Social Correlates of Paranoia, and the Effect of Belonging-Affirmations

Rosamund Raine

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**Abstract**

While depleted social networks are a widespread and troubling problem for those within the clinical paranoia population, contradictory evidence in the non-clinical paranoia population leaves this area in need of further investigation. Additionally, the closely related constructs of loneliness and belonging are consistently associated to mental health; however, research looking at their relationship with paranoia has been notably neglected. Interestingly, paranoia and belonging have been indirectly connected within the non-clinical literature, with self-affirmations reducing paranoia severity, and belonging being proposed as a particularly active ingredient within the affirmation process. The current study firstly aimed to identify whether social networks are depleted for those experiencing paranoia within the non-clinical population, and where in the network any such depletions take place. The second aim was to highlight any associations between paranoia and loneliness and belonging, and to establish whether paranoia had a causal influence on these two constructs. The final aim was to observe whether belonging-affirmations could reduce paranoia, and if, given the proposed relationship between paranoia, loneliness and belonging, this process also resulted in reduced loneliness. A general population sample was recruited and a three-phase study design implemented. Participants firstly completed a cross-sectional phase followed by a paranoia induction experimental phase, and a belonging-affirmation experimental phase. While results did not demonstrate a significant relationship between paranoia and social network size, a significant relationship between increased paranoia and increased loneliness and decreased belonging was observed. However, belonging-affirmations did not significantly reduce either paranoia or loneliness. It was concluded that, while social networks do not appear to be depleted for those experiencing paranoia within the general population, paranoia does appear to be associated with loneliness and belonging, with early indications that paranoia may have a causal influence within these two relationships. Belonging-affirmations were concluded as being ineffective interventions for reducing paranoia and loneliness.

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**Introduction**

**Overview**

Paranoia is an experience within which one feels persecuted, and believes that harm is intended towards them by others (Freeman & Garety, 2000). This experience is now widely recognised as a phenomenon that occurs within the general, as well as clinical, population (e.g., Bebbington et al., 2013). While much of the paranoia literature is based upon clinical samples, research investigating paranoia is increasing in the general population, and is important for two pertinent reasons. Firstly, paranoia poses a difficulty for a significant proportion of those within the general population, making research in this area important in its own right. Secondly, research within the general population can be used to increase knowledge with regard to the more extreme paranoia experience of those within the clinical population, without the confounding variables that are so often related with clinical paranoia presentations. Usefully, experimental procedures have demonstrated effectiveness in increasing state paranoia for those within the general population (e.g., Ellett & Chadwick, 2007), thus increasing the ability to investigate paranoia experiences in a controlled environment, with even less confounding factors.

One feature that is well corroborated as a difficulty for those experiencing paranoia in the clinical population, is depleted social networks (e.g., Erickson, Beiser, Iacono, Fleming & Lin, 1989). Reduced social networks have considerable detrimental consequences; the most obvious being reduced social support. Unfortunately, research looking at the relationship between paranoia and depleted social networks within the general population has various methodological flaws, and results are notably inconsistent. As such, further research with robust measures is needed to assess the relationship between paranoia and social networks within the non-clinical context. Furthermore, the implications of where within the network any such depletions take place is an important consideration. Depletions that take place among those with whom the individual is particularly close, and therefore provide high levels of support at times of distress, are likely to have different consequences to depletions that take place among those in the network with whom the individual is much less emotionally close. Finally, additional consequences of depleted social networks include increased loneliness and decreased belonging (e.g., Heaney & Israel, 2008; Perlman & Peplau, 1981), constructs that appear to have conceptual relationships with paranoia and close associations with mental health (e.g., Hagerty & Williams, 1999; Kawachi & Berkman, 2001; Perlman & Peplau, 1981). However, it seems that there is almost no research looking at the relationship between paranoia and loneliness and belonging within either the clinical or non-clinical population.

While the relationship between paranoia and loneliness and belonging has been investigated minimally within the literature, paranoia and belonging have been indirectly associated within self-affirmation research. Self-affirmations involve engaging in procedures that increase ones internal psychological resources, which are suggested to help an individual to protect themselves when a psychological threat is presented (Sherman & Hartson, 2011). Importantly, initial investigations suggest that affirmations may be an effective buffer against paranoia (Ellett & Chadwick, 2007; Kingston & Ellett, 2014), and that belonging could be a particularly active ingredient in the affirmation process, when one is faced with social/identity threat (Shnabel, Purdie-Vaughns, Cook, Garcia & Cohen, 2013). However, research in both of these areas is very much in its infancy, and the important work of identifying the active ingredients within affirmations that specifically reduce paranoia is yet to be begin. Finally, with proposed connections among loneliness, belonging and paranoia, it might also be expected that affirmations, particularly belonging-focussed affirmations, would have a significant effect upon reducing increased levels of loneliness, however this does not appear to have been investigated at all within the literature.

The present thesis aimed to: 1) Highlight whether increased trait paranoia and depleted social networks are connected within the non-clinical paranoia literature, and where any such depletions take place; 2) Examine the relationships between trait paranoia and trait loneliness and trait belonging; 3) Identify whether increasing state paranoia causes state loneliness to increase and state belonging to decrease; 3) Investigate whether belonging-affirmations can reduce state paranoia and state loneliness.

This chapter begins by introducing the definitions and various conceptualisations of paranoia, particularly with regard to the presence of paranoia within the general population. The literature related to the experimental paranoia induction procedure used within the present study is then presented, before the research and relationships among the study variables are discussed, and hypotheses of the current thesis stated.

**Paranoia**

**Defining paranoia**

Freeman and Garety’s (2000) criteria for defining paranoia (Table 1) is widely accepted, and has been used to assess paranoia in both clinical and non-clinical studies (e.g., Foster, Startup, Potts & Freeman, 2010; Freeman et al., 2014). As such, these criteria are used to define paranoia within the current study.

Table 1

*Freeman and Garety’s (2000) Criteria for Determining Paranoia*

|  |
| --- |
| Criteria A and B must be met |
| 1. A. The individual believes that harm is occurring, or is going to occur, to him or her
2. B. The individual believes that the persecutor has the intention to cause harm

Points for clarification: |
| 1. Harm concerns any action that leads to the individual feeling distressed
2. Harm only to friends or relatives does not count as a persecutory belief, unless

 the persecutor also intends for this to have a negative effect upon the individual1. The individual must believe that the persecutor, at present or in the future, will

 attempt to harm him or her1. Delusions of reference do not count within the category of persecutory beliefs
 |

*From.* Freeman, D. and Garety, P. A. (2000). Comments on the content of persecutory delusions: Does the definition need clarification? *British Journal of Clinical Psychology*, *39*(4), p.412.

Importantly, many terms have been used to describe the paranoia experience outlined by Freeman and Garety (2000); e.g., persecutory delusions, paranoia, persecutory ideation, paranoid thinking. For clarity, the term that will be used throughout this thesis is ‘paranoia’. However, as the clinical literature often refers to the associated clinical disorder, rather than the specific experience of paranoia, there will be some occasions within the present thesis when the clinical presentation/disorder will be referred to, rather than the specific paranoia component.

**Paranoia continuum**

Historically, a categorical approach has been the basis for conceptualising the construct of paranoia (Jones, Delespaul & van Os, 2003). This categorical view has meant that for a long time paranoia, at all levels of severity, was generally considered to be a clinically significant problem, and that individuals either had paranoia at a clinical level or no experience of paranoia at all. In support of this, Jaspers (1963) argued that the mechanisms through which delusional and ‘normal’ beliefs were formed, was qualitatively different. Additionally, based upon practical need, the Diagnostic and Statistical Manual of Mental Disorders (DSM) has also historically been based upon a categorical conceptualisation of psychotic experience, in which paranoia is only recognised as an experience/problem for those with a diagnosable psychotic disorder. This is in contrast to the common perspective of affective disorders, which are identified as being present within the general, as well as clinical population (e.g., Judd, Paulus, Wells & Rapaport, 1996), and become clinically significant at a certain threshold.

A categorical conceptualisation of paranoia has major implications for the idea of paranoia being present within the general/non-clinical population. The above research and diagnostic manual suggest that those within the general population do not have any experiences of paranoia, implying that the concept of non-clinical paranoia simply does not exist. Nevertheless, even when this was the dominant view of paranoia, a minority of researchers queried this simplistic categorical approach (e.g., Strauss, 1969), suggesting that those within the general population have paranoid experiences of the same quality as those within the clinical population. Increasing support for the view that paranoia is also a problem for those within the non-clinical population has led to general population studies taking an increased interest in investigating this alternative view. Such non-clinical population studies have now led to a widely accepted view that paranoia is not only experienced by those within clinical populations, but is also a common experience of those within the general population (e.g., Bebbington et al., 2013; Ellett, Lopes & Chadwick, 2003; Freeman et al., 2005; Freeman et al., 2011; Freeman & Garety, 2014; Rutten, van Os, Dominguez & Krabbendam, 2008), and may be similar in all areas but severity. The implication of this research is a continuum model of paranoia, within which mild (non-clinical) experiences of paranoia are at the lower end, and severe (clinical) experiences of paranoia are at the upper end. In support of a continuum view of paranoia is evidence suggesting a hierarchy regarding increased severity of belief, distress and the amount that individuals are preoccupied with paranoid thoughts when one is further up the hierarchy (Peters, Joseph & Garety, 1999), while the content of the paranoid thoughts remain similar (Harrow et al., 1988, cited in Bentall, Corcoran, Howard, Blackwood & Kinderman, 2001). Importantly, significant percentages of those with non-clinical paranoia have been shown to be more likely to go on to develop psychotic disorders (Dominguez, Wichers, Lieb, Wittchen & van Os, 2011; Poulton et al., 2000), demonstrating potential vulnerability of movement along the continuum. As all research looking at non-clinical paranoia is underpinned and justified by a continuum model of paranoia, it is very important to consider the various characterisations of the presence and presentation of paranoia within the general population when conducting work in this area. As such, the continuum view, and the various conceptualisations related to this perspective will be presented below.

Since paranoia has become widely accepted as an experience that occurs within both the clinical and non-clinical populations, several variations of the continuum conceptualisation of paranoia have been presented (Costello, 1994). For example, the phenomenological approach considers the differences between the upper and lower ends of the continuum as differing with regard to intensity and intrusiveness. The vulnerability approach focuses on how frequency and severity of non-clinical psychotic symptoms can signify a particular vulnerability to developing symptoms characteristic of the upper end of the continuum (e.g., Mason, Claridge & Williams, 1997). Furthermore is the conceptualisation that, rather than paranoia laying upon a linear continuum, in which frequency and severity of symptoms are parallel with need for care (Johns & van Os, 2001), paranoia is based upon a quasi-continuum. More specifically, this quasi-continuum approach could be considered to be a threshold view, which proposes that there is a certain point upon the continuum when frequency and severity of symptoms are no longer linear, increase dramatically, and signifying the point at which there is a need for care (Claridge, 1994). Hence, this last approach has qualities of the continuum theory with regard to paranoia/psychosis occurring in milder forms, but has a categorical-type component in which there is a clear clinical cut-off, when the presentation becomes suddenly and significantly different with regard to frequency and severity of symptoms. This quasi-approach tends to be the accepted view of those within psychiatry who support a continuum view, as it appears to be a derivative of the more categorical concepts accepted within the medical model (Claridge, 1994). Unlike the view generally taken within psychiatry, it is often a pure continuum view that is endorsed within psychology (e.g., Chapman, Chapman & Kwapil, 1995; Claridge, 1994; Claridge & Beech, 1995; Mason, Claridge & Jackson, 1995; Mason et al., 1997). A pure continuum view considers psychosis in terms of personality, meaning that traits of psychosis, such as paranoia, are not only held by those with clinical psychosis, but also by those in the general population, with need for care running parallel. As such, research looking at paranoia in the general population tends to work on the premise that those in the non-clinical population have experiences of the same quality as those in the clinical population, but with less need for care.

Finally, a major development for the paranoia continuum view has been presented within the DSM. While the DSM classification system remains categorical, there has been a distinct shift from a purely categorical conceptualisation of psychiatric disorder, meaning that there has been a shift to the view that there are varying degrees of severity of psychiatric disorders, which lie upon a continuum. Importantly, the continuum view of paranoia was specifically supported by the recent DSM-V (American Psychological Association, 2013), within which the diagnoses that would previously have been categorised as ‘schizophrenia’ is now known as ‘schizophrenia spectrum disorder’. More specifically, psychosis sub-types no longer exist within this domain, instead there is a focus on individual symptom severity. This spectrum view suggests a considerable shift towards the view that disorders often characterised by paranoia are located upon a continuum, and that not all symptoms necessarily equate to clinical diagnoses when at less severe levels.

**Non-clinical paranoia analogue samples**

Holding the continuum view in mind, those within the non-clinical population are increasingly being used as analogue samples to those who experience paranoia within the clinical population. A prerequisite of recruiting individuals from the general population as analogue to those in the clinical paranoia population is that the quality of the paranoia experience is similar throughout the paranoia continuum. Fortunately, there is increasing empirical support for the similarities between clinical and non-clinical paranoia (Johns & van Os, 2001; Rössler, et al., 2007; Rössler et al., 2011). Such similarities include similar risk factors (e.g., Freeman et al., 2007; Henquet, Murray, Linszen, & van Os, 2005; Janssen et al., 2003; Larøi & van de Linden, 2005; Myin-Germeys, Krabbendam & van Os, 2003; Rössler et al., 2011; Spauwen, Krabbendam, Lieb, Wittchen & van Os, 2006; van Os, Hanssen, Bijl & Ravelli, 2000; van Os et al., 2002; van Os & Verdoux, 2003) and certain cognitive and emotional factors, such as lower intellectual functioning and stress (Allen, Freeman, Johns & McGuire, 2006; Cohen, Magai, Yaffee & Walcott-Brown, 2004; Freeman et al., 2011). Compounding the utility of research with non-clinical samples are measures of paranoia that have been developed specifically for use within non-clinical populations (e.g., Paranoia Scale; Fenigstein & Vanable, 1992; O-LIFE, Mason & Claridge, 2006).

The advantages of recruiting non-clinical analogue samples include a reduction in confounding variables that often characterise the clinical paranoia population (e.g. medication use, comorbid mental health problems), and increased ease of recruitment, which can result in much bigger sample sizes. However, while it seems clear that paranoia exists in the non-clinical population, there are still many unknowns with regard to the extent of the similarities between clinical and non-clinical paranoia, and therefore the extent to which non-clinical samples can be used as analogue samples is still in need of investigation. Nevertheless, while investigating non-clinical paranoia can provide valuable insights about the clinical population, the finding that paranoia is a widespread problem within the general population has led to more recent interest in investigating non-clinical paranoia, independent of it’s analogue role. Emphasising the importance of this research are the difficulties that have been associated with the non-clinical paranoia experience. These difficulties include depressed mood, social anxiety, low self-esteem, general anxiety, worry, interpersonal sensitivity, and reduced physical health, emotional well-being, social inclusion and functioning (Freeman et al., 2008a; 2008b; Freeman et al., 2011; Martin & Penn, 2001). Additionally pertinent to the importance of research in this area is literature suggesting that those with non-clinical levels of paranoia experiences may be more likely to go on to develop clinical paranoia (Dominguez et al., 2011; Poulton et al., 2000).

In summary, we have seen that paranoia is an increasingly recognised problem within the general population, and that this group can be recruited within research as analogue to those with clinical levels of paranoia, with the advantage of reduced confounds and increased ease at which bigger sample sizes can be sought. Importantly, the phenomenon of paranoia within the non-clinical population has been identified as an important area of investigation in it’s own right, particularly due to its association to mental health difficulties.

Finally, making paranoia research even more accessible is the development of experimental paranoia induction procedures. Due to the experimental nature of these interventions, confounding variables can be controlled to an even greater extent than when recruiting analogue samples that have already elevated levels of paranoia in the non-clinical population. More specifically, the ease at which large samples can be recruited is even greater, as no particular participant criteria with regard to paranoia severity is needed. Thus, paranoia induction procedures are a very valuable research resource.

**Paranoia Induction Procedures**

The conditions within which paranoid thoughts can be induced have been investigated within a number of studies (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007; Fenigstein, 1984; Freeman et al., 2008b), and have allowed several methods of paranoia induction to be proposed (Freeman et al., 2008b; Green et al., 2011). One of these methods involves failure feedback in combination with increased self-awareness, a procedure that has been effectively used within several studies (e.g., Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007; Kingston & Ellett, 2014). This method will be a central component of the procedures within the current thesis. As such, the relevant mechanisms and evidence related to this particular paranoia induction procedure will be outlined below.

When considering failure feedback in combination with increased self-awareness as a paranoia induction procedure, it is important to think about the related theory of paranoia. It is hypothesised that paranoia is the result of protecting one’s self-esteem, when a threat to one’s self-esteem is presented. That is, when something causes a noticeable gap to develop between one’s actual and ideal self, one’s self-esteem is threatened. To protect self-esteem in this situation, an external, rather than internal, explanation for the threat is adopted, in the form of paranoia (Bentall et al., 2001). For example, if someone thought of themselves as highly academic and this was an important part of their identity, if they then performed badly on an academic test, this may expose a gap between their actual self (e.g. someone who does not always do well on academic tests) and ideal self (e.g. someone who would always do well on academic tests). Thus, a threat to their self-esteem is presented. To manage this threat (i.e. the posed gap), a defence, such as paranoia, may be adopted. For example, a thought such as ‘someone has manipulated my thoughts so that I don’t do well on this test’ may be endorsed in order to protect their identity/self-esteem. This theory of paranoia has also been related to depressive mood, as it is proposed that negative beliefs underlie the fragility of one’s sense of self (Bentall, 2003), and is therefore significantly related to one’s susceptibility to experiences of paranoia. In terms of non-clinical paranoia, Silvia and Duval (2001) and Duval and Silvia (2002) suggest that a combination of ambiguous or failure feedback and high self-awareness, leads to the above described actual/ideal self discrepancy, and therefore triggers paranoia.

Bodner and Mikulincer (1998) looked at practical ways of implementing a combination of failure feedback and increased self-awareness as a way of experimentally inducing paranoia. Within this research there were six conditions, the first three involved increasing self-awareness through increased attention upon the self. These three conditions involved either completing a task in the presence of a video camera recording the participant and a mirror within which the participant could see themselves, completing a task in the presence of a video camera recording the participant and a monitor showing the live recording, or completing a task only in the presence of a mirror within which the participant could see themselves. Those within the remaining three conditions were subject to increased self-awareness through increased attention upon someone else, through either completing a task in the presence of a video camera recording the experimenter and a mirror within which the participant could see the experimenter, completing a task in the presence of a video camera recording the experimenter and a monitor showing the live recording, or completing a task in the presence of a mirror within which the participant could see the experimenter. The task completed by all participants was the conceptual learning task presented within Hiroto and Seligman (1975), which is an impossible task (unbeknown to the participant). There were also three failure feedback conditions related to the conceptual learning task within this study. The first involved no feedback being provided, the second induced ‘personal failure’, by telling participants that the task was easy and that they had failed, and the third induced ‘universal failure’, by telling participants that the task was difficult and that they had failed. Results demonstrated that in the personal failure condition, increasing attention through self-focussed methods triggered depressive symptoms, while increasing attention through experimenter-focussed methods triggered paranoia symptoms. Additionally, it was found that differences in paranoia among failure feedback groups was only observed within the experimenter-focus conditions. In summary, Bodner and Mikulincer’s (1998) results demonstrated that it was only the increased awareness experimenter-focus conditions within which paranoia was induced, and that failure feedback only triggered paranoia in this experimenter-focus context.

Developing upon this work looking at failure feedback combined with increased self-awareness as a way of inducing paranoia, Ellett and Chadwick (2007) looked at the relationship between increased self-awareness, task failure, and paranoia and depression, in two experiments. Experiment one involved six conditions within which all participants (N = 60) were randomly allocated to either a failure or neutral feedback task. Both conditions involved completing an unsolvable conceptual learning task four times, however, upon completion of the task, the failure group were told that they had given the wrong answer, while the neutral group were not given any feedback. All participants were also allocated to one of three attentional groups, these consisted of a control group, within which there was no camera present, an experimenter group within which the experimenter sat opposite the participant, in front of a screen showing the same information as that displayed on the participant’s screen, and a camera group, within which there was a camera recording the participant, along with a monitor showing the live recording, with no explanation for the presence of either. The Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998) was administered after each of the four tasks, and the Paranoia Scale (PS; Fenigstein & Vanable, 1992) and the Beck Depression Inventory II (BDI-II; Beck, Steer & Brown, 1996) were administered upon completion of all four tasks. Findings demonstrated that those in the camera and monitor condition scored significantly more highly than those in the other two conditions on the PS, but no difference was found between the two task conditions (failure vs. neutral) on the PS. However, those within the failure condition scored significantly more highly on the BDI-II than those in the neutral condition, but there was no difference between the three self-awareness conditions on BDI-II. Scores on both the paranoia and depression sub-scales of the PDS increased over the four trials of the task. However, there was no significant difference between the three conditions (control vs. experimenter focus vs. participant focus) or the two feedback groups (failure vs. neutral) for either sub-scale on the PDS. In summary, in contrast to the work of Bodner and Mikulincer (1998), findings suggested that when participants were completing the concept-learning task in the participant-focus condition, paranoid, and not depressive thoughts were induced, and these were induced independently of whether they received failure feedback or not.

The second of Ellett and Chadwick’s (2007) experiments again involved each participant (N = 40) completing the conceptual learning task four times, but this time with no failure feedback. Each participant completed two of the concept-learning task trials twice with a camera recording the participant (participant-focus), and twice with the camera recording the experimenter (experimenter-focus). In both conditions what was being recorded on the camera, was visible to the participant on a television monitor, with no explanation given as to why the camera and monitor were present. Participant and experimenter recording conditions were conducted alternately across the four trials, with half of the participants starting with the participant recording condition, and half starting with the experimenter recording condition, with the experimenter sat opposite the participant in all conditions. Participants completed the PDS following each of the four tasks. Results demonstrated that both the PDS paranoia and depression sub-scales increased for the group that started with participant-focus and for the group that started with experimenter-focus, across the four time points. However, there was no difference between self-focus and experimenter-focus for either of the PDS sub-scales. Interestingly, the PDS paranoia scale was higher at Time 1, for those who started with the participant-focus condition compared to those who started with the experimenter-focus condition, and paranoia scores were significantly higher when the camera changed from being focussed on the experimenter, to being focussed on the participant, suggesting that the participant-focus condition had more of an effect on paranoia than the experimenter-focus condition. In summary, again in contrast to Bodner and Mikulincer (1998), the results reported that both heightened self-focus (participant-focus self-awareness condition) and heightened public-focus (experimenter-focus self-awareness condition) were effective at inducing paranoia, even in the absence of failure feedback, and that heightened self-focus might be the most effective of the two conditions at inducing paranoia.

The work of Bodner and Miklincer (1998) and Ellett and Chadwick (2007) has significantly contributed to ideas that increased self-awareness is an effective paranoia induction procedure within the non-clinical population. While there are inconsistencies between the results of the two studies, Ellett and Chadwick (2007) demonstrated consistent results in their two studies regarding the effect of increased self-awareness using self-focus procedures, which, in combination with failure feedback, has been successfully implemented within the paranoia literature (e.g., Kingston & Ellett, 2014).

Paranoia induction procedures can be very helpfully used to investigate both the experience of paranoia within the general and clinical populations, and the extent of the similarities between paranoia in these two contexts. However, there are areas of paranoia that cannot be investigated with an experimental induction procedure. For example, depleted social networks are a considerable and well-documented problem for those within the clinical paranoia population (e.g., Erickson et al., 1989), but due to their relatively stable nature, they cannot be investigated using short-term experimental procedures that induce state paranoia. As such, the characteristics of social networks of those who have experiences of paranoia within the non-clinical population, cannot be explored using experimental procedures.

**Paranoia and Social Networks**

Social networks consist of those with whom an individual values the relationship and regularly interacts (Hill & Dunbar, 2003). The widespread problem of depleted social networks and its detrimental effects for those experiencing clinical levels of paranoia is well documented within the literature (e.g., Erickson et al., 1989; Macdonald, Hayes & Baglioni, 2000; Sündermann et al., 2014). A broadly accepted view is that depleted social networks and social isolation for many of those experiencing clinical levels of paranoia arises after rather than before their initial paranoia experience, as a result of their paranoia symptoms (e.g., Brugha, Wing, Brewin, MacCarthy & Lesage, 1993; Cannon et al., 1997). Among the consequences of depleted social networks are reduced emotional and practical support (Thoits, 2011), reduced physical and mental health (Hale, Hannum & Espelage, 2005), reduced sense of belonging (Heaney & Israel, 2008), and increased loneliness (Perlman & Peplau, 1981). Thus, it is understandable why this would be of extreme detriment to those experiencing clinical levels of paranoia. Additionally, it is widely accepted that social support protects against many physical and psychological difficulties, and that for those already experiencing such difficulties, social support can reduce both the intensity of the interventions required, and improve prognosis (Berkman & Glass, 2000), with number of social contacts being identified as one of the main predictors of outcome in schizophrenia (Cohen & Sokolovsky, 1978). Furthermore, increased behavioural problems for those with long-term psychiatric disorders have been significantly related to smaller family networks, and for those with first-episode schizophrenia, small social networks have been related to longer durations of untreated psychosis and severe negative symptomology (Thorup et al., 2006). Finally, and potentially particularly important to the current thesis, reduced social contact has been related to the actual development of clinical levels of psychosis (Kwapil, 1998; Wiles et al., 2006). This is particularly pertinent to the present study if those with high levels of non-clinical paranoia could be more vulnerable to more severe paranoid experiences (Poulton et al., 2000; Dominguez et al., 2011), with reduced social contact having the potential to truly compound any such vulnerability. Despite the extensive literature suggesting that social networks are depleted for those experiencing clinical levels of paranoia, and the worrying consequences of this, research assessing whether social networks are also depleted for those experiencing paranoia in the general population is considerably lacking. While a continuum view of paranoia, which holds that the quality of paranoia remains the same throughout the continuum, is likely to suggest that those with milder experiences of paranoia would also have depleted social networks, sparse, unspecific and methodologically flawed research in this area means that this has not yet been confirmed (Gayer-Anderson & Morgan, 2013).

**Non-clinical paranoia and social networks**

Literature searches were conducted for the present thesis, using search terms: social network, size, structure, psychosis, and paranoia (journal databases: JSTOR, Science Direct, SAGE, and Google Scholar were used for all literature searches in the current thesis). Perhaps of most interest among the search results was a comprehensive literature review of the research looking at social networks and psychosis presentations in the non-clinical population (Gayer-Anderson and Morgan, 2013). This review emphasised that the literature in this area was sparse, contradictory and had methodological problems, implying that meaningful conclusions in this area could not yet be made. Six further studies looking at the association between paranoia and social networks within non-clinical population samples were identified during the literature search of the present thesis.

Two of the identified studies included large-scale cross-sectional research that found significant relationships between lack of social support and presence of psychotic symptoms (Alptekin, Ulas, Akdede, Tümüklü, and Akvardar, 2009; Freeman et al., 2011). However, neither used a robust measure of paranoia or detailed measures of social networks. Alptekin et al. (2009) recruited a general Turkish population (N = 1280), who completed the screening questions of the psychosis module of the Composite International Diagnostic Interview (CIDI) version 2.1 (Wittchen et al., 1991), and social support appears to have been measured with one categorical variable of ‘Yes’ or ‘No’. Analysis involved comparing a symptomatic group (those who scored above zero on the CIDI) and a non-symptomatic group, on the social support variable, using logistic regression. This analysis demonstrated that social support was significantly related to psychotic symptoms. While a significant result fits with the extensive literature within the clinical paranoia population that suggests that social networks are depleted, a paranoia-specific measure was not used within this study, and the social network data was extremely limited, thus restricting the extent to which specific, accurate and representative information was yield.

Freeman et al. (2011) analysed data collected from the Adult Psychiatric Morbidity Survey in England (APMS, 2007; N = 7281). Within this survey, paranoid thinking was assessed using three of the Psychosis Screening Questionnaire items (PSQ; Bebbington & Nayani, 1995), while the Interview Method of Social Relationships (IMSR; Brugha et al., 1987) was used to assess social support. The IMSR (Brugha et al.,1987) is a detailed assessment of social support and structure of a participants social network, however, the results reported by Freeman et al. (2011) only consisted of the answers to five questions of the IMSR. Analyses involved paranoia being entered into a logistic regression as the dependent variable, with four possible categories (no paranoia; one PSQ item endorsed; two PSQ items endorsed; three PSQ items endorsed) and social functioning being entered as an independent variable. This analysis revealed that reduced paranoia was significantly associated with being married, and increased paranoia was significantly related to reduced access to social support. Paranoia was looked at specifically within this study, which allows generalisation to this particular construct, however, the measure of this within the sample was limited to three questions, which may not be enough to accurately represent paranoia. Furthermore, only a small amount of the IMSR (Brugha et al., 1987) data appears to have been analysed and only seems to identify those within the immediate social contact group (those the respondent feels close to), that they turn to for support, giving limited information about the full extent of the persons social network size.

While the results of Alptekin et al.’s (2009) and Freeman et al.’s (2011) large scale investigations initially suggest a significant relationship between increased paranoia and reduced social networks, four of the identified studies within the literature review of the present thesis, did not highlight a significant relationship between these constructs (Freeman et al., 2008a; 2008b; Horan, Brown & Blanchard, 2007; Jenkins, Mbatia, Singleton, & White, 2010). Firstly, a large cross-sectional study investigated incidence and risk factors for psychotic symptoms within an urban Tanzanian population sample (n=899; Jenkins et al., 2010). Psychotic symptoms were assessed using the PSQ (Bebbington & Nayani, 1995) and social support was assessed by asking participants how many relatives/friends they were close to (using three categories: zero to three, four to eight, nine or more). Initially results reported that reduced social support was significantly related to increased incidence of psychotic symptoms, but when factors associated with area of residence were accounted for (e.g., household status, ethnicity), lack of social support was no longer independently related to increased incidence of psychotic symptoms. Again, a large sample was recruited, however, only a general psychosis measure was used, with no specific analysis of the data yield from the measure’s paranoia items, and very limited information about social networks was gathered.

However, Freeman et al. (2008a; 2008b) also found contradictory evidence for a relationship between paranoia and social networks. They looked at the relationship between state paranoia, assessed through the State Social Paranoia Scale (SSPS; Freeman et al. 2007) and number of social supports, as assessed through the Social Support Questionnaire-short form (SSQ-short form; Sarason, Sarason, Shearin & Pierce, 1987) in the general population (n=200). Their results reported a weak (but non-significant) association between state paranoia and reduced number of social supports. When considering the validity of these results, it should be acknowledged that the relationship between paranoia and social networks was only a very small part of their investigations, and only the short form of the SSQ (Sarason et al., 1987) was used. However they did use a paranoia-specific measure, but one that only collected data regarding state, and not trait paranoia.

Furthermore, Horan et al. (2007) conducted cross-sectional research with a relatively small sample of undergraduate students (n=79). A small part of this investigation involved assessing the difference between number of social supports as identified with the SSQ-Short Form (Sarason et al., 1987), for those who scored highly on the schizotypal/schizoid/paranoid sections of the International Personality Disorder Examination (IPDE; Loranger et al., 1994), with a control group, and a group scoring highly on magical ideation. Results demonstrated no significant association between scores on any of the sections of the IPDE (Loranger et al., 1994) and number of social contacts. However, only a relatively small sample was recruited, and only the short version of the SSQ (Sarason et al., 1987) was used, meaning that, again, only limited information regarding the persons social network was sought.

Finally, Wiles et al. (2006) conducted a large-scale longitudinal study within the general population looking at risk factors for psychotic symptoms. Among the identified risk factors for the development of psychotic symptoms was having a small primary support group at baseline. This suggests that, whether depleted social networks is a problem for those with experiences of paranoia in the general population or not, depleted social networks in the general population is a potential risk factor for developing clinical levels of psychosis/paranoia. Again, there were no robust measures of paranoia used, and only very basic data was gathered regarding social networks within this research.

In summary, a start has been made to identifying whether social networks are depleted for those with high levels of non-clinical paranoia. However, it seems that the measures used are limited in the amount and specificity of information captured for either of these constructs. Additionally, none of these studies used measures of paranoia that had been developed for use within non-clinical populations (e.g. the PS; Fenigstein & Vanable, 1992; or the PDS; Bodner & Mikulincer, 1998), neither did any of the studies gather data specifically looking at trait paranoia (outside of various related clinical disorders, e.g. psychosis, personality disorder). As such, a robust measure of paranoia does not appear to have been used within investigations looking at the relationship between paranoia and social networks in the non-clinical population, except for one study which looked at state paranoia (Freeman et al., 2008a; 2008b). Additionally, this research only appears to look at where there may be depletions to those with whom there is a high level of closeness. Only looking at those who provide the highest levels of social support within a person’s social network could be considered as a factor related to the contradictory results found in this area, as it may be that there are depletions, but that they only take place among those to whom the individual is less emotionally close. While the latter finding would mean less detrimental implications for reduced social networks, the location of depletions, wherever they are within the network, is still important information to gather in order to characterise the social networks of those experiencing paranoia in the non-clinical population. To assess whether depletions occur within the networks of those with non-clinical paranoia, data regarding the whole of someone’s social network would need to be collected, including both those with whom one feels very close, and those with whom one feels less emotionally close. This would allow conclusions to be made about whether social network size decreases for people who have higher levels of paranoia, and where any such depletions take place inside the network.

In relation to the location of social network depletions, Roberts, Dunbar, Pollet and Kuppens (2009) summarize the literature looking at the structure of human social networks. They suggest that human’s social acquaintances are arranged into three concentric circles, and that moving from the inner to the outer circles, involves number of social acquaintances, and level of emotional closeness and amount of interaction with these social acquaintances decreasing. Importantly for this work is that research has demonstrated that those within the innermost circles are those from whom one receives support at times of acute emotional distress (Dunbar & Spoors, 1995). This compounds the idea that depleted social networks have potentially considerable implications for those experiencing paranoia, depending on where in the network depletions take place. For example, reductions in the number of close friends/family may mean that individuals are less likely to get help/support (Roberts & Dunbar, 2011), which in turn may lead to the maintenance/deterioration of these distressing symptoms (Thorup et al., 2006), and may even lead to symptoms escalating into the clinical range (Chapman, Chapman, Kwapil, Eckblad & Zinser, 1994; Dominguez et al., 2011; Poulton et al., 2000). Thus, it is firstly important to identify whether those who have high but non-clinical levels of paranoia have depleted social networks, and secondly where within the network such depletions take place. All network depletions are likely to have a considerable impact upon an individual and instigate/exacerbate/compound the social isolation that is characteristic of those with clinical paranoia, with concerning consequences. However, if depletions particularly take place among those with whom a person is emotionally close, implications are likely to be of even greater concern.

Two factors that are often related to considerable depletions anywhere within a persons social network are increased loneliness (Perlman & Peplau, 1981), and decreased sense of belonging (Heaney and Israel, 2008), both of which contribute significantly to ones mental health (Hagerty & Williams, 1999; Perlman & Peplau, 1981). Theoretically, these two constructs are particularly pertinent to paranoia due to their interpersonal nature, a connection that becomes particularly apparent when considering the definitions of these concepts. That is, if one is experiencing high levels of self-consciousness and suspiciousness and mistrust of others (paranoia), then they are also likely to have the subjective experience of deficient social relationships (loneliness), and a decreased sense of feeling close and connected to others (belonging). Thus, at a conceptual level, direct links between these three constructs is logical, and the implications concerning.

**Paranoia, Loneliness and Belonging**

Loneliness is reported to be a subjective and unpleasant experience that involves deficient social relationships and distress (Perlman and Peplau, 1981), while sense of belonging is described as the extent to which one feels connected to others (Shnabel et al., 2013), and is the opposite of loneliness (de Jong Gierveld, Van Tilburg, & Dykstra, 2006).

Loneliness has been related to clinical paranoia/psychosis both within and outside of its relationship to reduced social networks (DeNiro, 1995; Neeleman & Power, 1994; Sündermann et al., 2014), but the research in this area is unfortunately sparse. Literature searches conducted for this review (search terms: paranoia, loneliness) suggest that only one study has assessed the direct relationship between non-clinical paranoia and loneliness. Freeman et al. (2008b) recruited a population sample (n=200), and exposed them to a virtual reality procedure. Among the relationships investigated, was that between induced paranoid thinking, as measured by Green et al.’s (2008) Paranoid Thoughts Scale Part B, and loneliness, as measured by the Social and Emotional Loneliness Scale for Adults (DiTommaso & Spinner, 1993). Results reported a significant relationship between paranoid thinking, and family situation related loneliness, but no significant relationships between paranoia and the other sub-scales of the loneliness measure (romantic loneliness and social loneliness) were observed. While this study only looked at state and not trait paranoia, and did not use a paranoia scale developed for use with non-clinical samples, it did use a full paranoia scale, and a robust measure of loneliness (DiTommaso & Spinner, 1993). However, research looking at the relationship between trait paranoia and loneliness and state paranoia using a non-clinical population specific measure and loneliness is still to be conducted.

Belonging has been described as an interpersonal construct (Hagerty, Williams, Coyne, & Early, 1996), that is a very important part of maintaining good mental health (Berkman & Glass, 2000; Hagerty & Williams, 1999; Hagerty et al., 1996; Hill, 2006; Kawachi & Berkman, 2001), buffering against stress (Resnick, Harris, & Blum, 1993; Thoits, 2011) and an essential component of a persons experience of social support, if that support is to be health promoting (Berkman, 1995). Importantly, reduced sense of belonging has been outlined as a notable part of the experience of those with long-standing psychosis (DeNiro, 1995), and increased belonging has been highlighted as an important component of recovery from first episode psychosis (Perry, Taylor & Shaw, 2007). However, despite these findings, there does not appear to be any further research looking at the relationship between paranoia and belonging, and no studies investigating the relationship between paranoia and belonging within the non-clinical population.

**Affirmations**

Interestingly, paranoia and belonging have been indirectly connected to each other within the self-affirmation literature. Initial research makes the exciting and promising suggestion that affirmations may have the effect of significantly reducing paranoia levels in the non-clinical population (Ellett & Chadwick, 2007; Kingston & Ellett, 2014). Additionally, early work looking at possible active ingredients within affirmations has suggested that belonging is one of the most prominent active ingredients within the affirmation process when social/identity threats are presented (Shnabel et al., 2013).

Before considering the relevant literature in this area, it is important to briefly outline the definition of affirmations, and the related theory. Self-affirmations are thought to involve engaging in thoughts or behavior that increase one’s internal psychological resources (Sherman & Hartson, 2011), that is, the resources that we can use to protect our psychological wellbeing. Steele (1988) suggests that affirmations increase psychological resources by consolidating/increasing positive thoughts about ourselves, our self-esteem, or our mood. Within research, this often practically involves participants writing about a value that is particularly important to them. By increasing psychological resources in this way, it is proposed that individuals are better able to cope with/buffer against psychological threats (Sherman & Cohen, 2006; Shnabel et al., 2013; Steele, 1988), resulting in a reduced need to use detrimental thought/behaviour patterns (such as dysfunctional defensive thoughts/behaviour) when faced with a psychological threat. The social psychology literature proposes that psychological resources can be thought of in the same way as physical immunity. That is, when psychological resources are high, and someone is faced with a psychological threat (e.g. a threat to their self-esteem), that person is better able to cope with that threat, and defend their psychological well-being. Sherman and Hartson (2011) suggest that when psychological resources have been increased through affirmations, the individual is able to change their psychological perspective with regard to a psychological threat, which in turn makes it less threatening, and therefore reduces the need to adopt a more dysfunctional defensive stance.

**Non-clinical paranoia and affirmations**

Two studies have looked at the ability of affirmations to reduce paranoia. Firstly, with the affirmation theory in mind, the third of Ellett and Chadwick’s (2007) experiments involved investigating the effect of boosting internal resources (through self-affirmations) on paranoia. Procedures involved implementing two priming tasks, one that increased accessibility of positive self-cognitions (by listing 10 characteristics that they felt were both positive, and described themselves), the other that increased accessibility of negative self-cognitions (by listing 10 characteristics that they felt were both negative and described themselves). Both conditions were implemented in conjunction with the participant-focus paranoia induction procedure used within Ellett and Chadwick’s (2007) first two experiments. More specifically, the procedure involved participants (N = 30) completing a task, in the presence of a recording camera focused on them, a monitor showing the live recording, and receiving feedback that they had failed the task. With regard to the presence of the camera, participants were given the information provided by Duval and Silvia (2002), that the camera was present to ensure consistency across the study. They reported that those who were primed to have more accessible positive self-cognitions gave lower state paranoia and depression scores than those who were primed to have more accessible negative self-cognitions. However, without a control group who did not participate in the paranoia induction, causal attributions were limited.

Kingston and Ellett (2014) developed upon the work of Ellett and Chadwick (2007) in their research within which students (N = 55) were randomly assigned to a self-affirmation or no-affirmation control condition. Within both conditions, participants rated 11 values in order of importance to them. The self-affirmation group were then asked to write for 10 minutes about both why their top rated value was meaningful to them, and a time when it made them feel good about themselves. The no-affirmation control group were asked to write for ten minutes about why their bottom rated value might be important to the average college student. Following this, participants completed the same paranoia induction procedure used within Ellett and Chadwick (2007). A repeated measures ANCOVA was conducted, with state depression as a covariate. Results demonstrated that the state paranoia scores of those in the self-affirmation condition were significantly lower than those in the no-affirmation control condition. Hence, the authors suggest that the self-affirmation process, which according to the theory involves increasing ones psychological resources, reduced paranoia severity. Additionally, their results demonstrated no significant effect of the affirmations on state depression, that is, state depression did not covary with state paranoia. The authors argue that this depression result supports the idea that affirmations have a direct effect on paranoia, and that it is not simply the result of improving depressed mood. However, the effect size of the affirmation procedure on state paranoia was not large. Additionally, there was no part of the investigation that looked at the active ingredient through which the affirmation effect might take place, leaving this question unanswered. The authors pose the identification of the active ingredient/s within this affirmation process as an important area of future investigation, highlighting the findings of Shnabel et al. (2013) that suggest belonging as a potentially important active ingredient within the affirmation process when faced with social/identity threat.

**Affirmations and belonging**

While the literature in the area of affirmations increases, literature searches carried out for the present thesis only identified one study that had investigated the possible active ingredients within the affirmation process. Shnabel et al. (2013) suggest affirming the self occurs through affirming bonds with those in our social network, that is, that the active ingredient within the affirmation process is belonging. However, it is suggested that this may only be the case when a social/identity threat is being encountered (Shnabel et al., 2013). Due to the specificity of the threat that belonging is suggested to be associated with (social/identity threat), the research looking at belonging as an active ingredient in affirmations has focused on the effect of affirmations on stigmatized groups, that is, those who are subject to negative stereotypes, and are therefore particularly concerned about confirming associated negative stereotype views (Cohen, Garcia, Apfel & Master, 2006; Shnabel et al., 2013). Shnabel et al.’s (2013) work follows the work of Cohen et al. (2006) who demonstrated that affirming ones values reduced activation of racial stereotypes (stereotype threat) for Black students, and the work of Cook, Purdie-Vaughns, Garcia and Cohen (2012) who demonstrated that affirmed Black students had a greater sense of belonging than those who had not been affirmed.

Shnabel et al. (2013) noted the impact of affirmations on academic performance, in the context of stigmatizing stereotypes, and went on to look at the role of belonging in this affirmation process through conducting two studies. The first study analysed the data from Cohen et al. (2006) and Cohen, Garcia, Purdie-Vaughns, Apfel and Brzustoski (2009), within which seventh grade students (169 Black and 186 White) were randomised to an affirmation or no-affirmation control condition, and was based on the premise that Black students are a negatively stereotyped group, within academic contexts. The affirmation group reviewed a list of values, and wrote about why their top rated value was important to them. The control group also reviewed a list of values, but were asked to write about why their least important value might be important to someone else. Content analysis was conducted upon each piece of writing, assessing whether belonging was being written about. They assessed whether those in the affirmation group wrote about belonging more than those in the control group, and whether writing about belonging mediated the effects of the affirmation on the participant’s academic performance (using their grade point average). Those in the affirmation group wrote about belonging significantly more than those in the control group, and writing about belonging improved academic performance for Black participants, but not for White participants. The second study involved recruiting undergraduate students (62 male and 55 female), and is based on the idea that females are a negatively stereotyped group when it comes to maths. Participants were randomised to one of three affirmation groups, or to a no-affirmation control group. Each participant rated 11 values in order of personal importance (Cohen, Aronson & Steele, 2000), following which, those in the no-affirmation control group were asked to write about how their ninth most important value might be important to someone else. Of those in the three affirmation groups, those in the first affirmation group were asked to write about how their top rated value made them feel independent and self-sufficient (individuating-affirmation), those in the second affirmation group were asked to write about how their top rated value was important to them (standard-affirmation), and those in the third affirmation group were asked to write about how their top rated value made them feel closer and more connected to people (belonging-affirmation). Following each participant completing the procedures of one of these four conditions, all participants completed a maths test. Again, each piece of writing was subject to content analysis, assessing whether belonging was being written about within the pieces of work. While the belonging-affirmation group wrote about belonging the most (97%), the other two affirmation groups also wrote about belonging in many of their essays (60% and 63%), with those in the three affirmation groups writing about belonging significantly more than those in the control group, of whom only 15% wrote about belonging. Belonging themes, therefore, appear to be an important part of the affirmation process, within this context. For the female participants, a linear contrast analysis demonstrated that as the amount of belonging themes elicited by each of the groups increased (individuating-affirmation, then standard-affirmation, then belonging-affirmation), maths test performance significantly increased. However, the same could not be said for the male participants, for whom there was no significant result. Additionally, there was a ‘marginally significant’ result (p < .08) for the difference between affirmation groups that were not specifically asked to write about belonging (individuating- and standard-affirmation) and the group that were asked specifically to write about belonging (belonging-affirmation) on the dependent variable (performance on a maths test). Results suggested that a belonging-focussed affirmation intervention has the potential to have more impact within this context for women. The authors concluded that the results of these investigations show that belonging is an active ingredient within affirmations when looking at the impact of affirmations on task performance, for certain groups of people (Black and female, respectively) within an academic environment. However, they suggest that belonging may only have been a potential active ingredient in affirmations here, because the psychological threats were specifically to participant’s identity. This interpretation appears to be supported by the results that only the groups presented as marginalised in the academic context (Black, then female students) were affected by the affirmations. The authors highlight that belonging-affirmations may be an effective buffer against social/identity threats, but not outside of this. It follows that belonging affirmations may also be particularly effective for those with paranoia, given that the experience of paranoia is proposed to arise as a result of a threat to ones self-esteem (i.e. a threat to ones identity).

The work of Shnabel et al. (2013) appears to be the only research looking at the potential active ingredients involved in the success of the affirmation process. The authors suggest that by identifying the specific active ingredients involved in affirmations, procedures can be enhanced through being more focussed upon these active ingredients, and therefore be more effective. While these are promising results for identifying the active ingredient involved in the affirmation process, particularly for social/identity threat, both investigations outlined in Shnabel et al. (2013) were in a very specific environment, with specific threats and groups. Hence, while belonging appears to be the only current suggestion for the active ingredient within affirmations, there is question about the generalizability of these investigations, and a need for much further research looking at belonging as a potential active ingredient within the affirmation process, in both the context of a social and non-social threat. With there being no current suggestion for the possible active ingredient within affirmations that effectively reduce paranoia, and the implications for social/identity threats of belonging-focussed affirmations, the possible role of belonging within affirmations that are effective for reducing paranoia, makes for a logical progression for research in this area. Furthermore, if the success of affirmations may be related to affirming bonds with others, that is, their sense of belonging increases, it follows that belonging-focussed affirmations may also be effective at reducing loneliness, not only because loneliness is characterised by poor perceptions of ones relationships, but also as it is described as the opposite of belonging, and as having a direct relationship with paranoia, for which it seems belonging-affirmations might also be effective.

In summary, while investigations are very much in their infancy, affirmations have been connected to both paranoia and belonging, but no single investigation has considered all three concepts together. If those with high levels of paranoia are able to increase their internal psychological resources through affirming bonds with others, they may no longer need to adopt paranoid thoughts to protect their self-esteem when they have been presented with a self-esteem threat. Additionally, affirming bonds with others and increasing one’s sense of belonging also logically leads to the assumption that the implementation of belonging-affirmations will also lead to reduced loneliness.

**The Present Study**

This chapter has summarised the areas related to social network size, loneliness, belonging, and affirmations that are currently lacking within the clinical and/or non-clinical paranoia literature. Based upon current research, the present study aimed to look more closely at the associations among these variables, as well as the ability of belonging-affirmations to reduce paranoia. The hope of these investigations was to better characterise the non-clinical paranoia experience, identify parallels between the non-clinical and the clinical paranoia experience in relation to the constructs of interest, and look more closely at a promising strategy for reducing paranoia symptoms.

**Hypotheses of the present study**

1. High levels of trait paranoia will be associated with reduced social network size, and reduced emotional closeness among social acquaintances.
2. Higher levels of trait paranoia will be associated with increased trait loneliness, and decreased trait belonging.
3. An increase in state paranoia will lead to increased state loneliness and reduced state belonging.
4. Completing a belonging-affirmation will reduce state paranoia and state loneliness.

**Method**

**Design**

As outlined in Figure 1, this study employed both a cross-sectional and an experimental design.

**Cross-sectional design**

For the cross-sectional phase of the design, participants completed measures that captured the following constructs at baseline (T1): trait paranoia, trait loneliness, trait belonging, social network size and emotional closeness.

**Experimental design**

Following the cross-sectional phase, there were two experimental phases. Within Experiment 1, participants were randomised to complete either a paranoia induction or control condition. Participants who completed the paranoia induction went on to participate in Experiment 2, in which they were randomised to complete either a belonging-affirmation procedure, or a no-affirmation control procedure. Dependent variables were measured at three time points in the study: baseline (T1), post-paranoia induction (Experiment 1; T2) and post-affirmation task (Experiment 2; T3), and included, state paranoia, state loneliness, and state belonging. State depression was also assessed at the three time points to check that the three groups at each stage were equivalent on this potentially confounding variable.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Baseline Measures** Sociodemographic information**Trait Measures**ParanoiaLonelinessBelongingSocial Network Size Emotional Closeness**State Measures**ParanoiaLonelinessBelongingDepression |  **Paranoia**  **Induction**  **(n=74)** |  |  **State** **Measures** Paranoia Loneliness Belonging Depression  |  |  **Belonging-Affirmation**  **Procedure (n=37)**  **No-Affirmation Control**  **Procedure (n=37)** |  **State**  **Measures** Paranoia Loneliness Belonging Depression   |
|  **Control** **Condition**  **(n=36)** |  **State** **Measures** Paranoia Loneliness BelongingDepression |  |  |
|  |  |

|  |  |  |
| --- | --- | --- |
| **T1** |  **T2**  | Time **T3**  |

*Figure 1*. Overview of design

**Participants**

An opportunity sample was recruited through the Royal Holloway undergraduate psychology credit system (N = 83), and through advertisement of a prize draw (N = 27). The former involved participants receiving three credits for taking part in the study, the latter involved participants being entered into a prize draw for taking part in the study. Those who took part in the cross-sectional phase and Experiment 1 consisted of 93 females (84.5%) and had a mean age of 21.15 (SD = 4.89, range = 17-41 years). The participants who went on to also participate in Experiment 2 (those in the experimental condition of Experiment 1; N = 74) consisted of 62 females (83.8%) and had a mean age of 21.0 (SD = 4.89, range = 17-41 years). For further demographic information for the three phases of the study, please see tables 3, 6 and 9 within the results section (pp. 67, 71 and 79).

**Power analysis**

An a priori power analysis was conducted for each of the experimental procedures to estimate the required sample sizes. For Experiment 1, Ellett and Chadwick’s (2007) comparison of state paranoia scores for those in the experimental group and those in the control group of a paranoia induction were used to estimate the effect size of the paranoia induction upon levels of paranoia. Cohen’s d (effect size) was calculated using the group means and pooled standard deviation. This produced a large effect size (1.10; Cohen, 1988). Based on this effect size, for a power analysis involving independent t-tests, with alpha at .05 and power at 0.80 (Cohen, 1992), 11 participants were required in each group for a one-tailed test. The current study was therefore adequately powered, with an actual power of 0.99.

To estimate the sample size for Experiment 2, Kingston and Ellett’s (2014) comparison of paranoia for those who took part in a self-affirmation task, compared to those who took part in a control task, was used to estimate the effect size of the belonging-affirmation on paranoia. Cohen’s d (effect size) was calculated using mean scores and standard deviations. This gave a medium effect size (0.58; Cohen, 1988), based upon which, for a power analysis involving between-subjects t-test, with alpha at 0.05 and power at 0.80 (Cohen, 1992), 35 participants in each group were required for a one-tailed test. The number of participants that actually went on to be recruited to Experiment 2 was 74. As such, based on the effect size found within Kingston and Ellett (2014) for a power analysis involving between-subjects ANCOVA with one factor and two groups (equivalent to an independent t-test minus one degree of freedom), with alpha at .05, power for the sample of the present thesis was at 0.80 (Cohen, 1992).

**Measures (presented in Appendix 1)**

**Trait measures**

***Paranoia Scale (Fenigstein & Vanable, 1992)***

This scale is a 20-item self-report questionnaire, which measures symptoms of paranoia with questions such as ‘Someone has it in for me’, ‘I sometimes feel as if I am being followed’, and was developed for use with non-clinical samples. All items are rated on a Likert scale ranging from 1 (not at all) to 5 (extremely applicable to me). The minimum and maximum scores are 20 and 100, respectively, with a higher score indicating higher levels of paranoia. The measure has been shown to have good internal consistency (alpha=.84), test-retest reliability (r=.70), and construct validity, as suggested by its sensitivity to experimental manipulations of paranoia (Fenigstein and Vanable, 1992).

***UCLA Loneliness Scale (Version 3: Russell, 1996)***

This scale is a 20-item self-report questionnaire, which measures loneliness with questions such as ‘How often do you feel that you are “in tune” with the people around you?’ and ‘How often do you feel that you lack companionship?’. All Items are rated on a Likert scale ranging from 1 (never) to 4 (always). The minimum and maximum scores are 20 and 80, respectively, with a higher score indicating higher levels of loneliness. Nine of the items are reverse scored. Russell (1996) reports high reliability with regard to both internal consistency (coefficient alphas ranging from .89 to .94) and test-retest reliability (r = .73). The same study reports convergent validity, through comparison with other measures of loneliness (r= .65 to r= .72), and construct validity through significant correlations between the measure and determinants and consequences of loneliness, proposed by theoretical models of loneliness.

***Social Network Questionnaire (Roberts, Dunbar, Pollet & Kuppens, 2009)***

This questionnaire provides a way of describing and organising information about one’s social network. Participants are asked to list all living genetic relatives, as well as all those who are unrelated to them and fit four criteria: they consider to have a personal relationship with the individual; they have their contact details; they have had some sort of contact with them in the past 12 months; and they would like the relationship to continue. For each of those on the lists, participants are asked to rate how emotionally close they feel to them on a scale of 1-10 (where 10 is very close), and to identify when they last contacted them. Within this study, participants were not asked to complete the part of the questionnaire that asks them to list the spouses/long-term partners of each of their genetic relatives. This was excluded to reduce the time taken to complete the questionnaire, and it was thought that spouses/long-term partners with whom participants were at all close, would be listed within the list of unrelated contacts.

***Social Provisions Scale (Cutrona & Russell, 1987)***

This scale is a 24-item self-report questionnaire of social provisions with questions such as ‘There are people I can depend on to help me if I really need it’ and ‘There is no-one I can turn to for guidance in times of stress’. All items are rated on a Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The minimum and maximum scores are 24 and 96, respectively, with a higher score indicating higher perceived levels of social support. Eleven of the items are reverse scored. This scale aims to capture the six social provisions (functions) that Weiss (1974) suggests are obtained from relationships with others (guidance, reassurance of worth, social integration, attachment, nurturance, and reliable alliance), which make up the six sub-scales of the measure. Cutrona and Russell (1987) state that reliability is demonstrated for the subscales (with coefficient alphas ranging from .65 to .76) and the total scale (alpha=.92), and that convergent validity is demonstrated through significant correlations with comparable measures (ranging from .35 to .46), including the Social Support Questionnaire (Sarason, Levine, Basham & Sarason, 1983), the Index of Social Supportive Behaviours (Barrera, Sandler & Ramsay, 1981), and an instrument measuring attitudes towards use of social support (Eckenrode, 1983).

***Sense of Belonging Instrument – Psychological State (SOBI-P; Hagerty & Patusky, 1995)***

This scale is an 18-item self-report questionnaire which measures sense of belonging with questions such as ‘I feel like an outsider in most situations’ and ‘I could disappear for days and it wouldn’t matter to my family’. All items are rated on a Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The minimum and maximum scores are 18 and 72, respectively, with a higher score indicating lower sense of belonging. Hagerty and Patusky (1995) report that the instrument has inter-rater reliability (alpha=.84), test-retest reliability (with coefficient alphas ranging from .84 to .93), and a whole instrument item content validity of alpha=.83. Construct validity was also assessed, in three ways. Firstly, all potential items were entered into a factor analysis, which resulted in a two-factor solution, with the 18 SOBI-P items loading onto one factor, representing the psychological state of sense of belonging. Secondly, a contrasting groups comparison was undertaken. This involved students, and individuals thought to be particularly high (nuns) or particularly low (those with depression) on belonging (Waltz, Strickland & Lenz, 1991), completing the measure. An ANOVA revealed that, as expected, the depression group scored significantly lower than the student group, and the nun group scored significantly higher than the student group (F=38.16, p=.001). Finally, SOBI-P scores were compared with scores of loneliness, using the Revised UCLA Loneliness Scale (Peplau & Cutrona, 1980; Russell, Peplau & Ferguson, 1978), and scores of social support and reciprocity, using the Interpersonal Relationships Inventory (Tilden, 1989). Correlations with loneliness ranging from r=.62 and r=-.76, with social support ranged from r=.42 to r=.58, and with reciprocity ranging from r=.22 to r=.59.

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

The HADS is a 14-item self-report questionnaire that measures anxiety and depression with questions such as ‘I feel tense or ‘wound up’’ (anxiety sub-scale) and ‘I feel as if I am slowed down’ (depression sub-scale). All items are rated on a Likert scale ranging from 0 to 3. Each number on the Likert scale has a corresponding statement that is specifically applicable to the individual item. The total minimum and maximum scores are 0 and 42, respectively, with a higher score indicating higher levels of anxiety and depression. The minimum and maximum scores are 0 and 21, respectively, for each of the two seven-item sub-scales (Anxiety and Depression). Sensitivity and specificity of the measure for screening depression and anxiety has been estimated at .90, and correlations with other measures reportedly range from .49 to .83 (Bjelland, Dahl, Haug, Neckelman, 2002). Mean Cronbach’s alpha’s for the anxiety and depression sub-scales have been reported as .83 and .82, respectively (Bjelland et al., 2002). Spinhoven et al. (1997) assessed reliability and validity using six different samples. They reported that test-retest (ranging from nine to 43 days) correlation coefficients for the anxiety and depression sub-scales, and for total scores, were 0.89, 0.86 and 0.91, respectively. Additionally, when comparing ‘psychiatric outpatients’, ‘general medical outpatients’ and ‘adults from the general population’, they reported that psychiatric outpatients had significantly higher scores on all scales compared to the other two groups, and that general medical outpatients had significantly higher scores on all scales, compared to adults from the general population.

**State measures**

***The Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998)***

This scale is a 17-item self-report questionnaire, developed to measure depressive and paranoid thoughts after completion of an unsolvable task, with questions such as ‘I feel ashamed of my task performance’ (depression sub-scale) and ‘I do not trust other people’s intentions’ (paranoia sub-scale). The depression sub-scale consists of 10 items, and the paranoia sub-scale consists of 7 items. All items are rated on a 6-point Likert scale ranging from 0 (not at all) to 5 (very often). The total minimum and maximum scores are 0 and 85, respectively, with a higher score indicating higher levels of paranoia and depression. The minimum and maximum scores are 0 and 50, respectively, for the depression sub-scale, and 0 and 35, respectively, for the paranoia subscale. Discriminant validity has been demonstrated through the scale’s ability to discriminate between major depression and paranoid schizophrenia (Bodner & Mikulincer, 1998). Good convergent validity and internal consistency (depression items alpha= .87 and paranoia items alpha= .79) have also been demonstrated for the scale (Bodner & Mikulincer, 1998).

***UCLA Loneliness Scale (Version 3; Russell, 1996; Adapted for the purpose of this study)***

Following extensive literature searches, and consultation with researchers in the area, it was concluded that there was not currently a psychometrically robust measure of state loneliness. Therefore, the UCLA Loneliness Scale (Version 3; Russell, 1996) was adapted to measure state loneliness within the current study. The Likert scale and minimum and maximum scores all remained the same as the original measure, however, the wording of each of the item statements was changed. Rather than starting each statement with ‘How often do you feel…..’, each item statement began with ‘Right now, do you feel….’. For example, ‘How often do you feel close to people?’ was changed to ‘Right now, do you feel close to people?’.

***Belonging Likert Scale (created for this study)***

There did not appear to have been any formal state belonging measures already developed, and no scale or measure was used at all in previous belonging-affirmation manipulations. As the trait measure of belonging used within the present study was a less widely used psychometric measure than the UCLA Loneliness Scale (Version 3; Russell, 1996), a different approach to creating a state measure was taken, resulting in a belonging Likert scale being developed for the purposes of the current thesis. The aim of this was to firstly capture differences in levels of the dependent variable of belonging at T1 and T2 as part of Experiment 1 hypothesis testing, and secondly to capture differences in state belonging at T2 and T3, as part of the Experiment 2 manipulation checks. The question used was ‘I feel close and connected to other people’, which was derived from the definition used by Shnabel et al. (2013), which fits with the widely used definition of sense of belonging proposed by Hagerty, Lynch-Sauer, Patusky, Bouwsema and Collier (1992). Participants were asked to rate this statement on a scale of 0 (not at all) to 100 (totally), hence the maximum and minimum scores were 0 and 100 respectively, with a higher score indicating higher levels of belonging.

**Paranoia Induction Procedure**

An established paranoia induction was used in the present study, following the methodology employed by Bodner and Mikulincer (1998) and Ellett and Chadwick (2007). This procedure involves combining failure feedback, through the use of a concept-learning task, with high self-awareness, through the use of a recording video camera and monitor showing the live recording.

**Failure manipulation: unsolvable concept learning task**

Following Ellett and Chadwick (2007), failure was manipulated using an unsolvable concept learning task used by Hiroto and Seligman (1975), with the images presented within Wills, Ellett and Lea (2004). The task was presented to participants using DMDX software and involved 10 trials. For each trial participants viewed a unique image for 5 seconds. After each image was shown, there was a 3 second interval before moving on to the next trial. Each of the images contained five geometric shapes (flanker, trapezium, field shape, coloured square, stripe orientation), all of which were categorised by one of two possible characteristics (e.g. stripe orientation – horizontal or vertical). Each of the 10 images contained all five of the shapes, each shape was characterised by one of its two characteristics (e.g. flanker - coarse). Each of the shapes, as well as an example image are displayed within Figure 2.

Participants were told that the researcher had randomly identified one of the shapes, along with one of that shape’s characteristics, to always be ‘correct’ (e.g. trapezium - inverted). Standardised instructions are presented in Appendix 2. After each image, participants indicated whether the image contained the ‘correct’ shape chosen by the experimenter. They then received bogus feedback, indicating whether their response was correct or incorrect. Participants were unaware that the feedback was bogus. Following all 10 trials, participants were asked to identify which shape and characteristic was the ‘correct’ one, as identified by the researcher. Regardless of their choice, they were told that they had given the wrong answer.

To ensure that participants understood the procedure, each completed one pilot trial without a camera or monitor, and with the experimenter sitting across the room with their back to them, before the 10 trials began. Participants were encouraged to ask questions with regard to the instructions at this point if needed, and where questions were asked, the experimenter re-emphasised parts of the task, such as the importance of responding within the 5 seconds that the image was in view.

FLANKERS

 

|  |  |
| --- | --- |
| Fine | Coarse |

TRAPEZIUM

 

|  |  |
| --- | --- |
| Upright | Inverted |

FIELD SHAPE

 

|  |  |
| --- | --- |
| Stars | Flowers |

COLOURED SQUARE

 

|  |  |
| --- | --- |
| Yellow | Blue |

STRIPE ORIENTATION

 

|  |  |
| --- | --- |
| Horizontal | Vertical |

Example Image



*Figure 2.* Stimuli used for the concept-learning task

**Self-awareness manipulation: camera and television monitor**

Following Ellett and Chadwick (2007), participants within the experimental condition completed the concept-learning task in the presence of a recording video-camera, and monitor showing the live recording, to induce increased self-awareness. A video camera, focussed on the participant, was placed three feet in front of the participant on a tripod, and was adjusted to the height of the participants eye-level. The video camera was connected to a 19-inch television monitor, which was positioned diagonally to the left of where the participant was working on the desk. The monitor displayed the live recording of the participant, so that they could see their face throughout the task. As suggested by Duval and Lalwani (1999), the presence of the video camera was explained to participants by stating that it was being used to ensure that procedures were consistent across the study.

**Paranoia Control Task**

Participants in the paranoia control task completed the same procedures as those in the paranoia induction task, but did so in the *absence* of the self-awareness manipulation, that is, there was no camera and monitor present.

**Affirmation Procedures**

The belonging-affirmation and no-affirmation control condition procedures from Shnabel et al. (2013) were followed (see appendices 3 and 4) within Experiment 2, procedures that are derived from a well-established evidence base (Sherman & Cohen, 2006; Steele, 1988). Firstly, participants are presented with a list of 11 values (Sources of Validation Scale; Harber, 1995), and are asked to rank them from 1 (their most important value) to 11 (their least important value). The values include: Artistic skills/aesthetic appreciation; Sense of humour; Relations with friends/family; Spontaneity/living life in the moment; Social skills; Athletics; Musical ability/appreciation; Physical attractiveness; Creativity; Business/money; Romantic values. Following Shnabel et al. (2013), those in the belonging-affirmation condition were asked to write for 10 minutes about how their top-ranked value made them feel *close and connected to others*. While those in the no-affirmation control condition were asked to write for 10 minutes about how their bottom-ranked value might be important to *someone else*.

The resulting essays were then subject to a manipulation check, which was conducted following the procedures of Shnabel et al. (2013). Two coders judged whether the essays contained belonging themes (0 = no, 1 = yes) according to the following criteria for identifying belonging in the essays presented by Shnabel et al. (2013), which outlined that belonging essays were defined as those that explicitly wrote about one (or more) of the following areas: a) one values an activity because it is done with others, b) one feels part of a group of people because of a certain value or while engaging in a certain activity, c) any related thoughts on the subject of one’s social belonging, such as being affiliated to or liked by others. The first of the two coders (RR) was very familiar with the conditions and affirmations. RR trained a second (independent) coder until satisfied that they truly understood the aim of the coding. Both coders then judged six of the essays as to whether they contained belonging themes, sharing and discussing their ratings after coding each essay, establishing how and why they rated in the way that they had. Following this, the first coder independently rated all of the essays (excluding the 6 already rated), while the second coder independently (and blindly) rated 50% of the total essays (of which there was a 50/50 split of belonging-affirmation and no-affirmation essays).

**Procedure**

Prior to recruitment, ethics approval was received from the Psychology Department Ethics Committee (ethics approval reference 2015/033; Appendix 5). The study was advertised as investigating social networks, task performance and emotions. Information sheets (see appendices 6 & 7) reiterated that the study was investigating social networks, task performance and emotions, and the paranoia experimental group were told that values were also being investigated. All participants were told that they would be asked to complete a batch of questionnaires, a short computer task, and further questionnaires. Those in the paranoia experimental group were also told that they would be asked to complete a values and writing task, before completing final questionnaires. All participants were informed of estimated timings of each task. Once participants had read the information and consent forms (appendices 8 & 9), they were asked if they would still like to take part in the study, and if so, to sign the consent form. These forms emphasised that their participation was completely voluntary, that they could withdraw their participation at any time, without consequence, and that it was not compulsory to answer every item on the questionnaires, but were nevertheless encouraged to.

As outlined in Figure 1, all participants first completed T1 baseline measures, which included all sociodemographic, trait, and state measures described above. Participants then completed either the paranoia induction or paranoia control condition of Experiment 1, followed by the T2 state measures (PDS [Bodner & Mikulincer, 1998]; UCLA Loneliness Scale [Version 3; Russell, 1996; Adapted for the purpose of this study]; Belonging Likert Scale [created for this study]). Those in the paranoia control condition finished the study at this point, and were debriefed (see Appendix 10 for debrief sheet).

Participants who undertook the paranoia induction were then randomised to complete either the affirmation or no-affirmation control condition of Experiment 2. This was conducted in a different part of the room to where the paranoia induction took place, and it was clear that they were no longer in view of the camera. After completing either the affirmation or no-affirmation condition of Experiment 2, participants completed the T3 state measures (PDS [Bodner & Mikulincer, 1998]; UCLA Loneliness Scale [Version 3; Russell, 1996; Adapted for the purpose of this study]; Belonging Likert Scale [created for this study]). Participants were then debriefed (see Appendix 11 for debrief sheet).

**Randomisation**

Random assignment was implemented for assignment of participants to either the paranoia induction condition or paranoia control condition of Experiment 1, with those randomly allocated to the paranoia induction condition then being randomly assigned to either the belonging-affirmation or no-affirmation control condition of Experiment 2. To ensure that allocation was random, all randomisation was conducted through a randomisation website ([www.randomisation.org](http://www.randomisation.org)).

While the experimenter could not be blind to the paranoia condition, due to their role in activating the video camera and television monitor for those in the paranoia induction condition, the experimenter was kept blind to the affirmation condition. As such, randomisation of participants to the affirmation/no-affirmation control condition was conducted by a second person who was independent to the study.

**Ethical Issues**

The paranoia induction is an established procedure, which has been used within several studies, and hasn’t been found to have any detrimental effects. Nevertheless, inducing participant paranoia has the potential to have negative emotional implications for participants. As such, all participants were fully debriefed at the end of the study, and the experimenter checked with participants as to whether they were feeling distressed following all of the procedures. While none of the participants reported distress at this point, they were all given information about relevant support sources should they experience distress after they had left the study, and were encouraged to contact the researcher by email if this were the case. Participants were also informed that the concept learning task, completed within Experiment 1, was unsolvable, and that the camera was switched on but that there was no video recording. Once participants had completed participation and been debriefed, given the mild deception involved, they were asked to sign a second consent form (see appendices 12 & 13) to give permission for their data to be used.

**Results**

**Overview**

This chapter starts with a description of the preliminary statistical procedures used to prepare the data for analysis. The procedures used for screening and managing missing values, outliers, and the normality of the distributions of all variables of interest to the hypotheses are then described. Where parametric assumptions were violated, transformations were used, and are described where applicable. Following from the preliminary statistics, each phase of the study and its associated descriptive statistics, manipulation checks and analyses involved in hypothesis testing are presented in turn. Each of these phases firstly involved exploring demographic information. For the experimental phases, demographic information for the experimental and control groups were compared, to assess the success of the randomisation procedures. Also for the experimental phases, manipulation checks of the experimental procedures were conducted. For all three phases of the study, the exploration of demographic information, and manipulation checks for the experimental phases, was followed by the relevant hypothesis testing. Hypotheses 1 and 2 were tested using bivariate correlations, while Hypotheses 3 and 4 were tested using ANCOVA’s, which are recommended for comparing groups on follow-up scores due to their increased sensitivity over repeated measures ANOVA (Vickers & Altman, 2001). All data were screened, managed and analysed using the Statistical Package for Social Sciences (SPSS, version 21). All reported values are presented to two decimal places, while percentages are presented to one decimal place. Throughout the analyses, statistical significance was adopted at *p* < .05.

**Preliminary Statistical Procedures**

**Missing data**

Specific guidelines were adhered to when screening the dataset for missing values. Firstly, mean substitution was adopted in cases where participants had fewer than 20% of items on a questionnaire missing. Mean substitution involves using the mean score (rounded to one decimal place) of the completed items on that questionnaire to estimate the missing values, which are then substituted with this mean score (Tabachnick and Fidell, 2007). Adding utility to this approach is that it both maintains internal consistency of the individual’s scores on the relevant measure, as well as the power of the study, because the sample size is not reduced (Hill & Lewicki, 2006). It is important to acknowledge that implementing the mean score has the ability to bias estimates, and to artificially reduce variance. The extent of any such bias or reduced variance occurs proportionally to how much data is missing (Hill & Lewicki, 2006). As such, listwise deletion was implemented on any scales where an individual had more than 20% of the values missing, that is, all data for that case, on the relevant scale and related variable, were deleted.

Screening of the raw data revealed several areas of missing data. Four (4.4%) participants produced one or more questionnaires upon which there were no items completed. Two of these cases did not complete any of the T2 questionnaires. It appeared that these questionnaires had been overlooked in these cases, potentially as a result of the complex design procedure that participants needed to follow. Nine (9.9%) participants missed one item on one or more questionnaires. These missing values were distributed between the questionnaires, with no apparent uniformity. Fifteen (16.5%) participants did not complete the second part of the SNQ contacts listing exercise, and two (2.2%) participants did not complete any of the SNQ contacts listing exercise at all. It is hypothesised that the former may have overlooked the second part of the exercise by not turning over the page, and that the latter may not have completed the whole exercise due to the perceived time involved in completing this particular task.

**Distribution of variables**

Homogeneity of variance was assessed using Levene’s tests for all ANCOVA’s. As none of Levene’s test’s were significant for any of the analyses, equal variances were assumed throughout.

Normality of variance was initially assessed visually, by examining histograms with normal curves. Following this process, each of the study variables were formally assessed with regard to skew and kurtosis with z-scores obtained using the relevant formula’s, as highlighted by Tabachnick and Fidell (2007). Normality was accepted if z < 3.29 (p > .001), as such, a significant score on skew or kurtosis (Z > 3.29, p < .001) indicated non-normal distributions.

Histograms, together with skew and kurtosis z-scores suggested that several of the T1 study variables were skewed. Total emotional closeness scores on the SNQ, and both the paranoia and depression subscales of the PDS were positively skewed (z = 4.13, p < .001; z = 6.74, p < .001; z = 4.82, p < .001, respectively). While the belonging Likert scale and Social Provisions Scale were negatively skewed (z = -4.01, p < .001; z = -3.95, p < .001, respectively). Each of these variables were transformed. For the positively skewed variables, a square root transformation was used. For the negatively skewed variables, to avoid unwanted effects of the transformation on the data, these variables were converted to positively skewed variables prior to transformation and reversed back, following transformation, to maintain the original direction of scoring.

To enable comparisons across the three time points, the paranoia and depression sub-scales of the PDS and the belonging Likert scale variables were also transformed for T2 and T3.

The resulting transformed variables all demonstrated normality (see Table 2).

Table 2

*Skew Data for Transformed Variables where Transformations were Needed*

|  |  |  |
| --- | --- | --- |
| Variable |  Skew |  Kurtosis |
| Total Emotional Closeness | 1.09 (p > .01) | 0.70 (p > .01) |
| Social Provisions Scale | -0.72 (p > .01) | 0.33 (p > .01) |
| Time 1 PDS Paranoia Sub-Scale | 0.28 (p > .01) | 0.87 (p > .01) |
| Time 1 PDS Depression Sub-Scale | 0.43 (p > .01) | -0.92 (p > .01) |
| Time 1 Belonging Likert Scale | 0.94 (p > .01) | 0.77 (p > .01) |
| Time 2 PDS Paranoia Sub-Scale | 0.60 (p > .01) | 0.59 (p > .01) |
| Time 2 PDS Depression Sub-Scale | 1.12 (p > .01) | -0.44 (p > .01) |
| Time 2 Belonging Likert Scale | 1.60 (p > .01) | 0.59 (p > .01) |
| Time 3 PDS Paranoia Sub-Scale | 0.76 (p > .01) | 0.80 (p > .01) |
| Time 3 PDS Depression Sub-Scale | 0.88 (p > .01) | 0.51 (p > .01) |
| Time 3 Belonging Likert Scale | 1.60 (p > .01) | 0.26 (p > .01) |

**Outliers**

For the present thesis, univariate outliers were identified as data points that were three standard deviations away from the variable mean. Outliers were highlighted through inspecting the box-plots and exploring the means and standard deviations of each variable. The authenticity of each outlier as a genuine extreme value was firstly assessed through checking that they were not the result of measurement errors/data recording errors/data entry errors (Field, 2009).

As part of the error checking, the outliers were assessed in the context of the whole dataset. One participant’s data (paranoia control condition) was an outlier across several of the study variables. It was decided that the extent of these outlying data points, meant that they could not be accepted as true extreme scores, compared to the rest of the dataset, and that this participant (paranoia control group) would be excluded from all analyses. One further participant had consistently high scores across Time 1, 2 and 3, on state paranoia. However, these data points were no longer outlying following the transformation of the state paranoia variables at the three time points, so their data were retained within the analyses. There were no notable patterns among the remaining outliers, all of which were eradicated either through the transformation of non-normal variables, or through a winsorizing process, within which the outlying score was replaced with the value of the next score, and balanced by also adjusting the most extreme score at the other end of the data distribution. A summary of outlying data points can be seen within Appendix 14.

**Cross-Sectional Phase - Associations Among Trait Variables**

**Descriptive statistics**

Table 3 demonstrates the sociodemographic characteristics of the total sample. In summary, most participants were single, female, undergraduate psychology students recruited as part of the RHUL psychology course credit scheme, while 27 participants were recruited outside of this scheme, with the incentive of a prize draw. There was a notably high percentage of participants who met clinical threshold for anxiety. This may be related to a high proportion of the sample being at the start of their first year of a psychology undergraduate degree, which for the majority involved being away from home for the first time, and being at the start of a new academic course, both of which were hypothesised as potentially being very anxiety provoking.

Table 3

*Sociodemographic Characteristics of the Whole Sample at Time 1*

|  |  |  |
| --- | --- | --- |
|  Sociodemographic Variable |  Total Sample (N = 109) | N (%) |
| Gender | Male | 15 (13.8%) |
| Female | 92 (84.4%) |
| Missing Data | 2 (1.8%) |
| Age | Mean (SD) | 21.15 (4.74) |
| Range | 17-41 |
| Ethnicity | White British | 59 (54.1%) |
| Non-White British | 48 (44.0%) |
|  Missing Data | 2 (1.8%) |
| Marital Status | Single | 97 (88.0%) |
| Cohabiting | 4 (3.6%) |
| Married | 4 (3.6%) |
| Missing Data | 4 (3.6%) |
| Mental Health Diagnosis | Yes | 24 (21.8%) |
| No | 83 (75.3%) |
| Missing Data | 2 (1.8%) |
| Depression | Clinical\* | 3 (2.7%) |
| Non-Clinical | 106 (97.2%) |
| Anxiety | Clinical\*\* | 42 (38.5%) |
| Non-Clinical | 67 (61.5%) |
| Incentive | Credit Scheme | 82 (74.4%) |
| Prize Draw | 27 (24.5%) |

*Note*. \*Score of 11 or above on HADS depression sub-scale (Snaith, 2003) \*\*Score of 11 or above on HADS anxiety sub-scale (Snaith, 2003)

**Hypothesis testing - associations between trait paranoia, and social**

**network size, emotional closeness, trait loneliness, and trait belonging**

The first hypotheses of the study were assessing whether higher levels of trait paranoia were associated with reduced social network size, reduced emotional closeness with social acquaintances, increased trait loneliness and reduced trait belonging. To test these hypotheses, Pearson’s Correlations were conducted between each of the trait variables, for the whole sample (see tables 4 & 5 for means, standard deviations, and correlations). Results demonstrated that there was no significant correlation between trait paranoia and number of those in the social network, total emotional closeness, or mean emotional closeness.

In summary, these results did not support Hypothesis 1, as the expected result that increased trait paranoia would be associated with reduced social network size and reduced emotional closeness, was not observed. However, a significant positive correlation between trait paranoia and trait loneliness and trait belonging was observed. That is, as paranoia increased, trait loneliness increased, and trait belonging decreased. However, results did support hypothesis 2, as higher levels of trait paranoia were significantly associated with increased levels of loneliness, and reduced belonging were observed.

Table 4

*Means and Standard Deviations of the Whole Sample at Time 1*

|  |  |
| --- | --- |
| Variable | Mean (SD; N) |
| Paranoia | 39.63 (12.06; N = 108) |
| Belonging | 32.68 (9.75; N = 109) |
| Loneliness | 40.57 (8.95; N = 109) |
| Social Network Size | 51.13 (22.98; N = 93) |
| Total Emotional Closeness | 146.09 (146.09; N = 93) |
| Mean Emotional Closeness | 5.98 (1.18; N = 93) |
| Depression | 4.06 (2.66; N = 109) |

Table 5

*Correlations among Trait Variables for the Whole Sample at Time 1*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total social network | Total emotional closeness | Mean emotional closeness | Trait loneliness | Trait belonging |
|  |  |  |  |  |  |
| Trait paranoia | -.08 | -.16 | -.10 | .49\*\* | .50\*\* |
| Total social network |  | .90\*\* | -.26\* | -.11 | -.04 |
| Total emotional closeness |  |  | .13 | -.23\* | -.17 |
| Mean emotional closeness |  |  |  | -.20\* | -.27\*\* |
| Trait loneliness |  |  |  |  | .73\*\* |

*Note*. \*p < .05 \*\*p < .01

**Experiment 1 – Causal Influence of Induced Paranoia on State Loneliness and State Belonging**

**Descriptive statistics and randomisation checks**

Prior to hypothesis testing, the sociodemographic variables and state variables were tested for equivalence across the two groups (paranoia experimental versus paranoia control) using chi-square tests and independent t-tests. Table 6 demonstrates that there were no significant differences between the comparison groups, on any of the sociodemographic variables or T1 state variables, indicating that the groups were appropriately matched and that the randomisation procedure was effective.

Table 6

*Sociodemographic Characteristics, State Variables, and Between-Group Comparisons for the Paranoia Experimental and Paranoia Control Groups*

|  |  |  |
| --- | --- | --- |
|  |  Condition |  |
|  *Sociodemographic Variables (N, %)* | Paranoia ExperimentalN = 74 | Paranoia ControlN = 35 | Paranoia Experimental vs. Paranoia Control |
| Gender | Male | 10 (13.5%) | 5 (14.3%) | $χ$2(1) = .00, *p* = .96 |
| Female | 62 (83.7%) | 30 (85.8%) |
| Missing Data | 2 (2.7%) | - |
| Age | Mean (SD) | 21.01 (4.89) | 21.42 (4.45) | t(107) = -.43, *p* = .67 |
| Range | 17-41 | 18-31 |
| Ethnicity | White British | 42 (56.7%) | 17 (47.6%) | $χ$2(1) = .91, *p* = .34 |
| Non-White British | 30 (40.5%) | 18 (51.4%) |
|  Missing Data | 2 (2.7%) | - |
| Marital Status | Single | 66 (89.1%) | 31 (88.7%) | $χ$2(2) = .68, *p* = .71 |
| Cohabiting | 2 (2.7%) | 2 (5.7%) |
| Married | 3 (4.1%) | 1 (2.86%) |
| Missing Data | 3 (4.1%) | 1 (2.86%) |
| Mental Health Diagnosis | Yes | 18 (24.3%) | 6 (17.2%) | $χ$2(1) = .84, *p* = .361 |
| No | 54 (72.9%) | 29 (82.9%) |
| Missing Data | 2 (2.7%) | - |
| Incentive | Credit Scheme | 59 (79.7%) | 23 (65.7%) | $χ$2(1) = 2.51, *p* = .11 |
| Prize Draw | 15 (20.3%) | 12 (34.3%) |
| *Time 1 State Variables (M, SD)* |
| Paranoia |  |  7.19 (5.93) |  5.42 (4.81) | t(107) = 1.60, *p* = .11 |
| Loneliness |  |  37.73 (10.74) |  38.03 (10.11) | t(107) = -.14, *p* = .89 |
| Belonging |  |  71.82 (17.47) |  70.20 (18.83) | t(106) = .40, *p* = .69 |
| Depression |  |  14.04 (10.56) |  10.89 (10.21) | t(107) = 1.72, *p* = .09 |

*Note*. While the untransformed means are reported for all variables, the between-group comparisons for the depression and paranoia sub-scales of the PDS and the state belonging Likert scale are based on transformed scores.

**Manipulation check - paranoia induction**

Prior to exploring the third hypothesis, a manipulation check was carried out to assess whether the paranoia induction procedure had the intended effect of inducing paranoia. An ANCOVA was carried out with paranoia group (experimental vs. control) as the independent variable, T2 state paranoia as the dependent variable, and T1 state paranoia as the covariate. The covariate, T1 state paranoia score, was significantly related to the participants’ T2 state paranoia score (F(1, 104) = 253.39, p < .001). However, there was no significant effect of paranoia group on T2 state paranoia score after controlling for the effects of T1 state paranoia score (F(1, 104) = .001, p .982). This suggests that the paranoia induction did not have the intended effect of inducing paranoia for those in the experimental group and not those in the control group. However, the means of the two groups (Table 7) suggested that there was an increase in state paranoia for both the paranoia experimental group and paranoia control group.

Following this observation that the means of both groups appeared to increase following the paranoia induction procedures, it was hypothesised that failure alone, which was a component of both the control and experimental group procedures, may have been sufficient to induce paranoia. As such, an analysis of the difference between T1 and T2 state paranoia for the whole sample was conducted. A paired-samples t-test was conducted with T1 and T2 state paranoia for the whole sample as the comparison variables. This demonstrated that, when looking at the data of all participants, scores were significantly higher for state paranoia at T2, than at T1 (t(107) = - 2.13, p = .036). This suggested that while there was no differential effect of paranoia induction group (experimental vs. control) on state paranoia, that the procedures for both groups caused state paranoia to increase, meaning that the whole sample scored significantly more highly on state paranoia at T2 then at T1. Thus, the suggestion that failure feedback was enough to evoke paranoia, even in the absence of increased self-awareness, was supported.

Table 7

*Means and Standard Deviations of State Paranoia for the Two Paranoia Groups at Time 1 and Time 2*

|  |  |  |
| --- | --- | --- |
|  | Condition |  |
| Paranoia Experimental Group (M, SD) | Paranoia Control Group (M, SD) | Total Sample (M, SD) |
| Time 1 state paranoia(pre-experiment) | 7.19 (5.93; N = 74) | 5.42 (4.81; N = 35) | 6.62 (5.63; N = 109) |
| Time 2 state paranoia (post-experiment) | 8.09 (6.86; N = 72) | 6.60 (6.49; N = 35) | 7.60 (6.75; N = 107) |

Finally, analyses were conducted to assess whether the paranoia induction had an effect on state depression, and to assess whether depression was a covariate with state paranoia. An ANCOVA was carried out with T2 state depression as the dependent variable, T1 depression as the covariate, and paranoia group (experimental vs. control) as the independent variable. The covariate, Time 1 state depression score, was significantly related to the participants’ T2 state depression scores (F(1, 104) = 240.22, p <.001). However, there was no significant effect of paranoia group on T2 state depression score after controlling for the effects of T1 state depression score (F(1, 104) = .89, p = .35). This finding implied that depression did not change differentially for the paranoia experimental and paranoia control groups. Due to the earlier significant findings of participants’ state paranoia scores increasing from T1 to T2, differences in state depression between T1 and T2 for the whole sample was also analysed. A paired samples t-test was conducted with T1 and T2 state depression entered as the comparison variables. There was no significant difference between the T1 and T2 state depression scores when looking at the data for the whole sample (t(107) = 0.98, p = .92). This further suggests that the paranoia induction did not have a significant effect on state depression, and that depression was not a covariate with paranoia, and therefore did not need controlling for.

**Hypothesis testing - causal effect of paranoia on loneliness and belonging**

The third study hypothesis was that increased state paranoia would cause state loneliness to increase and state belonging to decrease. While the paranoia induction manipulation check revealed that there was no difference between the experimental and control groups on state paranoia, as planned, analyses comparing any changes between the two groups on loneliness and belonging before and after the experimental procedure were conducted (see Table 8 for means and standard deviations). Two ANCOVA’s were implemented, the first with T2 state loneliness as the dependent variable and T1 state loneliness as the covariate, the second with T2 belonging as the dependent variable, and T1 belonging as the covariate. The paranoia group (paranoia experimental vs. paranoia control) was the independent variable for each of the ANCOVA’s, that is, the data of those who completed the paranoia experimental procedure was compared to the data of those who completed the paranoia control procedure. The first of these analyses demonstrated that the covariate, Time 1 loneliness score, was significantly related to the participants’ T2 state loneliness score (F(1, 104) = 502.15, p < .001), and the second analysis demonstrated that the covariate, Time 1 state belonging score, was significantly related to the participants’ T2 state belonging score (F(1, 103) = 1584.67, p < .001). However, neither analysis revealed significant differences between groups on either loneliness (F(1, 104) = .07, p = .79) or belonging (F(1, 103) = .26, p = .61). The non-significant results suggested that there was no significant difference between the paranoia experimental and control groups on state loneliness or state belonging at T2 after controlling for the relevant T1 variables. As such, the results did not support Hypothesis 3 that suggested increased state paranoia would cause increased state loneliness and decreased state belonging. However, as the manipulation check results indicated that there was no difference in state paranoia between the two groups at T2, the finding that there was also no difference in state loneliness and state belonging between the two groups at T2, is not surprising, as it was hypothesised that any differential increases in state loneliness/decreases in state belonging between the two paranoia groups at T2 would be the result of differential increases in paranoia. Hence, without increased paranoia in the experimental group compared to the control group, an effect of paranoia group on state loneliness and state belonging would not be expected.

Table 8

*Means and Standard Deviations of State Loneliness and State Belonging for the Two Paranoia Groups and the Total Sample at Time 1 and Time 2*

|  |  |  |
| --- | --- | --- |
|  | Condition |  |
| Paranoia Experimental Group (M, SD) |  Paranoia Control  Group (M, SD) | Total Sample (M, SD) |
| Loneliness | Belonging | Loneliness | Belonging | Loneliness | Belonging |
| Time 1 (pre-experiment) | 37.73 (10.74; N = 74) | 71.82 (17.47; N = 73) | 38.03 (10.11; N = 35) | 70.20 (18.83; N = 35) | 37.83 (10.50; N = 109) | 71.30 (17.85; N = 108) |
| Time 2 (post-experiment) | 38.41 (10.59; N = 72) | 70.32 (18.66; N = 72) | 38.74 (10.63; N = 35) | 69.57 (18.62; N = 35) | 38.52 (10.55; N = 107)  | 70.07 (18.56; N = 107) |

Following from the manipulation check finding that there were significant differences between T1 and T2 state paranoia for the whole sample, it was suggested that the failure element of the paranoia induction experimental and control procedures was sufficient to evoke paranoia, even without the additional element of self-awareness. As such, the hypothesis that state loneliness would increase and state belonging would decrease with increased state paranoia, was explored for the whole sample (see Table 8 for means and standard deviations, and Table 9 for correlations). Two paired sample t-tests were conducted to analyse these relationships. The first compared T1 state loneliness with T2 state loneliness for the whole sample, and the second compared T1 state belonging with T2 state belonging for the whole sample. Results revealed that there was a significant increase in state loneliness score from T1 to T2, and a significant increase in state belonging score (indicating reduced belonging) from T1 to T2 (t(106) = 2.11, p = .04; t(107) = 31.18, p <.001, respectively). Despite these results, observations of the whole sample data within Table 8 suggest that, while significant, there was only a very small difference between the means of loneliness at T1 and T2, and between the means of belonging at T1 and T2, suggesting very small effect sizes. Nevertheless, although the effect appears to be small, and without a control comparison causal implications cannot be made, it appears that significant increases in state paranoia for the whole sample following the paranoia induction procedure were accompanied by significant increases in state loneliness and significant decreases in state belonging, associations that are consistent with Hypothesis 3, although they do not speak to the causal issue.

Table 9

*Correlations between T1 and T2 state paranoia, loneliness, and belonging*

|  |  |  |  |
| --- | --- | --- | --- |
|  | T1 state paranoia | T1 state loneliness | T1 state belonging |
| T2 state paranoia | .833\*\* |  |  |
| T2 state loneliness |  | .910\*\* |  |
| T2 state belonging |  |  | .953\*\* |

*Note*. \*p < .05 \*\*p < .01

Finally, a further analysis was conducted to assess the covariation of change between state paranoia and state loneliness and state belonging. This analysis assessed the degree to which the state paranoia of the whole sample increased between T1 and T2 compared to the degree to which state loneliness increased and state belonging decreased between T1 and T2. Correlations were used to analyse associations among these three change variables (change in state paranoia – T1 minus T2 state paranoia score; change in state loneliness – T1 minus T2 state loneliness score; change in state belonging – T1 minus T2 state belonging score). Non-parametric correlations were implemented, due to skew and kurtosis of the paranoia and belonging change variables that could not be successfully corrected using transformations. The analyses revealed no significant correlations between change in state paranoia scores and change in state loneliness and state belonging scores (r(105) = -.05, p = .64; r(104) = .02, p = .88, respectively), suggesting that the degree of change in state paranoia scores was not significantly associated with the degree of change in state loneliness or state belonging scores.

**Experiment 2 – Effect of Belonging-Affirmations on State Paranoia and State Loneliness**

**Descriptive statistics and randomisation checks**

Prior to hypothesis testing, sociodemographic variables and state variables were tested for equivalence across the two groups (belonging-affirmation versus no-affirmation control) using chi-square tests and independent t-tests. Table 10 demonstrates that there were no significant differences between the comparison groups, on any of the sociodemographic variables, or state variables, suggesting that the groups were matched/the randomisation was effective.

Table 10

*Sociodemographic Characteristics and Between-Group Comparisons for the Affirmation and No-Affirmation Groups*

|  |  |  |
| --- | --- | --- |
|  | Condition |  |
| *Sociodemographic Variables (N, %)* | AffirmationN = 37 | No-AffirmationN = 37 | Affirmation vs. No-Affirmation |
| Gender | Male | 5 (13.5%) | 5 (13.5%) | $χ$2(1) = .01, *p* = .93 |
| Female | 32 (86.4%) | 30 (81%) |
| Missing Data | - | 2 |
| Age | Mean (SD) | 20.92 (4.23) | 21.11 (5.52) | t(72) = -.17, *p* = .87 |
| Range | 17-33 | 18-41 |
| Ethnicity | White British | 19 (51.3%) | 23 (62.1%) | $χ$2(1) = 1.53, *p* = .22 |
| Non-White British | 18 (48.6%) | 2 (32.4%) |
|  Missing Data | - | 2 (5.4%) |
| Marital Status | Single | 33 (89.1%) | 33 (89.1%) | $χ$2(2) = 2.88, *p* = .24 |
| Cohabiting | 1 (2.7%) | 1 (2.7%) |
| Married | - | 3 (8.1%) |
| Missing Data | 3 (8.1%) | - |
| Mental Health Diagnosis | Yes | 11 (29.7%) | 7 (18.9%) | $χ$2(1) = .91, *p* = .34 |
| No | 26 (70.2%) | 28 (75.6%) |
| Missing Data | - | 2 (5.4%) |
| Incentive | Credit Scheme | 28 (75.7%) | 31 (83.8%) | $χ$2(1) = .75, *p* = .39 |
| Prize Draw | 9 (24.3%) | 6 (16.2%) |
| *Time 2 State Variables (M, SD)* |  | N = 35 | N = 37 |  |
| Paranoia |  | 8.49 (6.71) | 7.72 (7.08) | $χ$2(20) = 19.77, *p* = .47 |
| Loneliness |  | 39.81 (11.31) | 37.09 (9.83) | $χ$2(37) = 40.44, *p* = .32 |
| Belonging |  | 68.94 (17.85) | 71.62 (19.55) | $χ$2(12) = 10.89, *p* = .54 |
| Depression |  | 16.14 (11.01) | 12.98 (11.24) | $χ$2(31) = 40.98, *p* = .11 |

*Note*. For the depression and paranoia sub-scales of the PDS, total emotional closeness, and belonging Likert scale, untransformed means are reported, but between-group comparisons are based on transformed scores.

**Manipulation check - affirmation procedure**

Prior to exploring Hypothesis 4, a manipulation check assessing the extent to which the belonging-affirmation procedure had been carried out as instructed, that is, whether those in the belonging-affirmation group were affirming the self through writing about belonging, while the no-affirmation control group were writing about areas unrelated to belonging. Content analysis was used to determine whether all those within the belonging-affirmation group had followed instructions, and written about how their top-ranked value made them feel close and connected to others, and whether those within the no-affirmation control group had followed instructions, and written about how their bottom-ranked value might be important to someone else and therefore did not contain belonging themes. Shnabel et al.’s (2013) content analysis procedures were followed. Analyses suggested agreement between the two coders was 97.3%, and Cohen’s Kappa was .95, representing a high level of agreement (Landis & Koch, 1977). Importantly, content analyses of the essays revealed that all of the 37 affirmation group essays had a belonging theme, while none of the no-affirmation essays had a belonging theme. This suggested that belonging was being used to affirm the self within the belonging-affirmation procedure, but not in the no-affirmation procedure. Additional support was provided for these results by comparing T2 and T3 self-reported state belonging data (see Table 11 for means and standard deviations). An ANCOVA was carried out with T3 state belonging as the dependent variable, T2 state belonging as the covariate, and affirmation group (belonging-affirmation vs. no-affirmation control) as the independent variable. The covariate, T2 state belonging, was significantly related to T3 state belonging (F(1.69) = 368.56, p < .001). There was also a significant effect of affirmation group on T3 state belonging, after controlling for the effect of T2 state belonging (F(1.69) = 5.36, p = .02), with those in the belonging-affirmation group demonstrating significantly higher state belonging scores than those in the no-affirmation control group, following the affirmation procedure. This suggests that the affirmation procedure, as intended, increased state belonging for those in the belonging-affirmation group, but did not increase belonging for those in the no-affirmation control group.

Table 11

*Means and Standard Deviations of State Belonging for the Two Affirmation Groups at Time 2 and Time 3*

|  |  |
| --- | --- |
|  |  Condition |
| Affirmation Group (M, SD) | No-affirmation control Group (M, SD) |
| Belonging | Belonging |
| Time 2 (pre-experiment) | 68.94 (17.85; N = 35) | 71.62 (19.55; N = 37) |
| Time 3 (post-experiment) | 75.00 (16.46; N = 37) | 74.05 (17.07; N = 37) |

To gain a better understanding of how participants carried out the affirmation procedures, an analysis of the frequencies and percentages of essay topic was conducted. This revealed that most of those in the belonging-affirmation condition selected Friends and Family as their most important value (31; 83.7%), and most of those in the no-affirmation control condition selected Athletics as their least important value (10; 27%). All of the values written about within the essays are summarised in Table 12, that is, all values rated as top value by those within the belonging-affirmation group, and all values rated as bottom value by those within the no-affirmation control group. Additional observations demonstrated that the mean number of words written by the affirmation group was M = 182.27, and the mean number of words written by the no-affirmation control group was M = 161.97, and that there was no significant difference between these two means (t(72) = .87, *p* = .39).

Table 12

*Frequencies and Percentages of Values Chosen as the Subject of the Affirmation Essays in the Affirmation and No-Affirmation Groups*

|  |  |  |
| --- | --- | --- |
| Value Domain | Affirmation Group (N = 37), Frequency (%) Rated as Number 1 Value Domain | No-affirmation Group (N = 37), Frequency (%) Rated as Number 11 Value Domain |
| Artistic Skills/Aesthetic Appreciation | - | 8 (21.6%) |
| Sense of Humour | 3 (8.1%) | - |
| Relations with Friends/Family | 31 (83.7%) | 1 (2.7%) |
| Spontaneity/Living Life in the Moment | - | 2 (5.4%) |
| Social Skills | 1 (2.7%) | - |
| Athletics | - | 10 (27%) |
| Musical Ability/Appreciation | - | 6 (16.2%) |
| Physical Attractiveness | - | 5 (13.5%) |
| Creativity | 1 (2.7%) | 2 (5.4%) |
| Business/Money | 1 (2.7%) | 3 (8.1%) |
| Romantic Values | - | - |

Finally, analyses were conducted to assess whether the affirmation procedure had an effect on state depression, and whether it therefore needed controlling for during hypothesis testing. An ANCOVA was carried out with T3 state depression entered as the dependent variable, T2 state depression entered as the covariate, and affirmation group (belonging-affirmation vs. no-affirmation control) as the independent variable. The covariate, T2 state depression score, was significantly related to the participants’ T3 state depression score (F(1, 69) = 153.51, p < .001). However, there was no significant effect of affirmation group on T3 state depression score after controlling for the effects of T2 state depression score (F(1, 69) = .64, p = .43). This non-significant result suggested that state depression did not need controlling for as a covariate to variables also measured and assessed at T2 and T3.

**Hypothesis testing - the effect of belonging-affirmations on paranoia and loneliness**

Hypothesis 4 suggested that belonging-affirmations would reduce state paranoia and state loneliness. Two ANCOVA’s were used to assess this hypothesis (see Table 13 for means and standard deviations). The first ANCOVA had T3 state paranoia as the dependent variable and T2 state paranoia as the covariate, while the second had T3 state loneliness as the dependent variable, and T2 state loneliness as the covariate. The affirmation group (belonging-affirmation vs. no-affirmation control) was the independent variable for each of the ANCOVA’s, that is, the data of those who completed the belonging-affirmation procedure were compared to the data of those who completed the no-affirmation control procedure.

The first of these analyses revealed that the covariate, T2 state paranoia score, was significantly related to the participants’ T3 state paranoia score (F(1, 69) = 179.54, p < .001). However, there was no significant effect of affirmation group on T3 paranoia score after controlling for the effects of T2 state paranoia score (F(1, 69) = .13, p = .723), suggesting that paranoia did not differentially reduce for those in the belonging-affirmation condition compared to those in the no-affirmation control condition. Secondly, T2 state loneliness score was significantly related to the participants’ T3 state loneliness score (F(1, 69) = 256.43, p < .001). However, again there was no significant effect of affirmation group on Time 3 loneliness score after controlling for the effects of T2 state loneliness score (F(1, 69) = .73, p = .40), suggesting that loneliness did not differentially reduce for those in the belonging-affirmation condition compared to those in the no-affirmation control condition. Thus, results reported that the affirmations did not have a significant effect on either state paranoia or state loneliness, and therefore did not support Hypothesis 4, which proposed that belonging-affirmations would decrease levels of state paranoia and state loneliness.

Table 13

*Means and Standard Deviations of State Paranoia, State Loneliness and State Belonging for the Two Affirmation Groups at Time 2 and Time 3*

|  |  |
| --- | --- |
|  |  Condition |
| Affirmation Group (M, SD) | No-Affirmation Group (M, SD) |
| Paranoia | Loneliness | Belonging | Paranoia | Loneliness | Belonging |
| Time 2 (pre-experiment) | 8.49 (6.71; N = 35) | 39.81 (11.31; N = 35) | 68.94 (17.85; N = 35) | 7.72 (7.08; N = 37) | 37.09 (9.83; N = 37) | 71.62 (19.55; N = 37) |
| Time 3 (post-experiment) | 6.57 (6.05; N = 37) | 37.05 (10.50; N = 37) | 75.00 (16.46; N = 37) | 5.69 (4.79; N = 37) | 35.49 (9.22; N = 37) | 74.05 (17.07; N = 37) |

**Discussion**

**Overview**

The study hypotheses of the present thesis were: (1) High levels of trait paranoia will be associated with reduced social network size and reduced emotional closeness among social acquaintances; (2) Higher levels of trait paranoia will be associated with increased trait loneliness, and decreased trait belonging; (3) An increase in state paranoia will lead to increased state loneliness and reduced state belonging; (4) Completing a belonging-affirmation will reduce state paranoia and state loneliness.

Results did not support Hypothesis 1, as cross-sectional data demonstrated no significant relationship between trait paranoia severity and social network size. Neither was there a relationship between trait paranoia severity and emotional closeness among social acquaintances. However the cross-sectional data results did support Hypothesis 2, as there was a significant positive correlation between trait paranoia and trait loneliness, and a significant negative correlation between trait paranoia and trait belonging, demonstrating that as paranoia increased, loneliness also increased, and belonging decreased. Additionally, Hypothesis 3 was tentatively supported, as state loneliness and state belonging significantly increased following the paranoia induction procedure. However, the effect appeared to be very small, and as state paranoia increased for the whole sample following the paranoia induction procedure, with no difference between the experimental and control groups, the data for the whole sample was analysed, without a control group, meaning that conclusions regarding causality could not be made for Hypothesis 3. Finally, Hypothesis 4 was not supported, as there was no significant difference between the belonging-affirmation and no-affirmation control groups on either state paranoia or state loneliness following the affirmation procedures.

This final chapter will start by relating the findings of the present thesis to research and theory, before going on to identify possible future research areas, research and clinical implications, and the strengths and limitations of the study. The findings of the present thesis will then be drawn together with conclusions.

**Main Findings in the Context of Research and Theory**

**Non-clinical paranoia and social networks**

Paranoia has been consistently related to depleted social networks within the clinical population (e.g., Erickson et al., 1989; Macdonald et al., 2000; Sündermann et al., 2014). However, the non-clinical literature has demonstrated inconsistent results with regard to this relationship, with apparent methodological flaws further emphasising the need for additional investigation (Gayer-Anderson & Morgan, 2013). Furthermore is the importance of where within the network any such depletions take place, that is, whether depletions take place among those with whom one is most emotionally close, or further out in the network, among those with whom one is less emotionally close and are therefore less likely to provide support in times of need. Hypothesis 1 aimed to identify whether increased trait paranoia in a non-clinical sample was related to reduced social network size, and if any such reductions take place among those with whom one is more or less emotionally close.

The observed results did not support the first part of this hypothesis, as no significant relationship was observed between trait paranoia and social network size, suggesting that in this non-clinical sample, increased trait paranoia was not significantly related to reduced social network size. Similarly, increased trait paranoia was not significantly associated with reduced emotional closeness, although this result becomes less important with no significant association between paranoia and social network size. The emotional closeness data was gathered to assess where social network depletions take place, however, as there were no significant social network depletions observed, it makes no sense to assess where any such depletions take place.

The findings of the present thesis support four of the previous investigations of the relationship between paranoia and social network size, which suggest that social networks are not depleted for those experiencing paranoia in the non-clinical population (Freeman et al., 2008a; 2008b; Horan et al., 2007; Jenkins et al., 2010). However, the present study provides important developments upon these investigations, as most of the previous studies looking at the relationships between paranoia and social network size in the non-clinical population did not use robust and specific measures of either social networks or paranoia. The present study gathered very detailed information about participants’ social networks, and used a paranoia-specific measure that captures trait paranoia, and was developed for use within the general population. Using such data collection methods suggests that the results yield within the current thesis were particularly reliable representations of the intended constructs, and conclusions, within this area that has demonstrated widely contradictory results, can be made with greater confidence.

The observations within the present thesis support the view that, unlike the experience of those with clinical paranoia, those with experiences of non-clinical paranoia do not have depleted social networks. A possible explanation for this inconsistency between the clinical and non-clinical paranoia populations may be related to the level of social functioning of those in the non-clinical paranoia population being less impaired than for those in the clinical paranoia population. Within the clinical paranoia literature, it is often argued that depleted social networks for those with paranoia is the result of difficulties with interactions with others (e.g., Brugha et al., 1993; Cannon et al., 1997), and that the symptoms of schizophrenia are likely to impact negatively upon being able to form and maintain social contacts (e.g. Thorup et al., 2006). At a less severe level of paranoia, it may be expected that social functioning ability would be less impaired, and would therefore have less of an impact upon one’s social network size, leaving social networks relatively intact for those experiencing paranoia in the general population, as seen within the present study. In line with the threshold/quasi-continuum view of the paranoia continuum, it could be that there is a threshold at which paranoia symptoms get to a severity at which they start having a significantly detrimental effect on social functioning, and as a consequence, ones social network size starts to dramatically reduce. It may be at this point that the social isolation that so often characterises the clinical paranoia presentation is observed, thus significantly reducing social/emotional support, and potentially compounding paranoia symptoms further. Useful future research could look at if and when such a process occurs, and indicate when socially focussed interventions could most usefully be implemented.

The implications of depleted social networks not being a difficulty for those at the non-clinical end of the paranoia continuum is that those with non-clinical levels of paranoia have better social support than those in the clinical population, with positive implications for well-being and protection against a deterioration in their paranoia symptoms. However, the difference between the clinical and non-clinical paranoia experience in relation to social networks has consequences for the use of non-clinical paranoia samples as analogue to the clinical population. If the non-clinical and clinical paranoia populations are not equivalent with regard to their social networks, non-clinical analogue samples should not necessarily be used when investigating areas related to depleted social networks for those in the clinical paranoia population. Additionally, with the increased social support that is likely to accompany intact social networks, there could be significant implications for many factors of interest within the clinical paranoia population that may be highly correlated with social support, suggesting that non-clinical paranoia analogue samples should be used with caution in these areas, and where they are used, social support should be controlled for within the relevant analyses.

Finally, it should be noted that the sample recruited within the current study was not screened for high levels of paranoia. As such, it may be that the sample did not have a large number of those at the higher end of the non-clinical paranoia population, and therefore the conclusions about depleted social networks for those with high levels of non-clinical paranoia should be made with caution. Consequently, using the same detailed and specific measures, as those used within the present thesis, future research might look at the relationship between social networks and paranoia within a sample specifically recruited for their high levels of non-clinical paranoia, compared to those with very low/no experiences of paranoia.

**Non-clinical paranoia, loneliness and belonging**

Independent of social network size, it made conceptual sense that paranoia, loneliness and belonging may be directly linked. This proposal was based upon the suggestion within the current thesis that each are interpersonal constructs, and that paranoia has been related to loneliness and belonging within the clinical literature (e.g., DeNiro, 1995; Sündermann et al., 2014), although the extent of these investigations was notably limited. Nevertheless, it was hypothesised that a mistrust of others (paranoia) would lead to a perception of inadequate social contact (loneliness) and reduced feelings of closeness and connectedness to others (belonging). Importantly, loneliness and belonging appear to have considerable implications for ones mental health, and both have been related to the management and recovery of clinical paranoia (e.g., Berkman & Glass, 2000; Hagerty & Williams, 1999; Hagerty et al., 1996; Hill, 2006; Kawachi & Berkman, 2001; Perry et al., 2007; Resnick et al., 1993; Thoits, 2011). As such, the consequences of a relationship between increased paranoia and increased loneliness and decreased belonging may have a direct impact upon how paranoia is managed, and potential recovery in the non-clinical population. However, loneliness and belonging have both been overlooked within the paranoia literature, and it remains completely unknown whether these constructs are connected within the non-clinical paranoia population. Consequently, studying these constructs within the general population is a useful start to investigations within this area for the non-clinical paranoia population, and can potentially also be viewed as a much-needed development within the paranoia literature generally, in which initial but limited research has been conducted with clinical paranoia samples. Hypothesis 2 sought to identify whether higher levels of paranoia were related to higher levels of loneliness and lower levels of belonging.

Results were consistent with Hypothesis 2, that is, those with higher levels of trait paranoia, also demonstrated higher levels of trait loneliness, and lower levels of trait belonging. This suggests that increased loneliness and decreased belonging are a difficulty for those who experience paranoia within the general population. Additionally, when considering non-clinical samples as analogue to the clinical population, support is also provided for current research that suggests that clinical levels of paranoia are related to increased loneliness and decreased belonging. The significant relationship between paranoia and loneliness and belonging is an interesting finding, given that social network size was not reduced for those with higher levels of paranoia, supporting the idea that these constructs are directly related to paranoia, rather than indirectly related through depleted social networks. Consequently, results support the proposed logical argument for a direct relationship between the three constructs, based upon their definitions. That is, high levels of suspiciousness about others (increased paranoia), logically lead to thoughts of deficient social relationships (increased loneliness) and reduced sense of connectedness to others (decreased belonging). However, it must also be acknowledged that paranoia, loneliness and belonging were all measured on self-report trait measures, whereas the social network and emotional closeness data was collected in a much more objective and descriptive way, using a questionnaire that was not based upon endorsement of individual items. As such, in light of the non-significant relationship between paranoia and social network size and emotional closeness, the possibility that the significant results observed between paranoia, loneliness and belonging are due to shared method variance cannot be discounted.

When considering the mechanisms through which paranoia might be directly related to loneliness and belonging, there appears to be one study that has previously looked at this. Sündermann et al. (2014) suggest that it is loneliness that leads to increased paranoia in the context of first episode psychosis, and that anxiety may be one of the pathways through which this relationship occurs. They go on to highlight that this process might happen as a result of loneliness leading to thinking distortions that lead to a perception of increased threat, leading to increased anxiety and increased paranoia. Again, supporting a relationship between paranoia and loneliness, that is not mediated by social network size. However, they propose that this causal relationship involves loneliness leading to increased paranoia, rather than the causal relationship proposed in the present thesis, of increased paranoia leading to increased loneliness. They go on to consider the effect of depleted social networks upon high levels of loneliness, stating that reduced social contact may mean that alternative explanations to those characterised by high levels of threat are more limited when social contact is reduced. More specifically, individuals have less confidants to support them in formulating less threatening alternative explanations, which they suggest may increase anxiety, and therefore increase paranoia. While this explanation does not seem relevant for paranoia within the non-clinical population, as the current study suggests that those with lower levels of paranoia do not experience significant reductions in social networks size, it does fit with the threshold explanation of the relationship between paranoia and depleted social networks proposed above. That is, at a certain point along the paranoia continuum, social networks may reduce dramatically, and lead to social isolation and go on to compound paranoia symptoms.

**Paranoia induction procedure**

Failure feedback in combination with increased self-awareness has been suggested as an effective experimental procedure for inducing paranoia, with the same paranoia induction method used within the current thesis, being employed in both of the previous studies looking at the relationship between affirmations and paranoia (Ellett & Chadwick, 2007; Kingston & Ellett, 2014). Additionally, studies looking at conditions within which paranoia is induced have emphasised the central role of increased self-awareness in this process (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007). As such, a control group was implemented within the present study in which the conditions in the paranoia control group were matched to those in the paranoia experimental group in all areas except for what appeared to be the key ingredient within the paranoia induction, which was inducing self-awareness. That is, those in the control group completed the concept-learning task with failure feedback, but, in contrast to the paranoia experimental group, this was not completed in the presence of a recording camera and attached monitor showing the live recording. However, despite research supporting the implementation of two such groups, manipulation checks within the present study revealed that there was no significant difference between the amount of paranoia induced using the paranoia experimental group procedures compared to the amount of paranoia induced using the paranoia control group procedures. More specifically, analyses revealed that paranoia scores significantly increased for the whole sample, following the paranoia experimental phase of the study, independent of whether participants were in the experimental or control groups. In relation to the specific experimental procedures, results reported that paranoia was induced both for those exposed to the failure feedback in combination with the increased self-awareness procedure, and for those exposed to the failure feedback in the absence of the increased self-awareness procedure. In summary, in line with the expectations of the paranoia induction method, the paranoia experimental induction procedure was effective at increasing paranoia, but what was not consistent with expectations was that those subject to the paranoia control procedure also had the same levels of increased paranoia as those in the experimental condition. As the only difference in the procedures implemented with each group was the presence/absence of induced self-awareness, it seems that, in this context, induced self-awareness did not appear to make a significant difference to levels of paranoia, above and beyond the impact of receiving failure feedback alone.

One possible explanation for both groups having increased levels of paranoia following the paranoia induction procedures is that failure feedback alone is enough to induce paranoia, and that the role of increased self-awareness is as a ‘superboost’ that enhances the effects of failure feedback, further increasing already elevated levels of paranoia. Failure feedback alone may cause paranoia to increase in both groups, but increased self-awareness may provide an additional superboost effect, which would be expected to result in a significantly higher level of paranoia being observed in the paranoia experimental group, compared to the paranoia control group who receive the failure feedback alone.

When considering that the failure feedback may be sufficient to induce paranoia, it is helpful to go back to the underlying theory. It is suggested that paranoia arises when threat is posed to one’s self-esteem. That is, when the gap between one’s ideal and actual self is increased (Bentall et al., 2001). External explanations (such as being subject to persecution) are assigned to the gap, in order to preserve one’s self-esteem. Failure feedback is proposed to increase/expose the gap between ones ideal and actual self, with heightened self-awareness bringing the individual’s attention to it. However, even without the increased self-awareness, the gap between the ideal and actual self is still likely to be exposed, and while increased self-awareness may make this more reliably noticeable, theoretically, it is not needed to create the initial threat to one’s self-esteem, for which paranoia is then adopted in order to protect. Thus, heightened self-awareness could be viewed as the superboost to ensure that paranoia is reliably induced, and that this superboost was somehow missed within the experimental group, or possibly mimicked within the control group of the current study.

Importantly for the explanation that failure feedback alone is enough to induce paranoia, it seems that the only study to compare a paranoia induction experimental group that involves failure feedback in combination with increased self-awareness, with a control group who are only exposed to failure feedback, was within the first of Ellett and Chadwick’s (2007) three experiments. Interestingly, they observed that failure feedback did not have a significant effect upon increasing paranoia, and suggested that failure feedback alone was not enough to induce paranoia. Unfortunately, sample sizes within each group of this experiment were low (N = 10) and there was no baseline measure, meaning that paranoia scores before and after the paranoia induction could not be compared. Without a baseline measure, the conclusions that can be drawn from this experiment are limited, as the possibility of differences in paranoia levels between the various groups prior to the experiment cannot be discounted. However, while research looking at the effect of failure feedback on paranoia, in the absence of increased self-awareness is lacking, what has been consistently suggested within work looking at this paranoia induction procedure, is that increased self-awareness is a central component of the methodology (Bodner & Mikulincer, 1998; Ellett & Chadwick, 2007). Nevertheless, the paranoia experimental manipulation check within the present study suggested that increased self-awareness was not required in order for paranoia to be induced, and that failure feedback alone was an effective paranoia induction procedure. However, even if this latter point were the case, it is curious why the self-awareness induction procedure was not effective within the present study.

An explanation for why induced self-awareness did not appear to have an effect within the present study is that the specific self-awareness induction procedure implemented was not effective. For example, in contrast to Ellett and Chadwick’s (2007) findings that participant-focus methods of increasing self-awareness were more effective for increasing paranoia than experimenter-focus methods, Fenigstein and Vanable (1992) only found a positive correlation between public self-consciousness (increased awareness using experimenter-focus methods) and paranoia, and did not find a significant correlation between private self-consciousness (increased awareness using self-focus methods) and paranoia. Similarly, Bodner and Mikulincer (1998) found that paranoia was only induced within experimenter-focus self-awareness induction procedures. The non-significant association between participant self-focus self-awareness procedures and paranoia reported within both Fenigstein and Vanable (1992) and Bodner and Mikulincer (1998) provides support for the suggestion that increased self-awareness did not appear to have a significant impact upon paranoia in the present study, due to the participant-focus method of inducing self-awareness not being an effective method for inducing/increasing paranoia.

An alternative explanation for there being no difference in paranoia scores between the paranoia experimental and control groups, is that in actual fact neither of the groups procedures were effective at increasing paranoia, and that all increases in paranoia were simply the result of the general experience of being in the experimental setting. Ellett and Chadwick (2007), briefly highlight the possibility that their observations of increased paranoia could simply be the result of a normal reaction to the experimental environment. Kingston (2012) also discuss this possibility, suggesting that this could be tested by removing some participants from the experimental setting and leaving some within the experimental setting following the paranoia experiment, before measuring and comparing their paranoia scores. Alternatively, in line with the above suggestion of increased self-awareness acting as a superboost to the paranoia induction, it might be that, rather than the superboost being missing within the paranoia experimental procedure, that being in the experimental situation mimicked the superboost effect of the self-awareness induction for those in the control group.

A further alternative explanation for the observation of there being no difference between the paranoia experimental and paranoia control groups on paranoia scores is that the concept-learning task completed as part of the procedures, needed to be implemented on several occasions for the self-awareness induction to be effective. Both Ellett and Chadwick (2007) and Kingston and Ellett (2014) implemented the concept-learning task with failure feedback on four occassions, and found that paranoia was significantly increased for those in the affirmation groups compared to those in the no-affirmation groups. Although, neither experiment included a paranoia control comparison group, so no manipulation checks were conducted. Nevertheless, it could be that for the superboost to take effect, the task needs to be conducted multiple times.

Finally, despite promising early indications that the combination of failure feedback and increased self-awareness is an effective method for inducing paranoia, varying and contradictory results strongly indicate that the details of the specific mechanisms that lead to the induction of paranoia is still in need of further investigation. Supporting the need for further investigations is the work of Kingston (2012) who attempted to assess the construct validity of this paranoia induction procedure, by looking at trait factors that would be expected to influence the extent of paranoia induced by these particular paranoia induction methods. She suggested that, based on the theory upon which the paranoia induction is based, higher levels of trait paranoia and public self-consciousness would increase the extent to which paranoia was induced, while social anxiety would not be related to the effectiveness of the paranoia induction procedure at all. However, none of the expected results were observed. While Kingston (2012) suggested that the observed results could be related to the unreliable methodology used within her study, she does discuss the possibility of the paranoia induction procedure being invalid. However, she was hesitant to invalidate the procedure, particularly due to past research demonstrating its effectiveness, and due to unrelated methodological pitfalls of her research. Nevertheless, taken with the finding of the present study in combination with the widespread inconsistencies in the literature relating to the increased self-awareness/failure feedback paranoia induction method, it seems further investigation of this procedure is needed before conclusions regarding it’s validity can be made.

In summary, the current study suggests that the effective parts of the paranoia induction procedure are not yet fully understood. The significant increase in paranoia of both the paranoia experimental group and paranoia control group suggests that failure feedback alone may be enough to induce paranoia. However, with previous findings contradicting this conclusion, and other explanations being possible, further work is needed to establish the mechanisms at work when this procedure is implemented. A starting point for future research in this area might usefully recruit a control group who are exposed to neither the failure feedback nor increased self-awareness induction, so that other elements of the experimental procedure can be ruled out as possible explanations for the increased paranoia observed within both groups of the induction procedure. Once this is established, the specific mechanisms involved in the effectiveness of the paranoia induction method can be further investigated.

**Causal influence of induced paranoia on loneliness and belonging**

Hypothesis 3 aimed to identify whether state loneliness would be increased and state belonging decreased, after experimentally inducing state paranoia. The results supported these hypothesised causal relationships, as state loneliness increased and state belonging decreased following the paranoia induction procedure. This supports the work of Freeman et al. (2008b) who reported a positive association between induced state paranoia and state family situation related loneliness. Additionally, the finding of the current thesis extends Freeman et al.’s (2008b) work by not limiting state loneliness to the family context, making results more generalizable. However, these results must be interpreted in the context of the paranoia experimental procedure not having the expected effect, and the data of the experimental and control groups being combined for analyses, meaning that the results are based upon a comparison of the whole sample’s scores before and after the experimental procedures. As such, there was no control comparison, and therefore a causal influence of paranoia upon loneliness and belonging cannot be inferred. That is, it remains to be seen whether the paranoia induction procedures led to increased paranoia, and whether this caused increases in loneliness and decreases in belonging, or if the effects of the experimental environment had some other effect that caused observable changes in these constructs. Future research should investigate these associations with a third group who receive neither the failure feedback nor self-awareness induction, that is, a group who are simply in the experimental setting, but without the proposed key ingredients of the paranoia induction. This would allow confounding variables to be ruled out, and any direct and causal relationship between paranoia and loneliness and belonging to be observed and inferred.

**Belonging-affirmations and paranoia**

Self-affirmations have demonstrated effectiveness in many areas, however identifying the active ingredients within the affirmation process has been given limited attention within the literature. Shnabel et al. (2013) suggest that belonging is a prominent active ingredient within affirmations, particularly those that are implemented when social/identity threat is presented. After observing a significant reduction in paranoia following a standard affirmation procedure, Kingston and Ellett (2014) suggested that, in light of the work of Shnabel et al. (2013), belonging could have been the active ingredient within the affirmations that they observed to be effective for buffering against paranoia. It was suggested within the present study that following from Kingston and Ellett’s (2014) suggestion that belonging may be the active ingredient, and given the theory that paranoia arises from a self-esteem threat, and the suggestion of Shnabel et al. (2013) that belonging-affirmations were particularly effective for identity threats, belonging made for a logical active ingredient for the affirmation process that reduces paranoia. As such, Hypothesis 4 suggested that belonging-affirmations would reduce paranoia.

Content analysis and an increase in state belonging suggested that the belonging-affirmation experimental procedures were successfully implemented. However, results did not support Hypothesis 4, as there was no significant reduction in state paranoia for those who undertook the belonging-affirmation procedure. This non-significant finding suggests that, while the procedures of the belonging-affirmation appear to have been successfully implemented, they were not effective in reducing state paranoia. There are several possible explanations for this finding. The first explanation is that belonging is not the most prominent active ingredient within the affirmation process for reducing paranoia, and that it is other active ingredients within the standard-affirmations that led to the buffering effect of affirmations for state paranoia observed within Kingston and Ellett (2014). However, paranoia is proposed to be a response to a threat to ones self-esteem, which is conceptualised as being closely tied to ones identity (e.g., Marcia, 1967), and Shnabel et al. (2013) suggest that belonging-affirmations may buffer most effectively against identity threats, so it is surprising that the belonging-affirmation was not effective within the present thesis. This surprising result may be explained by the difference in focus of the studies looking at the effect of affirmations on paranoia, and the work of Shnabel et al. (2013). More specifically, all of Shnabel et al.’s (2013) work was looking at those who are part of marginalised groups and faced with a stereotype threat. As such, it may be that differences between the experience of self-esteem threat that is proposed to arise within the paranoia induction procedure, and the experience of being part of a marginalised group, result in two different threat scenario’s, which respond to different active ingredients within the affirmation process. Additionally, Shnabel et al. (2013) emphasise belonging as an active ingredient when the threat is social/a threat to ones identity. They were looking at already marginalised groups, that is, groups generally faced with social/identity threats, and presenting participants with psychological threats proposed to be associated with this marginalisation as a way of looking at how affirmations impact upon participant’s academic performance. Thus, identity threat was posed within the socially based context of marginalisation, which was proposed to have a detrimental effect on academic performance, effects that belonging-affirmations were observed to reduce. While paranoia is generally based upon social threat, and the paranoia induction creates a threat to ones self-esteem (identity), the actual threat is not socially based; rather, it is a threat to one’s self-esteem, which is then given a socially based persecutory explanation. Shnabel et al. (2013) proposes the utility of belonging-affirmations for social/identity threat, but it might be that they are only effective when these two constructs are combined, that is, when an identity threat is posed within a social context. For example, they might be effective if the paranoia induction had used the condition within which the experimenter was observing the participant doing the task (heightened public, rather than private self-awareness; Fenigstein & Vanable, 1992), hence a threat to identity (self-esteem) within a social context (someone watching them) would be presented. So, it would no longer be a threat to self-esteem caused by an increased/visible gap between one’s ideal and actual self, but a threat to self-esteem caused by how they would ideally like to be perceived by others, and how they are actually perceived by others, that is, a socially-based threat.

An alternative explanation for the belonging-affirmations not having a significant effect on reducing paranoia in the present thesis is that affirmations may be a protective factor with a buffering effect rather than an effective post-threat remedy for those already experiencing paranoia. Consequently, belonging may well be a prominent active ingredient within the affirmation process for paranoia, but this may have not been observed in the present study due to the belonging-affirmation being implemented following the paranoia induction procedure, rather than before it. While studies have demonstrated that affirmations can be effective when administered after, rather than before a threat is presented (e.g., Burson, Crocker & Mischkowski, 2012), Ellett and Chadwick (2007), Shnabel et al. (2013) and Kingston and Ellett (2014) all implemented their affirmation procedures prior to presenting participants with threat, and all demonstrated significant effects of the affirmation procedures on the relevant outcomes. It might be that for belonging-affirmations to take effect and/or for standard-affirmations to take effect on paranoia, they need to be implemented prior to threat. More specifically, belonging may be an active ingredient within the affirmation process that reduces paranoia, but is only effective when affirmations are implemented prior to the threat that triggers paranoia. As such, it might be that belonging-affirmations are effective for protecting against paranoia/have the ability to reduce the development of further symptoms, but are not effective as an intervention for reducing already elevated levels of paranoia.

With regard to the timing of affirmations, several studies have suggested that there are areas in which affirmations need to be implemented prior to the threat, in order for them to be effective. Critcher, Dunning and Armor (2010) demonstrated that affirmations were only effective for reducing defensiveness in response to a threat when implemented prior to the threat. Cook et al. (2012) demonstrated that the influence of affirmations on academic performance and psychological toll was significantly more effective when the affirmation was implemented prior to the threat. When considering the possibility that affirmations were not effective within the present study due to their timing, it is helpful to return to the underlying theory of self-affirmations. Affirmations are described as consolidating internal strengths, and while the mechanisms through which this takes place are largely unknown, affirmations appear to lead to increased psychological resilience, meaning that affirmed individuals have more internal resources/strength to protect their psychological wellbeing when presented with some kind of psychological threat (e.g. a threat to their self-esteem). With increased psychological resilience, one has less need to resort to unhelpful defensive processing when psychological threats are presented (Steele, 1988). For example, when threat is presented, instead of engaging in defensive processes that could have other detrimental effects (e.g. paranoia), thoughts about the threat may be altered in a way that makes is seem less threatening (Sherman & Hartson, 2011), and this is enough to protect one’s psychological well-being, meaning that they no longer need any other, perhaps more unhelpful defensive strategies (e.g. paranoia) to protect against the threat, and negative effects of psychological threat (e.g. reduced academic performance) are decreased. The paranoia induction procedure proposes to present threat to one’s self-esteem, resulting in the need to adopt paranoia as a defence against this threat. It could be that following such a psychological threat, internal resources are weaker, meaning that the internal resources that are being consolidated as part of the affirmation process are weaker, resulting in affirmations not leading to an adequate increase in psychological resilience, and unhelpful defensive processes (e.g. paranoia) still being needed to protect one’s self-esteem. Within the present study, threat had already been presented in the form of the paranoia induction procedure, which is likely to have reduced participant’s internal resources, with paranoia then being activated to compensate for this, in order to protect self-esteem. So it may be that the ability of self-affirmations to consolidate internal resources and increase psychological resilience to the extent that paranoia was not needed, was challenged by depleted internal resources following the paranoia induction, and potentially also by the already adopted defensive and often unhelpful thought processes and attributions that characterise paranoia. In summary, the potential challenges posed to the affirmation process, by implementing the affirmation procedure after rather than before the paranoia induction procedure involved consolidating internal resources that had recently been depleted, as well as needing to break down the paranoia defences that were already in place. These challenges support the idea that belonging-affirmations may have been effective if implemented prior to, rather than after the paranoia induction procedure, when participants’ psychological resources were intact and paranoid thoughts and attributions had not already been adopted. Additionally, the effect size within Kingston & Ellett’s (2014) affirmations experiment was only medium, which contributes to the suggestion that the affirmation was not powerful enough to increase participants internal resources to the extent needed to see a difference in paranoia scores following the paranoia induction, in the context of already depleted internal resources and the adoption of paranoid thoughts and attributions.

An alternative explanation for the observation that belonging-affirmations did not effectively reduce paranoia in the present study is that, while they may protect against self-esteem/identity threats, they may only protect against the effect of such threats on academic performance (Shnabel et al., 2013) and not against their effects on psychological states such as paranoia. It could be that feeling close and connected to others activates a mechanism that can effect academic performance, but does not allow for improved paranoia, and that providing the belonging-affirmation prior to the paranoia induction procedure would not have made a difference to its effect upon paranoia.

In summary, while the present study appears to have successfully implemented the belonging-affirmation procedures, results suggest that belonging-affirmations are not effective for reducing paranoia when implemented after a paranoia induction procedure. The ineffectiveness of belonging-affirmations in this context may be the result of affirmations being effective as a buffer, but not as an intervention for paranoia, or as a result of belonging not being a prominent ingredient within the standard-affirmation procedures that have been shown to buffer against paranoia. Conducting further research that implements belonging-affirmations prior to the paranoia induction procedure will be helpful to clarify the explanation for the observation within the present thesis. Shnabel et al. (2013) emphasise the importance of identifying active ingredients within the affirmation procedure, so that affirmations can be focussed and have the greatest possible effects. However, the prominent active ingredients within affirmations that buffer against paranoia remain unknown, meaning that focussed affirmations for this construct cannot be created, and research in this area is still in need of further exploration.

**Belonging-affirmations and loneliness**

As belonging is described as the opposite of loneliness (de Jong Gierveld et al., 2006), and a relationship between paranoia and loneliness was hypothesised, it was suggested that a belonging-affirmation would lead to a reduction in loneliness, as well as paranoia. This understanding led to Hypothesis 4 seeking to establish whether belonging-affirmations were effective at reducing state loneliness in addition to state paranoia. However, as demonstrated for the relationship between belonging-affirmations and paranoia, results reported that levels of loneliness of those who undertook the belonging-affirmation did not reduce, and this part of Hypothesis 4 was therefore not supported.

In line with the central explanations for why belonging-affirmations did not appear to effectively reduce paranoia within the current study, it may be that belonging-affirmations are not effective at reducing already elevated levels of loneliness and/or that belonging is not an active ingredient within affirmations that might be able to reduce loneliness. However, without past research looking at the influence of affirmations on loneliness, there is also the possibility that affirmations are simply not effective for reducing loneliness, and that the lack of significant results within the present thesis is not related to the timing of the affirmations, or belonging not being an active ingredient, but that affirmations are simply not effective in this area. Nevertheless, further research is needed to establish whether affirmations are effective for loneliness before any such conclusions can be drawn.

One aspect that is particularly curious with regard to belonging-affirmations not having a significant effect on loneliness is that belonging is described as the opposite of loneliness, and participants’ sense of belonging appears to have been significantly increased within the belonging-affirmations, and yet loneliness was not significantly reduced. One explanation as to why an increase in belonging would not cause a parallel reduction in loneliness is that these constructs are more independent of one another than initially thought and/or that the effect of increasing belonging was not strong enough to reduce loneliness. This latter point could be related to the finding within the present thesis of a significant and positive relationship between paranoia and loneliness. As such, there may have been particular elements of increased loneliness following the paranoia induction procedure that were specifically related to elements of increased paranoia. As paranoia continued to be elevated following the belonging-affirmations, any relationship between paranoia and loneliness may have been responsible for levels of loneliness also being maintained following the belonging-affirmations. In summary, it may be that a relationship between increased paranoia and increased loneliness was more powerful at keeping loneliness increased than could be addressed with the increases in belonging that arose within the belonging-affirmations.

**Implications for Future Research**

In light of the above findings, it seems that there are several areas within which further investigation is needed. The first possible future direction for research is to look at whether there is a specific point upon the paranoia continuum at which social networks rapidly decline. That is, exploring whether there is a clear threshold at which social functioning and social networks become significantly impaired. This would help to identify the point at which social interventions could be particularly helpful, with the potential to maintain an individual’s social support, and reduce the possibility of social isolation. A related and further area that could be usefully explored is identifying whether social networks and non-clinical paranoia continue to have a non-significant relationship with a sample that is specifically recruited on the basis that they have experiences of high, but non-clinical levels of paranoia. This also has the potential to inform the first area of exploration, as it may be within this higher range of non-clinical paranoia within which there begins to be a rapid decline in social network size, before people move to the clinical part of the paranoia continuum.

In relation to the paranoia induction procedure, an important area of future investigation is to recruit a control group who complete the concept-learning task in experimental conditions, but receive neither failure feedback nor a self-awareness induction, and compare their levels of paranoia to those of participant’s subject to the two conditions implemented within the present thesis. This would help to establish whether it was the failure feedback alone that resulted in paranoia, or if the general experimental environment mimicked the effects of the self-awareness induction, or whether simply being within experimental conditions, independent of the use of failure feedback/increased self-awareness, results in increased paranoia. Once the conditions within which paranoia is induced are established, research looking at the hypothesised causal effect of paranoia on loneliness and belonging can be pursued.

Finally, an important next step within the affirmation and paranoia literature is to investigate whether belonging-affirmations are effective as a buffer, rather than an intervention, to paranoia. That is, whether belonging is an active ingredient within the affirmation process for paranoia, when affirmations are implemented prior to a paranoia induction procedure, and whether this process can also effectively buffer against loneliness. If this were not the case, it would then be important to explore other possible active ingredients that are particularly prominent within affirmations that have demonstrated effectiveness in reducing paranoia. Additionally, if belonging did not appear to be an active ingredient in the buffering ability of affirmations for paranoia, it would still remain to be seen whether affirmations can be used as an effective intervention, as well as an effective buffer to paranoia, making this an additional area for future investigation.

**Research and Clinical Implications**

It is proposed that paranoia lies upon a continuum, which ranges from very low level paranoia within the general population, to high levels of paranoia that characterise clinical paranoia presentations. A prominent narrative within the paranoia continuum literature is that paranoia at all levels is of the same quality, but with increasing levels of intensity towards the upper end. As such, those in the non-clinical population have been used as analogue samples to those in the clinical paranoia population. For such analogue research to be effective, clinical and non-clinical populations should be equivalent in the areas of interest. What was demonstrated within the present study was that the major difficulty of depleted social networks seen within the clinical paranoia population does not appear to be a difficulty for those experiencing non-clinical levels of paranoia. This suggests that analogue research recruiting those in the non-clinical population that looks at factors related to social network size, or that could be significantly impacted upon by increased levels of social support for those with non-clinical paranoia, should be conducted with caution. Furthermore, increased social support for those in the non-clinical population is likely to have implications for many research areas within which non-clinical analogue samples to the clinical paranoia population are recruited, and should therefore be highlighted and controlled for where relevant.

The present study has helped to characterise the paranoia experience by suggesting that both loneliness and belonging are a difficulty for those experiencing non-clinical paranoia, and that implementing belonging-focussed affirmations may not be an effective intervention for reducing either levels of paranoia or loneliness. While affirmations may only be effective as a buffer, and not as an intervention for paranoia, therefore reducing the utility of affirmations in this context, the demonstrated ability of standard-affirmations to reduce paranoia (Kingston & Ellett, 2014) still means that affirmations have the potential to buffer against the development of further symptoms. Hence, the combination of affirmations with known effective interventions for paranoia (e.g. CBT; Chan & Leung, 2002) could be a very effective treatment for both current and future symptoms. Furthermore, when considering affirmations as a buffer against paranoia, this may be particularly helpful for those whose levels of paranoia may be more susceptible to increase, such as those with high levels of paranoia in the non-clinical population (e.g., Dominguez et al., 2011; Poulton et al., 2000) and those with sub-threshold symptoms within the clinical population (e.g., McGorry et al., 2002). Future research might usefully investigate the longitudinal effects of affirmations to assess the utility of affirmations in these contexts, perhaps with affirmations being part of routine intervention.

Finally, literature has suggested that belonging has a buffering effect for mental health problems (Berkman & Glass, 2000; Hagerty & Williams, 1999; Hagerty et al., 1996; Hill, 2006; Kawachi & Berkman, 2001) and that reduced belonging is part of the psychosis experience (DeNiro, 1995). Belonging-affirmation manipulation checks within the present thesis suggest that those with increased paranoia are able to increase their levels of belonging, independently of their levels of paranoia, which in itself has possible benefits, such as protecting from co-morbid mental health problems. However, while affirmations may stop escalation of symptoms, the present research suggests that they might not have an impact on individuals’ current symptoms.

**Strengths**

A considerable strength of the present study is that it has looked at a correlate of paranoia (social networks) that is a consistent problem with far-reaching detrimental effects within the clinical paranoia population, but demonstrates very inconsistent results in research looking at social networks in the non-clinical population, where several methodological flaws are highlighted. The present study looked at this relationship in the non-clinical population using specific and robust measures, and therefore provides much needed reliable data in this area. These results allowed a strong argument in support of the general population research to be presented, which suggests that social networks are not depleted for those in the non-clinical population. This finding contributes valuable knowledge with regard to the experience of non-clinical paranoia and the appropriateness of the use of non-clinical samples as analogue to those in the clinical population for areas significantly related to social network size/support.

Additionally, the current study looked at loneliness and belonging, constructs that have considerable implications for ones levels of distress and mental health, and potentially particularly for paranoia, and studied these relationships within both a cross-sectional and experimental design. These investigations have made an important start to developing an area of research that has been considerably neglected within the paranoia literature. Further to this is the valuable finding within the experimental part of these investigations, regarding the paranoia induction procedure control group inducing paranoia to the same extent as the paranoia experimental group. This finding has highlighted many unanswered questions regarding the failure/self-awareness paranoia induction procedure, and has identified clear aims for future research to establish the most effective and reliable way that this induction procedure can be implemented.

Furthermore, the present research furthers the work looking at the relationship between affirmations and paranoia, an area that is currently in it’s infancy, but has potentially very important implications for the interventions used with those experiencing paranoia. Specifically, it has highlighted the possibility that affirmations may only be effective for buffering against paranoia, rather than being an effective intervention for already elevated levels of paranoia. Additionally, the current study is the first to investigate the possible active ingredients within the affirmation process that has been shown to reduce paranoia, and one of very few looking at the active ingredients within affirmations at all. As such, the present thesis provides valuable insights using an experimental design and specific measures, and has provided clear direction for future research in this area. Finally, in relation to the belonging-affirmation procedures, the present study has supported the belonging-affirmation procedure presented within Shnabel et al. (2013) as an effective and reliable intervention for implementing belonging-focussed affirmations. This was demonstrated within the results of the content analysis, and the observed increase in levels of belonging for those who undertook the belonging-focussed affirmations.

**Limitations**

The first limitation of the present thesis is that the sample mostly consisted of undergraduate psychology students, with a mean age of 21 years. While this is an extremely common sample within the non-clinical paranoia literature, it does limit the generalizability of the study. While a quarter of the study participants were recruited outside of the undergraduate psychology credit scheme, generalizability was still limited by age group, and educational background. Nevertheless, the mean age of the sample lay within the common age of onset of clinical paranoia experiences (e.g., Kessler et al., 2007), meaning that, although the spread of ages was limited, the mean age could be perceived as relevant to this subject area. It would however be of advantage to generalizability if future research were to recruit a broader population sample.

Secondly, while a relatively large sample was recruited within the present study, the already existing research looking at paranoia and social network size within the non-clinical population includes two very large general population samples (Alptekin et al., 2009; Freeman et al., 2011). The measures used within the present thesis were much more specific and robust than those used in most of the studies in this area, however in comparison to the two studies highlighted above, the sample of the present thesis is comparatively small, suggesting that the same far-reaching generalisations to the general population cannot be made. Future research could look to include more robust and specific measures of social network size and paranoia, such as those used within the present study, in general population surveys, so that conclusions regarding social networks and paranoia can be more confidently made.

Thirdly, with regard to the measures, those of state loneliness and state belonging were adapted/created for the current study, and so it cannot be assumed that they were reliably and validly measuring the relevant constructs of interest. This brings into question the validity of the results gained using these measures, which include the hypotheses concerned with state loneliness, and the hypotheses concerned with state belonging. Additionally, the belonging measure was used as a manipulation check of the belonging-affirmation procedures, however, this was not solely relied upon, as it was carried out in addition to the thorough content validity investigation used by Shnabel et al. (2013). Of note is that the use of both the state loneliness and state belonging measures within the current study appeared to be supported, as they both consistently demonstrated significance when looking at the relationship of pre- and post-experiment scores on the measures, throughout the study. Unfortunately, a lack of formally validated measures of state loneliness and state belonging is an on-going problem for research in this area, which limits the work that can be done, and the advances that can be made. As such, research is needed to create standardised measures of state loneliness and state belonging so that robust research looking at these constructs within experimental designs can be conducted.

Finally, the paranoia induction procedure led to a significant increase in paranoia for the whole sample, with no difference between the control and experimental groups on state paranoia. This meant that the data that was yield was from a much larger sample of participants whose paranoia scores were increased, but that there was no control group to compare their scores to. As a result, causation with regard to the effect of paranoia on loneliness and belonging could not be established, and it could not be concluded that the paranoia induction procedure had induced paranoia. As such, it may have been that other factors that were not identified within the present study were responsible for the changes on the three measures, and that paranoia did not cause loneliness and belonging to increase at all. If the same paranoia induction were to be used in future research, a second paranoia control group should be recruited, who complete a task that involves neither failure feedback nor the self-awareness induction procedures used within these paranoia induction methods.

**Conclusions**

The results of the present thesis strongly support the suggestion that social networks are not depleted for those experiencing non-clinical paranoia. However, it seems that increased paranoia is significantly related to increased loneliness and decreased belonging. While the initial results of the present study suggest that paranoia causes increases in loneliness and decreases in belonging, further research is needed before sound conclusions can be made about causal relationships among these constructs. Finally, belonging-affirmations do not appear to significantly reduce paranoia following a paranoia induction procedure, and future research is needed to establish whether this is due to belonging not being a prominent active ingredient within the affirmation process that buffers against paranoia and/or if affirmations are only an effective buffer, and not an effective intervention for paranoia.

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**Appendices**

**Appendix 1: Trait and State Measures**

1. Paranoia Scale (Fenigstein & Vanable, 1992)

Here are some statements below about certain feelings and beliefs that people usually have concerning themselves, others, and certain situations. Your task is to choose how well each statement is applicable to you. Please note that all information provided by you is confidential. Please use the following scale to indicate your answers:

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| **1** | **2** | **3** | **4** | **5** |
| **Not at all applicable** | **Slightly applicable to me** | **Somewhat applicable to me** | **Applicable to me** | **Extremely applicable to me** |

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

2. UCLA Loneliness Scale (Version 3; Russell, 1996)

The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by writing a number in the space provided. Here is an example:

How often do you feel happy?

If you never felt happy, you would respond “never”; if you always feel happy, you would respond “always”.

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| NEVER | RARELY | SOMETIMES | ALWAYS |
| 1 | 2 | 3 | 4 |

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| \*1. | How often do you feel that you are “in tune” with the people around you? |  |
| 2. | How often do you feel that you lack companionship? |  |
| 3. | How often do you feel that there is no one you can turn to? |  |
| 4. | How often do you feel alone? |  |
| \*5. | How often do you feel part of a group of friends? |  |
| \*6. | How often do you feel that you have a lot in common with the people around you? |  |
| 7. | How often do you feel that you are no longer close to anyone? |  |
| 8. | How often do you feel that your interests and ideas are not shared by those around you? |  |
| \*9. | How often do you feel outgoing and friendly? |  |
| \*10. | How often do you feel close to people? |  |
| 11. | How often do you feel left out? |  |
| 12. | How often do you feel that you relationships with others are not meaningful? |  |
| 13. | How often do you feel that no one really knows you well? |  |
| 14. | How often do you feel isolated from others? |  |
| \*15. | How often do you feel you can find companionship when you want it? |  |
| \*16. | How often do you feel that there are people who really understand you? |  |
| 17. | How often do you feel shy? |  |
| 18. | How often do you feel that people are around you but not with you? |  |
| \*19. | How often do you feel that there are people you can talk to? |  |
| \*20. | How often do you feel that there are people you can turn to? |  |

Items that are asterisked should be reversed (i.e. 1=4, 2=3, 3=2, 4=1). Then the scores for each of the items summed together. Higher scores indicate greater degrees of loneliness.

3. Social Network Questionnaire (Roberts, Dunbar, Pollet & Kuppens, 2009)

**Age:**

……………..

**Highest educational qualification:**

………………………………………………………………..

**Marital status:**

………………………………………………………..

**Type of accommodation occupied (e.g. University halls of residence, private renting, parents house):**

…………………………………………………………………………………

(Only **score** emotional closeness for those in past 12 months (like Roberts et al. did)

**Please list all known and living relatives in the table below (this list should include relatives to whom you are genetically related).**

For each person listed, please do the following:

1. Rate how emotionally close you are to them, on a scale of 1-10 (where 10 is very close).
2. Include the last time that you contacted the person.

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**Please list all those (*excluding* those already highlighted above) with whom you have some sort of personal relationship, and for whom the following conditions apply: i) You have their contact details; ii) You have had some sort of contact with them within the last 12 months; iii) You wish the relationship to continue.**

To prompt your memory, please consult any lists of personal telephone numbers/addresses that you have (e.g. in your mobile phone, computer, handwritten address book).

For each person listed, please do the following:

1. Rate how emotionally close you are to them, on a scale of 1-10 (where 10 is very close).
2. Include the last time that you contacted the person.

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| Name | Emotional closenessRating(1-10) | Last time that you contacted this person |
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4. Participant Sociodemographic Questionnaire

Have you ever been diagnosed with a mental health problem? (please circle)

**Yes No**

Gender (please circle):

**Male Female**

Ethnicity (please tick):

|  |  |  |
| --- | --- | --- |
| **Ethnic Group** | **Sub Group** | **√** |
| White | British | **[ ]**  |
|   | Irish | **[ ]**  |
|   | Any other White background | **[ ]**  |
| Mixed | White & Black Caribbean | **[ ]**  |
|   | White & Black African | **[ ]**  |
|   | Any other Mixed background | **[ ]**  |
| Asian or Asian British | Indian | **[ ]**  |
|   | Pakistani | **[ ]**  |
|   | Bangladeshi | **[ ]**  |
|   | Tamil | **[ ]**  |
|   | Any other Asian background | **[ ]**  |
| Black or Black British | Caribbean  | **[ ]**  |
|   | African | **[ ]**  |
|   | Any other Black background | **[ ]**  |
| Other Ethnic Groups | Chinese | **[ ]**  |
|   | Eastern European | **[ ]**  |
|   | Any other ethnic group | **[ ]**  |

5. Social Provision Scale (Russell & Cutrona, 1984)

In answering the following questions, think about your current relationships with friends, family members, co-workers, community members, and so on. Please indicate to what extent each statement describes your current relationships with other people. Use the following scale to indicate your opinion.

STRONGLY DISAGREE DISAGREE AGREE STRONGLY AGREE

 1 2 3 4

So, for example, if you feel a statement is very true of your current relationships, you would respond with a 4 (strongly agree). If you feel a statement clearly does not describe your relationships, you would respond with a 1 (strongly disagree).

Rating

1. There are people I can depend on to help me if I really need it ..............

2. I feel that I do not have close personal relationships with other people ..............

3. There is no one I can turn to for guidance in times of stress ..............

4. There are people who depend on me for help ..............

5. There are people who enjoy the same social services I do ..............

6. Other people do not view me as competent ..............

7. I feel personally responsible for the well-being of another person ..............

8. I feel part of a group of people who share my attitudes and beliefs. ..............

9. I do not think other people respect my skills and abilities ..............

10. If something went wrong, no one would come to my assistance ..............

11. I have close relationships that provide me with a sense of emotional

security and well-being ..............

12. There is someone I could talk to about important decisions in my life ..............

13. I have relationships where my competence and skill are recognised ..............

14. There is no one who shares my interests and concerns ..............

15. There is no one who really relied on me for their well-being ..............

16. There is a trustworthy person I could turn to for advice if I were having

 problems ..............

17. I feel a strong emotional bond with at least on other person ..............

18. There is no one I can depend on for aid if I really need it ..............

19. There is no one I feel comfortable talking about problems with ..............

20. There are people who admire my talents and abilities ..............

21. I lack a feeling of intimacy with another person ..............

22. There is no one who likes to do the things I do ..............

23. There are people who I can count on in an emergency ..............

24. No one needs me to care for them ..............

6. Sense of Belonging Instrument – Psychological State

(SOBI-P; Hagerty & Patusky, 1995)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | StronglyDisagree | Disagree | Agree | Strongly Agree |
| 1. I often wonder if there is any place on earth where I really fit in | 1 | 2 | 3 | 4 |
| 2. I am just not sure if I fit in with my friends | 1 | 2 | 3 | 4 |
| 3. I would describe myself as a misfit in most social situations | 1 | 2 | 3 | 4 |
| 4. I generally feel that people accept me | 1 | 2 | 3 | 4 |
| 5. I feel like a piece of a jig-saw puzzle that doesn’t fit into the puzzle | 1 | 2 | 3 | 4 |
| 6. I would like to make a difference to people or things around me, but I don’t feel that what I have to offer is valued | 1 | 2 | 3 | 4 |
| 7. I feel like an outsider in most situations | 1 | 2 | 3 | 4 |
| 8. I am troubled by feeling like I have no place in this world | 1 | 2 | 3 | 4 |
| 9. I could disappear for days and it wouldn’t matter to my family | 1 | 2 | 3 | 4 |
| 10. In general, I don’t feel a part of the mainstream of society | 1 | 2 | 3 | 4 |
| 11. I feel like I observe life rather than participate in it | 1 | 2 | 3 | 4 |
| 12. If I died tomorrow very few people would come to my funeral | 1 | 2 | 3 | 4 |
| 13. I feel like a square peg trying to fit into a round hole | 1 | 2 | 3 | 4 |
| 14. I don’t feel that there is any place where I really fit in this world | 1 | 2 | 3 | 4 |
| 15. I am uncomfortable that my background and experiences are so different from those who are usually around me | 1 | 2 | 3 | 4 |
| 16. I could not see or call my friends for days and it wouldn’t matter to them | 1 | 2 | 3 | 4 |
| 17. I feel left out of things | 1 | 2 | 3 | 4 |
| 18. I am not valued by or important to my friends | 1 | 2 | 3 | 4 |

7. Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983)

**Tick the box beside the reply that is closest to how you have been feeling in the past week. Don’t take too long over your replies: your immediate is best.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **D** | **A** |  | **D** | **A** |  |
|  |  | **I feel tense or ‘wound up’:** |  |  | **I feel as if I am slowed down:** |
|  | 3 | Most of the time | 3 |  | Nearly all the time |
|  | 2 | A lot of the time | 2 |  | Very often |
|  | 1 | From time to time, occasionally | 1 |  | Sometimes |
|  | 0 | Not at all | 0 |  | Not at all |
|  |
|  |  | **I still enjoy the things I used to enjoy:** |  |  | **I get a sort of frightened feeling like ‘butterflies’ in the stomach:** |
| 0 |  | Definitely as much |  | 0 | Not at all |
| 1 |  | Not quite so much |  | 1 | Occasionally |
| 2 |  | Only a little |  | 2 | Quite often |
| 3 |  | Hardly at all |  | 3 | Very often |
|  |
|  |  | **I get a sort of frightened feeling as if something awful is about to happen:** |  |  | **I have lost interest in my appearance:** |
|  | 3 | Very definitely and quite badly | 3 |  | Definitely |
|  | 2 | Yes, but not too badly | 2 |  | I don’t take as much care as I should |
|  | 1 | A little, but it doesn’t worry me | 1 |  | I may not take quite as much care |
|  | 0 | Not at all | 0 |  | I take just as much care as ever |
|  |
|  |  | **I can laugh and see the funny side of things:** |  |  | **I feel restless as I have to be on the move:** |
| 0 |  | As much as I alwys could |  | 3 | Very much indeed |
| 1 |  | Not quite so much now |  | 2 | Quite a lot |
| 2 |  | Definitely not so much now |  | 1 | Not very much |
| 3 |  | Not al all |  | 0 | Not at all |
|  |
|  |  | **Worrying thoughts go through my mind:** |  |  | **I look forward with enjoyment to things:** |
|  | 3 | A great deal of the time | 0 |  | As much as I ever did |
|  | 2 | A lot of the time | 1 |  | Rather less than I used to |
|  | 1 | From time to time, but not too often | 2 |  | Definitely less than I used to |
|  | 0 | Only occasionally | 3 |  | Hardly at all |
|  |
|  |  | **I feel cheerful:** |  |  | **I get sudden feelings of panic:** |
| 3 |  | Not at all |  | 3 | Very often indeed |
| 2 |  | Not often |  | 2 | Quite often |
| 1 |  | Sometimes |  | 1 | Not very often |
| 0 |  | Most of the time |  | 0 | Not at all |
|  |
|  |  | **I can sit at ease and feel relaxed:** |  |  | **I can enjoy a good book or radio or TV program:** |
|  | 0 | Definitely | 0 |  | Often |
|  | 1 | Usually | 1 |  | Sometimes |
|  | 2 | Not often | 2 |  | Not often |
|  | 3 | Not at all | 3 |  | Very seldom |

**Please check that you have answered all of the questions**

**Scoring:**

**Total score: Depression (D) …………………. Anxiety (A) …………………**

**0-7 = Normal**

**8-10 = Borderline abnormal (borderline case)**

**11-21 = Abnormal (case)**

8. The Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998)

Please answer each question by ticking the box that corresponds to how much you agree each statement describes your thoughts and feelings **right now**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Not at all0 | A little1 | More than a little2 | Quite a lot3 | Frequently4 | Very often5 |
| 1. I’m disappointed from my performance |  |  |  |  |  |  |
| 2. I feel that I do not have energy to perform other tasks |  |  |  |  |  |  |
| 3. I feel ashamed of my task performance |  |  |  |  |  |  |
| 4. I do not have the appropriate abilities to perform the tasks |  |  |  |  |  |  |
| 5. I have doubts about my abilities and skills |  |  |  |  |  |  |
| 6. I’m critical of my task performance |  |  |  |  |  |  |
| 7. I feel guilty about my task performance |  |  |  |  |  |  |
| 8. I feel that I’m less competent than others |  |  |  |  |  |  |
| 9. I feel weak and tired |  |  |  |  |  |  |
| 10. I feel helpless |  |  |  |  |  |  |
| 11. I feel that my behaviour is being analysed |  |  |  |  |  |  |
| 12. I feel that people talk about me |  |  |  |  |  |  |
| 13. I feel that people are hostile to me |  |  |  |  |  |  |
| 14. I feel that others are picking on me |  |  |  |  |  |  |
| 15. I feel that others are examining my actions |  |  |  |  |  |  |
| 16. I feel that others influence my performance |  |  |  |  |  |  |
| 17. I do not trust other people’s intentions |  |  |  |  |  |  |

9. UCLA Loneliness Scale

(Version 3; Russell, 1996; Adapted for the purpose of this research)

The following statements describe how people sometimes feel, for each statement the best answer is what you feel is true for you right now. Here is an example:

Right now, do you feel happy?

If you never feel happy right now, you would respond “never”; if you always feel happy right now, you would respond “always”.

|  |  |  |  |
| --- | --- | --- | --- |
| NEVER | RARELY | SOMETIMES | ALWAYS |
| 1 | 2 | 3 | 4 |

|  |  |  |
| --- | --- | --- |
| \*1. | Right now, do you feel that you are “in tune” with the people around you? |  |
| 2. | Right now, do you feel that you lack companionship? |  |
| 3. | Right now, do you feel that there is no one you can turn to? |  |
| 4. | Right now, do you feel alone? |  |
| \*5. | Right now, do you feel part of a group of friends? |  |
| \*6. | Right now, do you feel that you have a lot in common with the people around you? |  |
| 7. | Right now, do you feel that you are no longer close to anyone? |  |
| 8. | Right now, do you feel that your interests and ideas are not shared by those around you? |  |
| \*9. | Right now, do you feel outgoing and friendly? |  |
| \*10. | Right now, do you feel close to people? |  |
| 11. | Right now, do you feel left out? |  |
| 12. | Right now, do you feel that your relationships with others are not meaningful? |  |
| 13. | Right now, do you feel that no one really knows you well? |  |
| 14. | Right now, do you feel isolated from others? |  |
| \*15. | Right now, do you feel you can find companionship when you want it? |  |
| \*16. | Right now, do you feel that there are people who really understand you? |  |
| 17. | Right now, do you feel shy? |  |
| 18. | Right now, do you feel that people are around you but not with you? |  |
| \*19. | Right now, do you feel that there are people you can talk to? |  |
| \*20. | Right now, do you feel that there are people you can turn to? |  |

10. Sense of Belonging

Using the scale provided below, please rate how much you agree with the following statement:

**Right now**, I feel close and connected to other people

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Not at all |  |  |  |  |  |  |  |  |  | Totally |

 Rating (0-100)

**Appendix 2. Standardised Participant Instructions for Concept-Learning Task**

Here is a set of 10 stimuli. They are organised into five different dimensions (i.e. flankers, trapezium, field shape, coloured square and stripe orientation). Each dimension has two values associated with it (i.e. the flankers dimension can either be ‘coarse’ or ‘fine’). Here are 10 possible combinations of dimensions and values:

1. FLANKERS

 

|  |  |
| --- | --- |
| Fine | Coarse |

2. TRAPEZIUM

 

|  |  |
| --- | --- |
| Upright | Inverted |

3. FIELD SHAPE

 

|  |  |
| --- | --- |
| Stars | Flowers |

4. COLOURED SQUARE

 

|  |  |
| --- | --- |
| Yellow | Blue |

5. STRIPE ORIENTATION

 

|  |  |
| --- | --- |
| Horizontal | Vertical |

During the experiment you will see a number of pictures. Each picture consists of a different combination of the 5 dimensions and values shown above. Here is an example of one of these pictures (show over leaf). As you can see, this picture contains the following dimensions and values: - coarse flankers, inverted trapeziums, flowers field shape, yellow coloured square, horizontal stripes.

EXAMPLE



Before you came into the study today, I randomly chose one of the values of one of the dimensions as ‘correct’ (e.g. coarse flankers) and your task is to work out which one it is. You will be shown 10 pictures like the one above and your task is to guess whether or not each picture contains the ‘correct’ value.

You will indicate your decision by pressing on the two shift keys on the keyboard:

Left shift key = ‘correct’ value is present

Right shift key = ‘correct’ value is not present

Please note that you need to respond quickly as each picture will only be on the screen for 5 seconds. If you do not respond within 5 seconds, the computer will generate a random response within the 5 seconds that the image is on the screen. Having made your guess, you will then be told whether the response is correct or incorrect. You should use this feedback to help you figure out what the correct value is.

After you have seen all of the 10 pictures, the following message will appear on the computer screen: “which of the dimensions contains the correct value?” and you will be asked to select one of the following five options: flankers, trapezium, field shape, coloured square or stripe orientation. You will then be told whether your answer is correct or incorrect. This is a hard task, so if you are not sure of the correct dimension, take a guess. If you don’t respond, it will be classed as an incorrect answer, and you will be told that your answer is incorrect.

You can practice this now, as a trial, to make sure that you have understood the instructions. You’ll get the hang of the computer task through this trial (*participant completes pilot trial*).

Do you have any questions? Is there anything that you are unsure about?

**Appendix 3: Belonging-Affirmation Participant Instructions**

Below is a list of characteristics and values, some of which may be important to you, some of which may be unimportant. Please rank these values and qualities in order of their importance to you, from 1 to 11 (1=most important item, 11=least important item). **Use each number only once**.

Artistic skills/Aesthetic appreciation

Sense of Humour

Relations with friends/family

Spontaneity/Living life in the moment

Social skills

Athletics

Musical ability/appreciation

Physical Attractiveness

Creativity

Business/Money

Romantic values

What was your most important value? (the value that you ranked number 1)

Please describe how this personal characteristic or life domain makes you feel **close and connected to other people**. Think about a time in your life that this was particularly **important** in making you feel **close and connected to others**, and the feelings that you had. Write as much or as little as you wish, and don’t worry about how well it’s written. Just focus on expressing your memory of the event and the feelings that you had at the time. Please do your best to write about this event and your feelings about **this value** and how it made you feel **close and connected to others**, for the next 10 minutes.

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**Appendix 4: No-affirmation Control Group Participant Instructions**

Below is a list of characteristics and values, some of which may be important to you, some of which may be unimportant. Please rank these values and qualities in order of their importance to you, from 1 to 11 (1=most important item, 11=least important item). **Use each number only once**.

Artistic skills/Aesthetic appreciation

Sense of Humour

Relations with friends/family

Spontaneity/Living life in the moment

Social skills

Athletics

Musical ability/appreciation

Physical Attractiveness

Creativity

Business/Money

Romantic values

What was your 11th most important value? (the value that you ranked number 11)

Please describe why this personal characteristic or life domain might be important and meaningful to **someone else**. Describe a time in **someone else’s** life when it may have been important and made them feel good about themselves. Write as much or as little as you wish, and don’t worry about how well it’s written. Just focus on expressing your thoughts and feelings. Please do your best to write about why **this value** might be important to **someone else** for the next 10 minutes.

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**Appendix 5: Confirmation of Ethics Approval**

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**Appendix 6: Information Sheet for the Paranoia Induction Experimental Group**

****

**Social networks, task performance and emotions**

**Information sheet**

My name is Rosamund Raine and I am a Clinical Psychology Doctoral student at Royal Holloway, University of London. I am carrying out a study, under the supervision of Dr. Lyn Ellett, which has two main aims. The first is to examine social networks, emotions, and factors that predict task performance. The second is to gain further understanding of what people value.

Your participation in the project would be greatly appreciated.

Participation will firstly involve completing ten **questionnaires**, which will take around 45 minutes. Following this, you will be asked to complete a 20-minute **computer task**, in which you will be given a series of shape-based problems to solve. The computer task will be filmed to ensure consistency across the study. Upon completion of the computer task, you will be asked to complete a further three **questionnaires**.

The final part of the study involves a 15-minute **values and** **writing task**, within which you will be asked to rate values, and write a short essay. Upon completion of this task, you will be asked to complete a further three **questionnaires**.

Nobody except the researchers and supervisors will be allowed to see any of your data. Within the study, you will only be identified by a number. All information is completely confidential.

You do not have to take part in this study if you do not want to, participation is entirely voluntary. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether or not to take part will not affect your education in any way. This project has been reviewed and granted approval by the Psychology Department Ethics Committee.

Please confirm that you have read the information sheet above for the study.

YES NO

Having read the information sheet please confirm whether or not you consent to taking part in the study (please see next page).

**Appendix 7: Information Sheet for the Paranoia Control Group**

****

**Social networks, task performance and emotions**

**Information sheet**

My name is Rosamund Raine and I am a Clinical Psychology Doctoral student at Royal Holloway, University of London. I am carrying out a study, under the supervision of Dr. Lyn Ellett, which aims to examine social networks, emotions, and factors that predict task performance.

Your participation in the project would be greatly appreciated.

Participation will firstly involve completing ten **questionnaires**, which will take around 45 minutes. Following this, you will be asked to complete a 20-minute **computer task**, in which you will be given a series of shape-based problems to solve. Upon completion of the computer task, you will be asked to complete a further three **questionnaires**.

Nobody except the researchers and supervisors will be allowed to see any of your data. Within the study, you will only be identified by a number. All information is completely confidential.

You do not have to take part in this study if you do not want to, participation is entirely voluntary. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether or not to take part will not affect your education in any way. This project has been reviewed and granted approval by the Psychology Department Ethics Committee.

Please confirm that you have read the information sheet above for the study.

YES NO

Having read the information sheet please confirm whether or not you consent to taking part in the study (please see next page).

**Appendix 8: Consent Form for the Paranoia Induction Experimental Group**

****

**Social networks, task performance and emotions**

**Consent form**

ID number: …………………………………………….

You have been asked to participate in a study examining social networks, emotions and factors that predict task performance.

Have you (please circle yes or no):

|  |  |  |
| --- | --- | --- |
| Read the information sheet about the study? | Yes | No |
| Had an opportunity to ask questions? | Yes | No |
| Got satisfying answers to your questions? | Yes | No |
| Understood that you’re free to withdraw from the study at any time without giving a reason (and without it affecting your care/education if applicable)? | Yes | No |
| Understood that you are free to deny answering any questions that you do not want to? | Yes | No |
| Understood that you will be filmed for consistency purposes? | Yes | No |
| Do you agree to take part in the study? | Yes | No |

Signature…………………………………………………….

Name in block letters…………………………………...

Date …………………………………………………….

This consent form will be stored separately from the anonymous information you provide.

**Appendix 9: Consent Form for the Paranoia Control Group**

****

**Social Networks, task performance and emotions**

**Consent form**

ID number: …………………………………………….

You have been asked to participate in a study examining social networks, emotions, and factors that predict task performance.

Have you (please circle yes or no):

|  |  |  |
| --- | --- | --- |
| Read the information sheet about the study? | Yes | No |
| Had an opportunity to ask questions? | Yes | No |
| Got satisfying answers to your questions? | Yes | No |
| Understood that you’re free to withdraw from the study at any time without giving a reason (and without it affecting your care/education if applicable)? | Yes | No |
| Understood that you are free to deny answering any questions that you do not want to? | Yes | No |
| Do you agree to take part in the study? | Yes | No |

Signature…………………………………………………………………

Name in block letters………………………………………………..

Date…………………………………………………………………………

This consent form will be stored separately from the anonymous information you provide.

**Appendix 10: Debrief Sheet for the Paranoia Control Group**

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**Social networks, task Performance, values and emotions**

**Debrief sheet**

Thank you for your participation in this study.

In accordance with most psychological research, the main aims and hypotheses of this study were not made explicit prior to the experiment. This is done to avoid the possibility that participants may alter their behaviour whilst in the experiment. A brief background to the study and the main aims are described below.

**Background and aims of the study**

The main aims of the study were to assess the relationship between thoughts about other people, social networks, emotions and social belonging.

Previous studies have shown that paranoid thoughts are common in undergraduate samples, and can be induced when we are exposed to certain environmental conditions, including failing a task in front of a video camera. Like other mood induction procedures, this has been used widely in research. The computer task was designed in such a way that it would have been impossible for anyone to have *correctly* predicted the right answer, therefore this was **an impossible task**.

Because it is very important that you do not figure this out beforehand, please do not share this information with any other undergraduates.

**The effects of the paranoia induction procedure**

It is unlikely that you will experience any residual paranoid thoughts or distress after leaving the experimental setting. If, however, at any point following the study you notice distress related to the experiment, I would advise you to contact the University Counselling Service on counselling@royalholloway.ac.uk or 01784 443 128 and/or your GP. Further to this, in the case of any distress or concerns related to the experiment, please contact me on Rosamund.Raine.2013@live.rhul.ac.uk or my supervisor on Lyn.Ellett@rhul.ac.uk.

If you have any questions about this study or you would like to have a copy of the results, please contact me, or my supervisor, and we will provide you with a summary of the findings.

Thank you again for your participation in the study.

**Appendix 11: Debrief Sheet for the Paranoia Induction Experimental Group**

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**Social networks, task performance and emotions**

**Debrief Sheet**

Thank you for your participation in this study.

In accordance with most psychological research, the main aims and hypotheses of this study were not made explicit prior to the experiment. This is done to avoid the possibility that participants may alter their behaviour whilst in the experiment. A brief background to the study and the main aims are described below.

**Background and aims of the study**

The main aims of the study were to assess the relationship between thoughts about other people, social networks, emotions and social belonging.

Previous studies have shown that paranoid thoughts are common in undergraduate samples, and can be induced when we are exposed to certain environmental conditions, including failing a task in front of a video camera. Like other mood induction procedures, this has been used widely in research. The computer task was designed in such a way that it would have been impossible for anyone to have *correctly* predicted the right answer, therefore this was **an impossible task**. Additionally, while the video camera was switched on, it was not recording, so no video record exists.

Also, it has been suggested that when we write about feeling close and connected to others, our sense of belonging increases. This study aimed to increase some participants’ sense of belonging by asking them to write about their sense of closeness/connectedness to others’. However, to determine whether writing about feeling close and connected to others increases our sense of social belonging, we need to compare this to writing about other areas that are *unrelated* to closeness/connectedness to others. Therefore, this study compares those who have had their sense of social belonging increased versus those who have not, and examines the impact of this on how we think and feel about other people.

Because it is very important that you do not figure this out beforehand, please do not share this information with any other undergraduates.

**The effects of the paranoia induction procedure**

It is unlikely that you will experience any residual paranoid thoughts or distress after leaving the experimental setting. If, however, at any point following the study you notice distress related to the experiment, I would advise you to contact the University Counselling Service on counselling@royalholloway.ac.uk or 01784 443 128 and/or your GP. Further to this, in the case of any distress or concerns related to the experiment, please contact me on Rosamund.Raine.2013@live.rhul.ac.uk or my supervisor on Lyn.Ellett@rhul.ac.uk.

If you have any questions about this study or you would like to have a copy of the results, please contact me, or my supervisor, and we will provide you with a summary of the findings.

Thank you again for your participation in the study.

**Appendix 12: Post-Experiment Consent Form for the Paranoia Induction Experimental Group**

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**Social networks, task performance and emotions**

**Post-experiment consent form**

You have taken part in a study investigating the relationship between thoughts, social networks, emotions and sense of belonging, which was carried out by Rosamund Raine. Were you (please circle yes or no):

|  |  |  |
| --- | --- | --- |
| Fully debriefed regarding the purpose of the study? | Yes | No |
| Informed of your right to withdraw your data from the study without giving a reason and without it affecting your education? | Yes | No |
| Given an opportunity to ask questions? | Yes | No |
| Got satisfactory answers to your questions? | Yes | No |
| Do you still agree to your data being used for the purposes of this study now that you are aware of the full aims of the experiment? | Yes | No |

Signature: ……………………………………………………………..

Name in block letters: ……………………………………………

Date:………………………………………………………………………

NB. This consent form will be stored separately from the anonymous information you provide.

**Appendix 13: Post-Experiment Consent Form for the Paranoia Control Group**

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**Social networks, task performance and emotions**

**Post-experiment consent form**

You have taken part in a study investigating the relationship between thoughts, social networks, emotions and sense of belonging, which was carried out by Rosamund Raine. Were you (please circle yes or no):

|  |  |  |
| --- | --- | --- |
| Fully debriefed regarding the purpose of the study? | Yes | No |
| Informed of your right to withdraw your data from the study without giving a reason and without it affecting your education? | Yes | No |
| Given an opportunity to ask questions? | Yes | No |
| Got satisfactory answers to your questions? | Yes | No |
| Do you still agree to your data being used for the purposes of this study now that you are aware of the full aims of the experiment? | Yes | No |

Signature: ……………………………………………………………..

Name in block letters: ……………………………………………

Date:………………………………………………………………………

NB. This consent form will be stored separately from the anonymous information you provide.

**Appendix 14: Table of Outlying Data Points**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Participant number | Experiment conditions | Variable upon which the data point is outlying | > 3 SD’s higher than variable mean | > 3 SD’s lower than variable mean | Action taken |
| 12 | Paranoia experimental, no-affirmation control | Time 3 PDS (depression sub-scale) | X |  | Variable transformed |
| 19 | Paranoia experimental, no-affirmation control | Mean emotional closeness | X |  | Winsorized  |
| 33 | Paranoia experimental, no-affirmation control | Age | X |  | Winsorized |
| 36 | Paranoia experimental, no-affirmation control | Time 1, 2 & 3 PDS (paranoia sub-scale) | X |  | Variables transformed |
| 38 | Paranoia experimental, no-affirmation control | Time 1 & 2 PDS (paranoia sub-scale) | X |  | Variables transformed |
|  |  | Time 1 & 3 PDS (depression sub-scale) | X |  | Variables transformed |
| 57 | Paranoia experimental, no-affirmation control | Time 2 PDS (paranoia sub-scale) | X |  | Variable transformed |
| 70 | Paranoia control | Total emotional closeness |  |  | Variable transformed |
| 75 | Paranoia control | Trait Loneliness | X |  | Winsorized |
|  |  | Time 1 & 2 State UCLA Loneliness Scale | X |  | Winsorized |
|  |  | SPS |  | X | Variable transformed |
| 101 | Paranoia experimental, no-affirmation control | Total number of those in social network | X |  | Winsorized |
|  |  | Total emotional closeness | X |  | Variable transformed |
| 102 | Paranoia control | HADS (depression sub-scale) | X |  | Winsorized |
|  |  | Time 1 & 2 PDS (depression sub-scale) | X |  | Variables transformed |