

Correlates and predictors of nonclinical paranoia

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ABSTRACT

Despite the common, recurrent and distressing nature of nonclinical paranoia (Ellett, Lopes, & Chadwick, 2003), its concurrent and prospective relationship with theoretically relevant cognitive processes has not been comprehensively researched (Lincoln, Mobius, Huber, Nagel, & Moritz, 2014). Existing research heavily relies on cross-sectional designs, therefore preventing examination of the temporal and dynamic relationship between paranoia and putative cognitive predictors (Freeman, Stahl, McManus, Meltzer, Brugha, Wiles, et al., 2012). Knowledge of the relationship between paranoia and maladaptive behaviours thought to contribute to its maintenance is also limited (Lincoln et al., 2014). This study aimed to address these gaps by a) cross-sectionally examining the association between paranoia, three theoretically relevant cognitive factors (i.e. public self-consciousness, rumination, and mindfulness), and a global measure of problem behaviour, b) prospectively examining the temporal and dynamic relationships between paranoia and the three cognitive factors over 2 weeks, and c) examining the prediction of idiosyncratic paranoia experiences, as measured by the Personal Experiences of Paranoia Scale (PEPS; Ellett et al., 2003) from pre-defined trait and state measures of paranoia and the three cognitive factors.

At baseline, university students (N=86) completed trait measures of paranoia, the three cognitive factors and a global measure of problem behaviour.

Subsequently, state measures of paranoia and the three cognitive factors were completed at three random time points over 2 weeks. The PEPS was then completed at 2 weeks follow-up.

Four key findings emerged: (1) at the trait level, paranoia positively associated with public self-consciousness, rumination, and problem behaviours, and negatively associated with mindfulness; (2) trait paranoia predicted variability in state paranoia over 2 weeks; (3) state measures of paranoia, public self-awareness, rumination and mindfulness correlated over the 2-week period, and (4) trait public self-consciousness predicted endorsement of paranoid experiences at 2 weeks follow-up.

The findings support contemporary models of delusion formation and maintenance (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002; Chadwick, 2006), and provide a foundation for further research into the dynamic processes underlying the onset and persistence of paranoid thinking.

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INTRODUCTION

1.1. Overview

Paranoia is an everyday thought process, characterised by suspiciousness, hostility assumptions, self-centeredness and conspiratorial intent (Ellett & Chadwick, 2007). There is growing evidence to suggest that paranoia lies on a continuum, ranging from milder variants such as mistrust and suspicion, to severe forms such as psychotic delusions (Freeman, 2007; Freeman, Pugh, Vorontsova, Antley, & Slater, 2010).

Public self-consciousness, rumination and mindfulness have been theoretically implicated in the formation and maintenance of paranoid cognitions (Chadwick, 2006; Fenigstein & Venable, 1992; Freeman et al., 2012). However, only a few studies have investigated these cognitive processes in the context of nonclinical paranoia (Lincoln et al., 2014). Given the common, recurrent and distressing nature of nonclinical paranoia, this is an important area to investigate further (Freeman, McManus, Brugha, Meltzer, Jenkins, & Bebbington, 2011). Of the existing research, the predominance of cross-sectional designs has limited the extent to which the psychological mechanisms underlying nonclinical paranoia can be explored, over time (Freeman et al., 2012). Naturalistic prospective designs can help advance knowledge in this area by enabling an examination of dynamic processes that affect nonclinical paranoia over time (Myin-Germeys, Oorschot, Collip, Lataster, Delespaul, & van Os, 2009). A key aim of this study, therefore, was to examine the concurrent and predictive association between public self-

consciousness, rumination, mindfulness and paranoia, at the trait and state level, over a 2-week period using a prospective naturalistic design. In addition to assessing state and trait paranoia via pre-defined questionnaires, this study captured phenomenological accounts of paranoia by utilising the PEPS (Ellett et al., 2003), which emphasises the subjective and multifaceted nature of paranoia (Stopa, Denton, Wingfield, & Taylor, 2013). Considering the current limited knowledge of the relationship between paranoia and theoretically relevant behaviours (Lincoln et al., 2014), another aim of the study was to investigate its association with a global measure of problem behaviours.

This chapter introduces the definition of paranoia, its conceptualisation according to the continuum view, and its occurrence in nonclinical populations. The theoretical and clinical relevance of studying correlates and predictors of paranoia will then be discussed, followed by a review of conceptual models and empirical work emphasising the role of public self-consciousness, rumination, and mindfulness. The theoretical relevance of problem behaviours to delusion formation and maintenance and the limited evidence supporting their association with paranoia will also be reviewed. The methodological challenges of cross-sectional and pre-defined questionnaire-based research are then discussed. Rationales for the adoption of naturalistic prospective designs to study the dynamic relationship between paranoia and theoretically relevant cognitive factors, and for paranoia measurement using pre-defined and phenomenological assessment methods will then be presented. The chapter will conclude by considering how the current hypotheses attempt to address the identified gaps in the literature.

1.2. Paranoia

1.2.1. Definition

Paranoid cognitions have been described as everyday psychological experiences rather than just a diagnostic symptom indicative of mental illness (Ellett et al., 2003). The common occurrence of paranoid thinking in the general population (Freeman, Garety, Bebbington, Smith, Rollinson, Fowler, et al., 2005) is consistent with a paradigm shift whereby the prevalent emphasis on categorical/diagnostic approaches to mental health difficulties has been gradually replaced by an increased interest in dimensional/continuum views of experience (Esterberg & Compton, 2008). In fact, there is now robust evidence supporting the idea that paranoia exists on a continuum, ranging from milder variants (e.g. mistrust and suspicion) to severe forms (e.g. persecutory delusions) (Freeman et al., 2010; van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009).

A number of issues have been highlighted as posing challenges to the definition of paranoia. One challenging issue concerns the difficulties with judging 'falsity' of paranoid beliefs if adopting a traditional conceptualisation to clinically define paranoia (Heckers, Barch, Bustillo, Gaebel, Gur, Malaspina, et al., 2013). According to this traditional view, paranoid thinking is defined as a broad range of *unfounded, unsupported, or unwarranted beliefs* that one is or will be subject to harm by someone or something (e.g. an organisation, force or power) (e.g. National Institute of Mental Health: NIMH, 2009; World Health Organisation: WHO, 1992). However, reliable assessment of unfounded beliefs is rather difficult given the higher likelihood that previous

real victimisation experiences underlie their occurrence (Fowler, Freeman, Smith, Kuipers, Bebbington, Bashford, et al., 2006), and the considerable variation characterising the content of such beliefs (Freeman, 2008).

Another issue surrounding the definition of paranoia is that it has become increasingly apparent that paranoia is a complex and multidimensional phenomenon (Ellett et al., 2003). This is also consistent with Freeman's (2007) view of the individual variability in a range of factors characterising persecutory delusions, including content of delusional belief(s), degree of conviction, distress, and resistance to change. Consequently, calls have been made for research to examine the phenomenology of paranoid experiences and how the different dimensions characterising such experiences relate to other psychological factors/processes (Campbell & Morrison, 2007; Freeman, 2007).

The adoption of a continuum approach has also led to new challenges in defining paranoia, as the term is commonly used to incorporate a wider set of experiences, ranging from nonclinical phenomena (i.e. paranoid-like experiences/beliefs/thinking), to clinically diagnosable variants (i.e. paranoid or persecutory delusions). Consequently, there is lack of clarity linked to this diverse terminology, whereby there is no consensual agreement as to how each term is defined, related to or distinguishable from one another (Freeman, 2007).

The definition of paranoia has also faced the challenging task of successfully establishing its distinctiveness from other anxiety-related disorders such as social anxiety, given that both conditions involve perceptions of interpersonal

threat (Ellett et al., 2003). Both paranoid and socially anxious individuals share concerns about being subject to negative judgement by others, scanning for socially threatening cues in the environment, and viewing other people's motives and behaviour as directed towards oneself (Rietdijk, van Os, de Graff, Delespaul, & van der Gaag, 2009). Nevertheless, in paranoia, intentional malevolence of others is the main source of social threat, whereas in social anxiety, the individual's own social inadequacies are most characteristic of such threat (Gilbert, Boxall, Cheung, & Irons, 2005).

To address the difficulties highlighted above, Freeman and Garety (2000) advanced a more detailed definition of paranoia (full details in Table 1 below), whereby a specific set of criteria helps identify what constitutes a paranoid belief.

Table 1. Criteria for identifying paranoid beliefs (Freeman & Garety, 2000)

Criteria A and B must be met:
<hr/>
A. The individual believes that harm is occurring, or is going to occur, to him or her
B. The individual believes that the persecutor has the intention to cause harm
There are a number of points for clarification:
<hr/>
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 individual

3. The individual must believe that the persecutor, at present or in the future, will attempt to harm him or her

4. Delusions of reference do not count within the category of persecutory beliefs

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

Key advantages attached to Freeman and Garety's (2000) definition concern

a) the *normalisation* of paranoia, as persecutory beliefs are not viewed as evidence of mental illness and/or intrinsically representative of unfounded/false or delusional experiences; b) establishing its differentiation from other anxiety disorders such as social anxiety, and c) clarifying its phenomenological variability by incorporating different situations/thoughts/feelings underlying fear of intentional harm by others.

These particular aspects of Freeman and Garety's (2000) definition make it an appropriate and useful definition within the context of this thesis, which concerns the investigation of paranoia in a nonclinical student sample. Thus, in keeping with the continuum view, the term 'nonclinical paranoia' will be used within the current thesis to refer to paranoid-like thoughts, whereas 'persecutory delusions' will refer to clinical symptoms of paranoia.

1.2.2. The 'continuum view'

Underlying current understanding of psychosis-related symptoms (including paranoia) are categorical and continuum approaches to psychopathology. The categorical approach has been incorporated into diagnostic systems such as

the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; American Psychiatric Association, 2013) and the International Classification of Diseases (ICD; WHO, 1992), currently on its 11th revision (Gaebel, Zielasek, & Cleveland, 2013). Inherent to these systems is the idea that symptoms characterising clinical disorders qualitatively differ from those seen in nonclinical populations. Although the categorical approach has been instrumental in advancing knowledge of the aetiology, treatment and management of clinical disorders (Lawrie, Hall, McIntosh, Owens, & Johnstone, 2010), some of its key limitations have also been highlighted. The latter include the risk of overlooking inter-individual symptom heterogeneity and failure to account for high comorbidity between disorders (Lawrie et al., 2010).

In contrast, the continuum approach suggests that psychopathology experiences are not qualitatively different from “normal” experience (Costello, 1994) and emphasises the value of studying individual symptoms as opposed to broad and heterogeneous diagnostic categories. Within this approach, a distinction between the phenomenological and the vulnerability view has also been made (Costello, 1994). In the context of psychosis, the phenomenological view stipulates that compared to clinical populations, less intense, persistent and debilitating psychotic symptoms are experienced by nonclinical populations, whereas the vulnerability view suggests that frequency and severity of ‘psychosis like’ symptoms index within-person vulnerability to subsequent psychotic disorder.

The continuum view has been empirically supported by research indicating that psychological mechanisms in both healthy and clinical populations are not as dissimilar from each other as previously thought (Claridge, 1987; McGovern & Turkington, 2001). The dimensional account of delusions has also been supported by large survey studies examining the demographic, economic, social and clinical correlates of paranoia in the general population (e.g. Freeman et al., 2011; Bebbington, McBride, Steel, Kuipers, Radovanovic, Brugha, et al., 2013). For example, in their 2011 British survey study which assessed 7281 participants, Freeman and colleagues identified a hierarchy of paranoia containing three different levels of severity, with less frequent but more severe paranoid beliefs building on from more common but milder variants. The authors also reported that across all levels of severity (i.e. from suspiciousness to persecutory delusions), paranoia was associated with younger age, lower cognitive functioning, physical health problems, social stressors (e.g. poverty) and psychiatric symptoms (e.g. suicidal ideation). As suggested by these findings, nonclinical paranoia can significantly impact individuals' health, emotional wellbeing and social functioning (Freeman et al., 2011). These findings are also consistent with evidence from other studies (e.g. Combs, Michael, & Penn, 2006; Freeman et al., 2010; Vermissen, Janssen, Myin-Germeys, Mengelers, a Campo, van Os, et al., 2008).

Research has also identified a range of affective and cognitive variables, which although postulated to contribute to formation and maintenance of clinical paranoia, also appear implicated in nonclinical paranoia. For example, both cross-sectional and experimental research with nonclinical populations

has found that anxiety, depression, low self-esteem, attentional biases to threat related information and attributional biases are all associated with paranoia (e.g. Allen, Freeman, Johns, & McGuire, 2006; Cohen, Magai, Yaffee, & Walcott-Brown, 2004; Fenigstein & Venable, 1992; Freeman et al., 2005; see also section 1.3. below, p. 23 below).

Longitudinal research has also tested the dimensional view of paranoia by investigating whether nonclinical paranoid ideation can be a precursor for subsequent psychotic disorder. In one study, 25% of 11 year olds reporting mild psychotic symptoms were given a clinical diagnosis of psychotic disorder when aged 26 years old (Poulton, Caspi, Moffitt, Cannon, Murray, & Harrington, 2000). The authors concluded that the mechanisms underlying the beliefs endorsed by the children who participated in their study were unlikely to be qualitatively different from those underlying the beliefs experienced by the same individuals at 26 years of age. Instead, the authors proposed that their findings are suggestive of shifts in psychotic-related symptoms along a continuum of severity. Similarly, Hanssen, Bak, Bijl, Vollebergh, and van Os (2005) reported persistence rates of 16% for subclinical psychotic symptoms over a two-year period, with half of these transitioning from subclinical to clinical psychotic states. This finding is also consistent with a follow-up study reporting transition rates between 8-10% (Wiles, Zammit, Bebbington, Singleton, Meltzer, & Lewis, 2006). Together, this evidence suggests that although a proportion of the population may experience paranoia that will never reach clinical severity levels, a lower proportion of individuals will experience a continuation from mild to more severe paranoia over time.

Notwithstanding the substantial evidence supporting the continuum view (e.g. Freeman et al., 2005; van Os et al., 2009), the debate surrounding the categorical vs. dimensional nature of psychotic symptoms is far from being resolved (David, 2010). Arguments in favour and against both approaches have been put forward along with the recognition that a complementary approach combining both perspectives may help disentangle the complex nature of psychotic-related symptoms more effectively (DeRosse & Karlsgodt, 2015). Whilst the categorical approach may be particularly useful in identifying risk factors for psychotic disorders by examining heterogeneous clinical samples, the dimensional or continuum approach could be more suitable to advance knowledge of protective factors or resilience to these disorders by examining healthy populations exhibiting sub-clinical psychotic symptoms (DeRosse & Karlsgodt, 2015). Evidence supporting this view includes findings from Linscott and Van Os' (2010) study, which systematically reviewed research on the prevalence of psychotic symptoms in the general population. The findings supported the continuum approach in that psychotic symptoms may not be restricted to diagnostic categories but rather appear to merge with less severe/sub-clinical and frequent experiences in the general population. However, support for the categorical approach was also found in that within the general population, different subgroups presenting with different levels of risk for psychotic disorder were also identified, therefore implying such risk is discontinuous with normality (Linscott & Van Os, 2010).

In summary, the research reviewed above broadly supports the idea that an attenuated form of paranoia is commonly experienced in the nonclinical population. A key implication of studying paranoia in nonclinical samples is that it can offer new insights into developmental processes and treatment of clinical delusions. Furthermore, this methodological approach is also advantageous in that it avoids several difficulties inherent in studying clinical populations, including confounding iatrogenic factors such as medication effects, institutionalisation, and cognitive decline (Galbraith, Manktelow, & Morris, 2008; McKay, Langdon, & Coltheart, 2005).

1.2.3. How common is paranoia?

Estimating the prevalence of paranoia in the general population is challenging given that rates vary depending on which measures are used to assess this construct and the characteristics of the samples studied (Freeman, 2007). Bearing this in mind, prevalence rates ranging between 1% (Eaton, Romanoski, Anthony, & Nestadt, 1991) and 18.6% (Freeman et al., 2011) have been reported. Notably, evidence from a systematic review of all prevalence studies undertaken between 1950 and 2007 showed that 1-3% of the general population experience paranoid beliefs of similar severity to those found in clinical groups (van Os et al., 2009). This review also identified different prevalence rates regarding presence of subclinical delusions associated with social and emotional difficulties (4%), and milder paranoid ideation (8%) (van Os et al., 2009). These findings also seem to apply to UK populations, as shown by a British study of a large representative sample of 8580 participants aged 17 to 64 years old (Johns, Cannon, Singleton, Murray,

Farrell, Brugha, et al., 2004). In this survey, 9% of the general population reported mild paranoid ideation (Johns et al., 2004). More recently, a study using data from the 2000 British National Psychiatric Morbidity Survey (total N = 8576) reported frequencies of different types of paranoid ideation ranging from less than 2% to almost 30% (Bebbington et al., 2013). These findings led the authors to conclude that “paranoia is so common as to be almost normal” (Bebbington et al., 2013, p. 425).

Higher prevalence rates than those found in general population studies have also been reported by research examining paranoid ideation in student samples (Lincoln & Keller, 2008). For example, Ellett et al. (2003) found 47% of their student population (N=324) reported an experience of paranoia. Similarly, in a sample of 1202 English university students, 42% reported feeling negative comments about them were circulated on a weekly basis (Freeman et al., 2005). These differences in prevalence rates between both types of sample are potentially due to students not being fully representative of the general population in that they often differ from the latter on key factors such as age, education, and gender (Freeman, 2006). Nevertheless, student samples are easy to recruit which maximises opportunities for collecting further evidence supporting the continuity view, as well as identifying factors that elicit and maintain paranoia in nonclinical groups (Lincoln & Keller, 2008). Such opportunities are also valuable in their potential for helping us to understand the prevention and treatment of more severe levels of paranoia (Freeman et al., 2005).

1.3. Research on correlates and predictors of paranoia: theoretical and clinical relevance

Consistent with the continuity view, research has shown that clinical and nonclinical paranoia share a number of correlates and predictors (see section 1.2.2. above). Commonly identified correlates include socio-demographic and environmental variables such as age, male gender, cannabis use, low socio-economic status and mental health difficulties (Freeman et al., 2011; Johns et al., 2004; van Os, Hanssen, Bijl, & Ravelli, 2000).

Across the paranoia continuum evidence showing similarities in factors theoretically implicated in delusion formation and maintenance, has also been obtained. Most of this evidence concerns studies focusing on affective variables (e.g. anxiety and depression) or specific types of cognitive factors (e.g. jumping to conclusions and attributional biases) (Freeman et al., 2005; Freeman, Pugh, & Garety, 2008a; Kesting, & Lincoln, 2013), whereas less attention has been paid to other cognitive processes postulated to trigger and perpetuate delusional distress, as well as behavioural facets potentially involved in this process (Lincoln, Reumann, & Moritz, 2010; Moritz, & van Quaquebeke, 2014). In light of the recurrent and distressing nature of nonclinical paranoia (Ellett et al, 2003; Freeman et al., 2011), and bearing in mind the potential for putative causal and/or maintenance factors to delusional thinking to be translated into effective treatments (Freeman & Garety, 2014), advancing knowledge in this area not only has theoretical value but may also have key clinical implications.

In fact, a recent literature review covering studies of nonclinical and clinical paranoia since 1999, highlights that although this body of empirical work has contributed to advancing knowledge of delusion-related processes, there are still specific areas of inquiry that need to be addressed further. Specifically, recommendations are made for future research to focus on a range of theoretically relevant cognitive factors to paranoia including worry-related processes (e.g. rumination), negative views about the self and others (including feelings of interpersonal vulnerability), and processes thought to increase and maintain delusional distress at the cognitive (e.g. non-mindful coping) and behavioural levels (e.g. avoidance behaviours) (Freeman & Garety, 2014; Garety & Freeman, 2013). Increased understanding about how such processes relate and/or contribute to the development and/or maintenance of paranoia in both clinical and nonclinical populations can benefit the development of symptom-specific and theoretically-driven interventions (Freeman, 2011). Addressing this issue is currently pressing in light of the overall limited effectiveness of psychological interventions targeting clinical psychotic symptoms (Garety & Freeman, 2013). This is the case of first generation psychological treatments for psychosis such as Cognitive Behaviour Therapy (CBT), which have shown only a small to moderate effect size (Freeman, 2011). This is not entirely surprising given that traditionally, CBT's particular emphasis is on shifting/changing the clients' delusional beliefs, a notably difficult task to achieve (Oliver, O'Connor, Jose, McLachlan, & Peters, 2012a).

Representing a step forward from traditional approaches to psychosis treatment, are more integrative interventions which rather than exclusively focusing on reducing symptoms (i.e. the psychotic experience itself), are aimed instead at mitigating symptom-related distress by encouraging the development of adaptive responses (at cognitive, affective and/or behavioural levels) to distressing psychotic experiences (Chadwick, 2014; Garety & Freeman, 2013; Hepworth, Startup, & Freeman, 2011; Oliver et al., 2012a). Examples of such interventions include 'third wave' behavioural and cognitive therapies such as Mindfulness-based programmes (Chadwick, 2014) and Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) approaches. Central to these approaches is the notion that encouraging the development of adaptive mindful self-focused attention (as opposed to ruminative self-focus) and acceptance of present-moment experience can promote a healthier relationship with one's difficult and painful experiences, which in turn leads to a reduction in distress and increased emotional and behavioural self-regulation (Baer, 2009; Hayes, Follette, & Linehan, 2011). In other words, the tendency to inflexibly and repetitively focus on the content of unpleasant internal and/or external stimuli and being non-accepting of such experiences by engaging in a range of cognitive, emotional and/or behavioural strategies to avoid or suppress them (a process also known as experiential avoidance), are the hypothesized key mechanisms associated and contributing to emergence and maintenance of psychological distress. In this sense, mindfulness and acceptance-based approaches to treatment are expected to be beneficial for individuals presenting with a range of psychological difficulties characterized by rigid and inflexible self-focused

attentional styles, a general tendency to ruminate and increased propensity to engage in maladaptive behaviour as attempts to reduce distress (Baer, 2009).

In relation to psychosis-related symptoms, there is an emerging evidence-base suggesting the potential role of experiential avoidance-related processes such as those highlighted above in contributing to onset and maintenance of delusional ideation in both clinical and nonclinical samples (e.g. Goldstone, Farhall & Ong, 2011; Udachina, Thewissen, Myin-Germeys, Fitzpatrick, O’Kane, & Bentall, 2009; Udachina, Varese, Myin-Germeys, & Bentall, 2014). Collectively, this evidence shows that more experientially avoidant individuals are also more likely to experience distressing delusions, regardless of whether they have been given a psychosis diagnosis (Godstone et al., 2011), and experiential avoidance predicts future occurrence of delusional thinking in both clinical and nonclinical populations (Udachina et al., 2009; Udachina et al., 2014). Adding to this evidence is the outcome of clinical intervention trials suggesting the effectiveness of mindfulness and acceptance-based treatments in reducing distress from psychotic symptoms by increasing a flexible, non-judgemental and accepting stance towards these undesirable experiences (Bach & Hayes, 2002; Gaudiano & Herbert, 2006). However, the evidence-base for these ‘third wave’ approaches to psychosis treatment is still developing as well as relying on the hypothesised association between psychosis symptoms (including paranoia) and experiential avoidance related processes, which is yet to be comprehensively researched (Cavanagh, Strauss, Forder, & Jones, 2014; Chadwick, 2014; Udachina et al., 2009). Furthermore, of the range of maladaptive cognitive, affective and/or

behavioural responses to distressing experiences (e.g. rigid self-focused attentional style, rumination, problem behaviours) characterising processes of experiential avoidance, it is currently unclear which of these responses are more consistently associated with and predictive (both cross-sectionally and prospectively) of psychotic symptoms along the continuum of severity. As previously mentioned, pursuing this line of inquiry may not only help to identify specific factors reliably associated with distressing psychotic symptoms but can also potentially inform which domains may constitute key intervention targets (Garety & Freeman, 2013).

In light of the considerations above, this study will focus on four main variables implicated in the emergence and maintenance of paranoid cognitions by theoretical models which implicitly and/or explicitly emphasise experiential avoidance as one of the underlying mechanisms driving this process (Chadwick, 2006; Freeman et al., 2002; Freeman, Garety, Kuipers, Fowler, Bebbington, & Dunn, 2007). These four variables refer to three specific cognitive processes – a self-focused attentional style known as self-consciousness, rumination and mindfulness – and a behavioural factor - problem behaviours. The less well-established relationship between clinical and nonclinical paranoia and each of these factors and their yet poorly understood role in the development and persistence of paranoid thinking is the main focus of discussion in the following sections below.

1.3.1. Self-consciousness

Self-consciousness describes a rigid and ruminative attention style, whereby one is unable to defocus from his/her own internal and/or external experiences, especially if these are perceived as having a negative impact upon the individual (McKenzie & Hoyle, 2008). In earlier writings, two distinct forms of this self-focussed attentional style were identified: private and public self-consciousness (Fenigstein, Sheier, & Buss, 1975). Whereas private self-consciousness concerns focusing attention on internal aspects of the self such as values or personal motives, public self-consciousness refers to focusing on aspects of the self, which are presented to others such as appearance and social behaviour (Fenigstein et al., 1975). A number of studies have established a reliable association between high self-consciousness and diverse psychopathology including mood and anxiety disorders (Morrison & Haddock, 1997).

Early clinical observations of individuals with paranoid personalities (Kraepelin, 1915; cited in Fenigstein & Vanable, 1992) suggested that high self-consciousness may relate to paranoia. This association fits in with an influential model of delusion formation and maintenance, which implicates high self-consciousness as having a key role in this process (Freeman et al., 2002). According to this model, anxiety gives rise to threat beliefs underlying paranoid thinking and leads to negative interpretations of ambiguous events; these effects are in turn exacerbated and maintained by high self-consciousness, whereby sustained and inflexible attentional focus on the self, increases the sense of self as a target of others' malicious thoughts or actions

(Freeman et al., 2007). Consistent with this view is Laing's (1969) notion of suspiciousness as a defining characteristic of self-consciousness, whereby increased attentiveness to oneself as presented to others may contribute to emergence of irrational misinterpretations linked to feelings of over-exposure and/or vulnerability (von Gemmingen, Sullivan, & Pomerantz, 2003).

There is some evidence supporting the theoretical relevance of self-consciousness to clinical psychotic presentations or symptoms (e.g. Andersson, Orrell & Puente, 1984; Perona-Garcelan, Cuevas-Yust, Garcia-Montes, Perez-Alvarez, Ductor-Recuerda, Salas-Azcona, et al., 2008; Smari, Stefansson, & Thorgilsson, 1994). However, most of the research on self-consciousness and paranoia has been in nonclinical populations. For example, in their three-part study examining the association between self-consciousness and paranoia in a student sample (N=581), Fenigstein and Venable (1992) reported: a stable and strong association between public self-consciousness and paranoia (part I); participants high in trait paranoia were more likely to report feelings of being observed than those with low levels of this trait (part II), and when experimentally manipulating self-consciousness by allocating participants to a high vs. low self-conscious group, those in the former group were more likely to feel that they were being observed than participants in the latter group (part III). These findings along with Fenigstein's (1984) previous work, led the authors to suggest that public self-consciousness significantly influences the extent to which individuals make paranoid inferences about others' motivations and behaviour, by perceiving themselves as being the intentional target of such motives or actions. This

distorted perception or 'idea of reference', also known as 'the self-as-target' bias, was also highlighted as corresponding to an information processing style characterising clinical paranoia (Greenwald, 1980; cited in Fenigstein & Venable, 1992).

Correlational studies in nonclinical samples have provided additional evidence of an association between public self-consciousness and trait paranoia (e.g. Combs & Penn, 2004; Martin & Penn, 2001; von Gemmingen et al., 2003). Furthermore, Fenigstein and Venable (1992) also used an experimental design in their three-part study. Therefore, their findings allow some degree of causality to be inferred regarding the association between self-consciousness and paranoia and the underlying feeling of being watched characterising these phenomena. Further evidence supporting a potentially causal relationship between self-consciousness and paranoia has also been obtained in a study, which showed experimentally induced high self-consciousness subsequently triggered increases in trait paranoia (Ellett & Chadwick, 2007).

Regarding the association between self-consciousness and state paranoia, to date only Freeman, Dunn, Fowler, Bebbington, Kuipers, Emsley, et al. (2013) have shown evidence of such a link. Using a clinical sample of 130 delusional patients, this study examined the relationship between state paranoia and a range of affective and cognitive variables (including self-consciousness). Findings showed that higher state paranoia was associated with higher self-consciousness (both private and public) as well as with higher levels of threat anticipation, negative interpretation of ambiguity, and negative self-beliefs.

Furthermore, when controlling for anxiety and depression, the association between state paranoia and the three abovementioned cognitive processes (i.e. threat anticipation, ambiguity interpretation and negative self-beliefs) no longer remained significant. Instead, only the association of state paranoia with public self-consciousness and attention on appearance to others remained significant when controlling for affective variables (Freeman et al., 2013). Although causality cannot be inferred from this cross-sectional study, its findings do nevertheless highlight the strong link between current paranoid thinking and an attentional style marked by greater sensitivity to how one is coming across to others. However, the association between state paranoia and public self-consciousness in nonclinical paranoia remains unknown. Furthermore, to obtain more conclusive evidence of the theoretical contribution of self-consciousness to future occurrence of paranoia (both at trait and state levels), longitudinal designs examining the prospective relationship between these variables are needed.

Freeman et al. (2013) also highlight the importance of studying a range of theoretically relevant cognitive processes in relation to paranoid thinking so as to identify which of these processes are key in triggering and/or maintaining psychotic symptoms (including paranoia) and therefore help inform clinical assessment and interventions. This call for increased theoretical integration has been adopted by recent studies such as the investigation by Perona-Garcelan, Garcia-Montes, Lopez-Jimenez, Rodriguez-Testal, Ruiz-Veguilla, Ductor-Recuerda, et al. (2014). In this nonclinical study, results showed that students with high hallucination proneness not only had significantly higher

levels of self-consciousness (both private and public) but also had lower levels of mindfulness compared to the low hallucination proneness group. Furthermore, a stronger negative correlation was found between public self-consciousness and mindfulness than between the latter and private self-consciousness. Perona-Garcelan et al.'s (2014) findings are also relevant to paranoia in that they are consistent with models of distressing reactions to psychotic experiences (including persecutory delusions), which emphasise the role of adaptive and maladaptive responses which either ameliorate/minimise the negative impact of these painful sensations (e.g. mindfulness) or serve to increase/maintain the distress that accompanies them (e.g. ruminative self-focused attention) (Chadwick, 2006). Nevertheless, public self-consciousness and other cognitive factors theoretically implicated in delusion maintenance such as processes of mindfulness and rumination (Chadwick, 2006) are yet to be examined together in terms of their relationship with paranoia.

1.3.2. Rumination

Although theoretical conceptualisations of rumination vary across different research areas, a commonly used definition describes this construct as a process of responding to negative affect by passively and repetitively thinking about personal problems, their causes and consequences (Nolen-Hoeksema, 1991). Rumination has also been defined as a *repetitive negative thinking* (RNT) process (Papageorgiou & Wells, 2003) which, despite of its significant overlap with other forms of perseverative negative thinking such as worry, has nevertheless been shown to be a distinct construct from such related

processes (e.g. Watkins, Moulds, & Mackintosh, 2005). Whereas worry is characterized by anticipation of future threats, rumination focuses on negative past experiences and difficult emotions (Dickson, Ciesla, & Reilly, 2012).

Rumination has been shown to be transdiagnostic in nature, affecting a range of Axis I and II disorders, including affective and anxiety disorders as well as psychosis (Harvey, Watkins, Mansell, & Shafran, 2004).

Contemporary models of persecutory delusions identify rumination as an anxiety-related process maintaining threat beliefs and contributing to increased delusional distress (Chadwick, 2006; Freeman et al., 2007).

According to one influential theoretical account, once suspicious thoughts are generated in the context of increased anxiety, they are likely to be kept in mind and become catastrophic in content through further appraisals of the threat belief(s) (i.e. rumination) a process that in turn, gives rise to and perpetuates the distress linked to such experiences (Freeman et al., 2007). A similar model has also been proposed, which conceptualises rumination as one of the key dysfunctional coping strategies or distressing reactions to psychotic experiences (Chadwick, 2006). According to this model, rumination is a habitual reaction to unpleasant psychotic experiences, whereby individuals 'get stuck' in repetitive, circular and draining efforts to either avoid or resist/confront such distressing experiences (Chadwick, 2006). Consistent with Chadwick's (2006) view is the suggestion that rumination may be a core component of *experiential avoidance* or *unwillingness to experience negative thoughts, feelings or bodily sensations* (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). In support of both Chadwick's (2006) and Hayes et al.'s

(1996) conceptualisation of rumination is evidence from a number of studies showing its association with: a desire to disengage from/avoid problems (Dickson, Reilly, & Ciesla, 2011); non-acceptance (Liverant, Kamholz, Sloan, & Brown, 2011); dwelling on past stressful experiences (Watkins, 2004); evaluative brooding (Moberly & Watkins, 2008) and negative cognition (Ciesla & Roberts, 2007).

Regarding the hypothesised relationship between rumination and paranoia, evidence supporting Freeman et al.'s (2002) and Chadwick's (2006) theoretical views has also been obtained. For example, correlational research has shown that paranoid thinking is associated with rumination in nonclinical samples (Simpson, McGregor, Cavanagh, & Dudley, 2012). RNT has also been shown to predict both new occurrences and the persistence of existing paranoia in the general population (Freeman et al., 2011). Compared to other forms of RNT however, research has predominantly failed to consider the potential role of rumination in triggering and maintaining persecutory ideation (Martinelli, Cavanah, & Dudley, 2013; Simpson et al., 2012). Recently, a clinical study attempted to address this issue by investigating the prospective and dynamic relationship between persecutory delusions and rumination (Hartley, Haddock, Vasconcelos e Sa, Emsley, & Barrowclough, 2013). Results showed that in the short-term (i.e. over 6 days), antecedent momentary levels of rumination predicted current delusional ideation and distress, thus adding weight to the idea of rumination as a cognitive process which causes/influences persecutory ideation (Hartley et al., 2013).

To the author's knowledge, two studies have investigated the association between rumination and nonclinical paranoia. In the first study, the relationship between rumination, safety behaviours (e.g. avoidance) and paranoia was cross-sectionally examined in a nonclinical (N=133) student sample (Simpson et al., 2012). Paranoia strongly correlated with both rumination ($r = .46$) and safety behaviours ($r = .55$), associations that were not accounted for by negative affect (i.e. anxiety and depression). Furthermore, when combined with age, gender and negative affect, rumination and safety behaviours explained 49% of the variance of paranoia. As for the independent contribution of rumination to paranoia over and above the other variables, rumination accounted for 12% of the variance, while safety behaviours accounted for 18% of the variance (Simpson et al., 2012). In the second study, which used an experimental design, paranoia was induced in a student sample (N = 37) and then measured before and after they engaged in a guided cognitive strategy task (i.e. rumination vs. distraction conditions) to examine if rumination (compared to distraction) would maintain or exacerbate state paranoia (Martinelli et al., 2013). As predicted, results showed that following a paranoia induction procedure rumination was associated with maintenance of state paranoia whereas distraction was associated with a decrease in paranoid thinking. Although this study makes a significant contribution towards demonstrating the potential causal relationship between rumination and nonclinical paranoia, its experimental design and paranoia induction procedure limits the generalisability of its findings to 'real life' experiences. This limitation can be addressed by adopting more ecologically valid approaches, which allow prospective examination of the relationship

between rumination and paranoia in the context of daily life. Whilst this strategy has already been used in relation to clinical paranoia (e.g. Hartley et al., 2013), naturalistic investigation of the role of rumination in triggering and maintaining nonclinical paranoia over time is yet to be conducted.

As discussed earlier, cognitive factors other than rumination such as self-consciousness and mindfulness are also implicated in delusion formation and maintenance (Chadwick, 2006; Freeman et al., 2002). These theoretical accounts advocate a multifactorial explanation of paranoid delusions, such that different cognitive processes play a combined role in triggering and maintaining these distressing experiences (Freeman, 2007). Although increased understanding of these hypothesised mechanisms of influence can be achieved by focusing on the concurrent and prospective relationship between paranoia, rumination, self-consciousness and mindfulness, no study has addressed this issue to date.

1.3.3. Mindfulness

Mindfulness describes an inherent human capacity to be aware of one's moment-to-moment experience non-judgementally and with acceptance (Keng, Smoski, & Robins, 2011). This natural/dispositional ability, although amenable to change via training, characterises both untrained and trained persons (Brown, Ryan, Loverich, Biegel, & West, 2011). Although overall consensus regarding the definition of mindfulness is yet to be attained (Keng et al., 2011), for the purposes of the current study, Kabat-Zinn's (2003) definition was adopted - "the awareness that emerges through paying

attention on purpose, in the present moment, and non-judgementally to the unfolding of experience moment by moment” (p. 145).

Several measures have been employed depending on whether mindfulness is conceptualized as a single (e.g. Brown & Ryan, 2003) or multifaceted construct (e.g. Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). To address this issue, Baer and colleagues (2006) developed the Five Facet Mindfulness Questionnaire (FFMQ) after examining the facet structure of mindfulness. This self-report measure of dispositional mindfulness has become increasingly used in research (Williams, Dalgleish, Karl, & Kuyken, 2014).

According to Abba, Chadwick, and Stevenson (2008), mindfulness aims to change an individual’s response to their experience rather than changing the experience itself. This has important implications when considering evidence from clinical studies suggesting that it is not the psychotic symptoms *per se* (i.e. voices) which cause distress, but rather how one relates to this experience (Romme, Honig, Noorthoom, & Escher, 1992). Chadwick’s (2006) model illustrates mindful and non-mindful ways of responding to psychotic experiences. Non-mindful responses involve one’s tendency to either avoid or get lost in reacting to such experiences by engaging in rumination and/or confrontation (see section 1.3.2. above), experiential avoidance and negative judgement. Such reactions correspond to dysfunctional coping strategies characterizing psychotic individuals (e.g. Birchwood & Chadwick, 1997) and have also been implicated in the maintenance and increase of a range of psychopathology outcomes (e.g. Broderick, 2005; Campbell-Sills, Barlow,

Brown, & Hofmann, 2006; Sloan, 2004). In contrast, the model postulates that mindful responses to psychotic sensations, involve maintaining *decentred* awareness of these experiences, accepting them just as they are and not reacting to them. In this sense, *decentred* awareness is synonym of *experiential acceptance*, which is characterised by openness and non-resistance to experiencing painful thoughts and emotions (Chadwick, 2006).

In support of Chadwick's (2006) model, evidence from intervention studies indicate the beneficial role of mindfulness in reducing the negative impact of psychosis-related symptoms (including paranoia) both in clinical (Chadwick, Hughes, Russell, Russell, & Dagnan, 2009; Khoury, Lecomte, Gaudiano, & Paquin, 2013) and nonclinical samples (Collip, Geschwind, Peeters, Myin-Germeys, van Os, & Wichers, 2013a; Langer, Cangas & Gallego, 2010).

Other than intervention studies, research has also found that non-judgemental acceptance of experience (i.e. a mindfulness-related construct) predicted less emotional resistance to and behavioural engagement with voices among individuals experiencing persistent auditory hallucinations (Morris, Garety, & Peters, 2014). Brett and colleagues (Brett, Heriot-Maitland, McGuire, & Peters, 2014) also found that lower distress to psychotic-like anomalous experiences was predicted by 'neutral and accepting responses' (as opposed to 'controlling and reactive' responding) in a sample combining clinical (i.e. diagnosed) and nonclinical (i.e. 'at risk' and 'undiagnosed') populations (Brett et al., 2014). A nonclinical study also examined mediating and moderating effects of negative schemas (i.e. negative view about oneself and others), mood (i.e. anxiety and depression), and psychological flexibility (i.e. a proxy

measure of mindfulness) on delusional ideation (Oliver et al., 2012a). Findings suggested the potential role of psychological flexibility in protecting individuals against delusional ideation in that the indirect effect of negative schemas upon delusions through anxiety was shown to be conditional on psychological flexibility. In other words, more psychologically flexible individuals are less likely to experience distressing delusions, even in the context of increased anxiety and negative thoughts about themselves and others (Oliver et al., 2012a).

Apart from intervention studies, the evidence presented above is cross-sectional in nature and therefore does not allow causality inferences to be made. However, one prospective study has been carried out focusing on the predictive association between mindfulness and nonclinical delusions over time. The findings showed that mindfulness not only predicted less delusional ideation distress over a 6 month-period but also mediated the impact of negative schemas on subclinical delusions (Oliver, McLachlan, Jose, & Peters (2012b)). In addition to Oliver et al.'s (2012b) study, research adopting naturalistic prospective designs to examine the hypothesised causal links between mindfulness-related processes and psychotic symptoms in both clinical and nonclinical samples is also starting to emerge. Findings from relevant naturalistic prospective studies include: an association between 'decentring abilities' and less psychotic-related distress and disruption to functioning in the context of daily life (Peters, Lataster, Greenwood, Kuipers, Scott, Williams, et al., 2012); a temporal association between experiential acceptance and quality of life among psychotic individuals (Vilardaga, Hayes,

Atkins, Bresee, & Kambiz, 2013), and the increased likelihood that paranoid students engage in daily avoidant (as opposed to mindful) coping than a 'non-paranoid' student group (Udachina et al., 2009).

In summary, the evidence reviewed above suggests mindfulness ability may protect individuals against distressing paranoid thoughts, by helping the person to *decenter* from such thoughts, whereby these experiences are viewed objectively, and in an accepting and non-judgemental way. However, the contribution of mindfulness to emergent and/or persistent paranoid experiences when compared to other theoretically relevant cognitive processes (e.g. self-consciousness and rumination) remains unknown. Examining the temporal and dynamic relationship between paranoia, mindfulness and other cognitive processes will be particularly useful given that similarly to its clinical counterpart, subclinical paranoid beliefs negatively impact subjective wellbeing (Freeman et al., 2005; Freeman et al., 2011).

1.3.4. Problem behaviours

The term 'problem behaviours' refers to a range of behaviours that have been identified clinically and by research as problematic/maladaptive, commonly co-occurring, transdiagnostic and socially concerning (e.g. aggression, self-harm and drug misuse; Kingston, Clarke, Ritchie, & Remington, 2011).

Theoretical accounts highlight the functional similarity of diverse problem behaviours in that they may represent attempts at emotional regulation by temporarily reducing aversive internal states (Hayes et al., 1996). Similarly, influential models of delusion formation and maintenance conceptualise behavioural responses such as avoidance (e.g. diverting attention from painful

thoughts) and misusing substances as either 'avoidant/safety' behaviours (Freeman et al., 2007) or as part of a process of experiential avoidance (Chadwick, 2006) in that they constitute attempts at reducing the impact of threat beliefs by disconnecting from and/or changing the unpleasant delusional sensations. By engaging in these unhelpful behavioural responses, the person is prevented from obtaining evidence that disconfirms their threat beliefs (Freeman et al., 2007) and remains 'stuck' in a cycle of maladaptive coping which reinforces the distress caused by their persecutory ideas (Chadwick, 2006).

Evidence supporting the above theoretical views and Chadwick's (2006) model in particular, includes research showing an association between frequency of paranoid cognitions and "avoidant coping" in clinical and nonclinical populations (da Motta, Corvalho, Pinto-Gouveia, & Peixoto, 2014; Freeman et al., 2005), and the increased tendency in both groups to engage in covert attempts to manage unpleasant psychotic-related experiences by thinking/behaving negatively in reaction to such experiences (i.e. "punishment"-based coping strategies) and/or by replacing these experiences with other anxiety-provoking thoughts (i.e. "worry"-based coping strategies) (Morrison & Wells, 2000; Morrison, Wells and Northard, 2000; Taylor, Graves, & Stopa, 2009).

Maladaptive coping with psychotic disorders and comorbid diagnoses in the form of clinically relevant problem behaviours, is also supported by cross-cultural evidence identifying these as key correlates (both cross-sectionally and prospectively) of such disorders (e.g. Gureje, Olowosegun, Adebayo, &

Stein, 2010; Kelleher & Cannon, 2010; Murphy & Brewer, 2011; Scott, Martin, Welham, Bor, Najman, O'Callaghan, et al., 2009; Sharifi, Bakhshaie, Hatmi, Faghih-Nasiri, Sadeghianmehr, Mirkia, et al., 2012). Among these different types of maladaptive behaviours, those often reported include: substance misuse (e.g. alcohol, cigarette and cannabis use), self-harming and/or suicidal behaviour, aggression, and engagement in 'dangerous activities' (Freeman, Garety, & Kuipers, 2001; Harris, Oakley, & Picchioni, 2014; MacKie, Castellanos-Ryan, & Conrod, 2011; Melo & Bentall, 2010). In addition to this evidence, other empirical work has also provided compelling evidence of a relationship between discrete problem behaviours and psychotic-related experiences (including but not specific to paranoia) at the clinical (e.g. Compton, Kelley, Ramsay, Pringle, Goulding, Esterberger, et al., 2009; Douglas, Guy, & Hart, 2009), and nonclinical (e.g. Fanning, Berman, Mohn, & McCloskey, 2011; Rossler, Hengartner, Angst, & Ajdacic-Gross, 2011) ends of the spectrum.

Of research specifically focusing on paranoia, evidence showing its association with specific problem behaviours, such as substance misuse and aggression in clinical and nonclinical populations, has led authors to suggest that behavioural dysregulation is a cardinal feature of emotional regulation deficits underlying paranoia across the continuum of severity (Lincoln et al., 2010; Lincoln et al., 2014). However, studies are yet to systematically examine the behavioural correlates of nonclinical paranoia (Lincoln et al., 2010; Simpson et al., 2012). Furthermore, existing studies have mostly focused on discrete problem behaviours, therefore failing to recognize the

comorbidity often characterizing such behaviours, whereby presence of behavioural dysregulation in one area is usually accompanied by behavioural difficulties in another area (Wupperman, Marlatt, Cunningham, Bowen, Berking, Mulvihill-Rivera, et al., 2012). Studies should therefore, move away from the overall emphasis consistently placed on a narrow range of discrete problem behaviours (e.g. either substance misuse or aggression) indexing key behavioural dysfunction linked to paranoia, as such approach excludes other emotional dysregulation-driven behaviours (e.g. self-harm and binge eating) (Kingston et al., 2011), which may also characterise and/or co-occur alongside paranoia experiences. One way of addressing this issue is for research in this area to focus on examining the association between paranoia and behavioural dysregulation in the form of a wider range of co-occurring/comorbid problem behaviours (i.e. using composite measures of this construct).

As per the recommendations above, a secondary aim of this study is therefore to investigate the relationship between nonclinical paranoia and a global/composite measure of problem behaviours. Pursuing this line of inquiry has both theoretical value and potentially useful practical/clinical application. Conceptually, the relationship between nonclinical paranoia and diverse maladaptive behaviours can potentially help strengthen/refine existing theory/models identifying common processes (e.g. experiential avoidance; emotional regulation deficits) underlying these phenomena. In terms of practical application, identifying clinically-relevant problem behaviours as a comorbid feature of paranoia has the potential to help guide standard practice

at all stages of clinical work (i.e. assessment, formulation and intervention) and may also contribute towards the development and/or implementation of tailored interventions specifically designed to target such comorbidity.

1.4. Methodological considerations

1.4.1. Correlational vs. longitudinal designs

In the previous section, a review of the literature concerning cognitive and behavioural processes, which are theoretically relevant to paranoia, was presented. The studies reviewed are part of a larger body of evidence showing similarities in correlates and predictors of paranoia across the continuum of severity (e.g. Freeman et al., 2005; Freeman et al., 2011; Bebbington et al., 2013). Notwithstanding the value of this research in clarifying commonalities between clinical and nonclinical paranoia, its predominant reliance on cross-sectional designs, limits the ability for causal inferences to be made about the potential role of a range of factors in contributing to delusion formation and maintenance (Freeman et al., 2011). Consequently, there has been a methodological shift within this area of research to designs that allow tentative conclusions about causal relationships to be made (e.g. longitudinal, experimental).

Prospective studies have used ecologically valid methods to examine the temporal relationship between paranoia and cognitive and affective processes implicated in its development and maintenance. In one study the Experience Sampling Method (ESM) was used with 158 participants with clinical and subclinical levels of paranoia, to examine the prediction of paranoid episodes

from momentary levels of emotional experiences and self-esteem occurring in the course of 1 week. The findings indicated that onset of paranoid episodes was preceded by both a decrease in self-esteem and an increase in anxiety (Thewissen, Bentall, Oorschot, a Campo, van Lierop, van Os, et al., 2011). ESM was also used to investigate the prediction of subclinical psychotic experiences from momentary assessments of stress reactivity over a period of 14 months. Results showed that persistent psychotic experiences were preceded by higher levels of emotional and daily stress reactivity, leading the authors to conclude that higher vulnerability to psychosis may result from higher stress sensitivity and more dysfunctional coping (Collip, Wigman, Myin-Germeys, Jacobs, Derom, Thiery, et al., 2013b).

Collectively, naturalistic prospective studies such as those described above, have been valuable in advancing current knowledge on the psychological mechanisms underlying the maintenance of paranoid beliefs in the context of daily life. In clinical samples, greater emphasis has been placed on contextual factors associated with affective variables and psychosis (Myin-Germeys, Delespaul, & van Os, 2005; Vilardaga et al., 2013), whereas nonclinical research has mainly focused on the association between natural variation in paranoia and temporal variability in a range of cognitive-affective factors such as negative affect (Kramer, Simons, Wigman, Collip, Jacobs, Derom, et al., 2013), self-esteem (Thewissen et al., 2011) and experiential avoidance (Udachina et al., 2009).

Overall, evidence from the studies above suggests that variability in cognitive-affective factors over time predicts subsequent occurrence of paranoid thinking, with higher variability indexing increased psychological maladjustment and lower variability indexing greater psychological wellbeing. This is consistent with findings from a recent meta-analytic review (Houben, van den Noortgate, & Kuppens, 2015) and research focusing on the dynamic relationship between psychotic-related symptoms and negative emotional processes in both clinical (e.g. Peters et al., 2012; Myin-Germeys, Peeters, Havermans, Nicolson, deVries, Delespaul, et al., 2003; Myin-Germeys et al., 2005; Collip, Myin-Germeys, & van Os, 2008), and nonclinical samples (e.g. Husky, Grondin, & Swendsen, 2004; Kramer et al., 2013; Thewissen et al., 2011).

Notwithstanding the value of the above research, the study of nonclinical paranoia from a dynamic perspective is yet to consider its temporal relationship with other theoretically relevant cognitive factors, such as those identified in the current study. Equally, the hypothesis that these cognitive processes (both at trait and state levels) may also contribute to further occurrence of paranoid thinking is yet to be examined. Furthermore, whilst most research in this area has prioritised the prediction of paranoid beliefs from momentary fluctuations in cognitive or affective variables of interest (e.g. Kramer et al., 2013; Thewissen et al., 2011), the extent to which these cognitive/affective processes may also be influenced by pre-morbid or trait paranoia is less well understood.

Besides the methodological considerations presented above, another challenging issue in paranoia research concerns the type of measures used to assess this construct; this is discussed next.

1.4.2. Pre-defined questionnaire measures vs. personal accounts

The measurement of paranoia using self-report questionnaire-based methods is prevalent in this area of research (Ellett, Allen-Crooks, Stevens, Wildschut, & Chadwick, 2013; Freeman, Pugh, Antley, Slater, Bebbington, Gittins, et al., 2008b). Of the range of available measures validated for use with nonclinical populations, the most widely used is the Paranoia Scale (PS; Fenigstein & Vanable, 1992). The PS is unidimensional in that it assesses presence or absence of persecutory ideas, and employs a broad definition of paranoia, including cognitions related to, although not specific to paranoia (e.g. depressive thoughts, ideas of reference) (Freeman & Garety, 2000). Unlike the PS, multidimensional self-report measures of paranoia such as the Paranoia Checklist (PC; Freeman et al., 2005) go beyond noting the presence/absence of paranoid thinking by also covering its content. The PC (Freeman et al., 2005) also assesses the frequency of paranoid thoughts as well as the related degree of conviction and distress.

Notwithstanding their contribution to advancing research on prevalence, content and concomitants of paranoia, most questionnaire-based methods adopt a pre-defined approach to measuring this construct. Such an approach does not take into account the phenomenological view, which emphasises subjective, idiosyncratic, personal experiences of paranoia along key

dimensions (Ellett et al., 2003). To address this issue, Ellett et al. (2003) developed the Personal Experience of Paranoia Scale (PEPS), a novel questionnaire-based measure which assesses the content of paranoid beliefs as well as cognitive, affective and behavioural components of paranoia, based on personal accounts of individual paranoia experiences (Ellett et al., 2003). In their cross-sectional study examining the phenomenology of paranoia experiences in a student sample, Ellett et al. (2003) found that paranoia was characterised by perceptions of powerlessness, feelings of anger, frustration and of being negatively judged by others, and engagement in avoidant-type behaviour. These findings are consistent with research employing alternative methodologies (e.g. Interpretative Phenomenological Analysis and semi-structured interviews) showing the content diversity and similarity of personalised accounts of paranoia experiences in both clinical and nonclinical groups (Campbell & Morrison, 2007). Nevertheless, and despite increased recognition of the idiosyncratic and multifaceted nature of paranoia along the continuum of severity, the use of methodologies that capture personal accounts of paranoid experiences such as the PEPS (Ellett et al., 2003) remains limited (Campbell & Morrison, 2007; Stopa et al., 2013).

Besides Ellett et al.'s (2003) investigation, to date the PEPS has only featured in two other studies, namely: da Motta et al. (2014) and Allen-Crooks and Ellett (2014). Whereas in da Motta et al.'s study, the PEPS was used to determine differences in emotional, cognitive and behavioural reactions to paranoid symptoms when comparing clinical and nonclinical populations, in the second study this measure was used to examine qualitative descriptions

of reasons for change in belief dimensions over time. However, studies are yet to examine what factors may prospectively explain or influence occurrence of paranoid experiences when focusing on personally defined accounts and in the context of daily life. Furthermore, the extent to which idiosyncratic paranoid experiences may be influenced by a range of theoretically relevant cognitive processes such as those identified in this study is currently unknown.

1.5. The current study

1.5.1. Summary of research gaps & key methodological issues

As discussed in the previous literature review, a number of research gaps and methodological issues have been identified, which are relevant to the aims of the current study.

First, although public self-consciousness, rumination and mindfulness have been directly implicated in the formation and maintenance of paranoid cognitions (Chadwick, 2006; Fenigstein & Vanable, 1992; Freeman et al., 2007), evidence of the relationship between these variables and nonclinical paranoia varies depending on which of these cognitive processes is prioritised by research. Whilst several studies have found an association between public self-consciousness and paranoia (e.g. Bodner & Mikulincer, 1998; Fenigstein & Vanable, 1992; Martin & Penn, 2001; von Gemmingen et al., 2003), research focusing on the association between paranoia, rumination and mindfulness is less well established (Oliver et al., 2012b; Simpson et al., 2012). Furthermore, often these cognitive processes are studied in isolation

rather than together using cross-sectional designs, which precludes more theoretical integration in this line of research as well as the ability to identify their relative contribution to the prediction of paranoia over time (Freeman et al., 2007).

Second, although clinically-relevant problem behaviours have been identified as key correlates of psychotic-related disorders (e.g. Kelleher & Cannon, 2010) and theoretically implicated in the emergence and maintenance of persecutory delusions (e.g. Chadwick, 2006), research is yet to systematically investigate the behavioural correlates of nonclinical paranoia (Lincoln et al., 2014; Simpson et al., 2012).

Third, the predominance of cross-sectional designs in this area of research only allows assessment of the presence of key psychological processes relevant to paranoia but not the extent to which they may influence paranoid thinking; therefore, prospective/longitudinal designs are currently needed to address this limitation (Freeman et al., 2012). Naturalistic prospective studies constitute a promising approach to examine the dynamic nature of the mechanisms of influence by which these psychological processes may operate to trigger and maintain paranoia. However, to date this research has mostly focused on the dynamic relationship between paranoia and specific cognitive and affective processes (e.g. self-esteem and negative affect) at the exclusion of other theoretically relevant variables. Furthermore, the dynamic and naturalistic approach to the study of paranoia and its putative correlates, is yet to consider the association between these processes both at a time/context-dependent level (i.e. state variables) and a static/pre-morbid

level (i.e. trait measures) (Kesting & Lincoln, 2013; Ellett, Owens & Berry, 2015).

Fourth, the overall reliance on pre-defined/standard approaches to measuring paranoia to date limits the ability to capture its idiosyncratic, interpersonal and multifaceted nature (Allen-Crooks & Ellett, 2014). To address this issue, personal account-based measures of paranoia experiences such as the PEPS (Ellett et al., 2003) have been developed and shown to effectively examine the phenomenology of paranoia in nonclinical samples both cross-sectionally and prospectively (Allen-Crooks & Ellett, 2014; Ellett et al., 2003). However, the extent to which idiosyncratic paranoia experiences may be prospectively influenced by a range of theoretically relevant cognitive processes is currently unknown.

1.5.2. Study aims & hypotheses

In order to address the above-mentioned research gaps and methodological issues, the current study had three main aims. Each aim will be presented below and linked to the respective study hypothesis(es).

The first aim of the study is to a) extend research on correlates of nonclinical paranoia, by examining its association with three theoretically relevant cognitive factors (i.e. public self-consciousness, rumination, and mindfulness) previously implicated in the formation and maintenance of paranoid cognitions, and b) contribute towards the study of behavioural facets of nonclinical paranoia by investigating its association with a global measure of problem behaviour.

Specifically, it was predicted that:

Hypothesis 1 (H1): *at baseline, trait paranoia will be associated with trait measures of public self-consciousness and rumination (positive correlation), mindfulness (negative correlation), and with a global measure of problem behaviour (positive correlation).*

The second aim of the study is to examine the temporal and dynamic relationship between paranoia and the three cognitive factors, by investigating the concurrent and predictive association between these variables over a period of 2 weeks. Specifically, it was predicted that:

Hypothesis 2 (H2): *state paranoia, public self-awareness, rumination and mindfulness taken at three random time points over the 2-week period will correlate; and*

Hypothesis 3 (H3): *trait paranoia will predict variability in state measures of paranoia, public self-consciousness, rumination and mindfulness.*

The third aim of the study is to extend paranoia prospective and naturalistic research by investigating the prediction of individual experiences of paranoia, as measured by the PEPS (Ellett et al., 2003) from pre-defined/standard trait and state measures of paranoia and the three cognitive factors.

Specifically, it was predicted that:

Hypothesis 4 (H4): *trait paranoia, public self-consciousness, rumination (positive correlation) and mindfulness (negative correlation) at baseline will predict paranoia experiences as measured by the PEPS after 2 weeks, and*

Hypothesis 5 (H5): *state paranoia, public self-awareness, rumination, and state mindfulness will predict paranoia experiences as measured by the PEPS after 2 weeks.*

METHOD

2.1. Design

The study's design included a cross-sectional, correlational and a prospective component.

2.1.1. Cross-sectional component

A within-subjects cross-sectional design was used to examine the association between trait paranoia, at baseline and five other baseline measures i.e. trait public self-consciousness, trait rumination, trait mindfulness, and a composite measure of problem behaviour at baseline (H1).

2.1.2. Correlational component

A within-subjects correlational design was also used to examine the association between state measures of paranoia, public self-awareness, rumination and mindfulness over the 2 weeks immediately after the completion of baseline measures (H2). This involved obtaining three random samples of the four state measures during the 2-week period, and the total scores were then averaged and correlated.

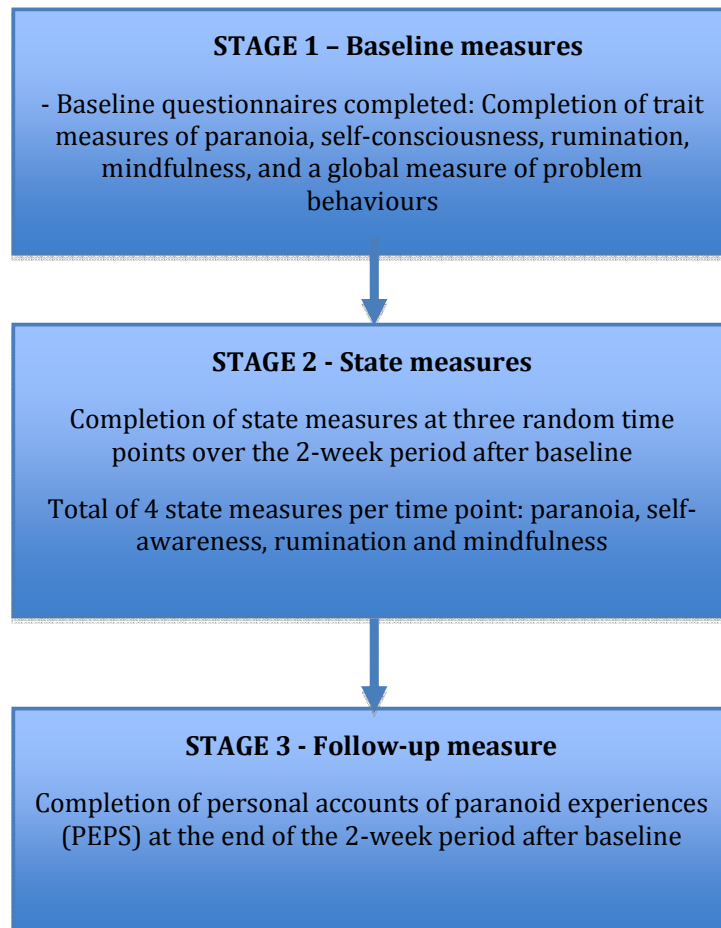
2.1.3. Prospective component

The study also used a within-subjects prospective design, which includes three different components linked to different hypotheses. The first component consisted of using trait paranoia at baseline to predict variability in state measures over the 2-week period (H3); the second component involved using baseline trait measures to predict individual experiences of paranoia over the

2-week period (H4), and the third component consisted of using state measures to predict individual experiences of paranoia over the 2 weeks (H5).

As shown in Figure 1 below, the study involved three different stages of data collection and each stage is intrinsically linked to a specific aspect of the study's design and to specific hypotheses as highlighted above. In stage 1, baseline measures were completed; this was then followed by completion of state measures taken at three random time points over 2 weeks (stage 2), and at the end of the 2-week period, a follow-up measure (i.e. PEPS) was also completed (stage 3).

Figure 1 – Flow chart depicting three stages of data collection



2.2. Sample

The study used an opportunity sample of $N = 86$ undergraduate and postgraduate Royal Holloway University of London (RHUL) students. Seventy-two (83.7%) participants were female and the mean age of the sample was 20.71 years ($SD = 4.8$, range = 18-42 years). Additional demographic information is presented in the Results section below (p. 75).

2.3. Power Analysis

A priori power analyses were computed to estimate the sample size for the cross-sectional and prospective aspects of the study.

2.3.1. Cross-sectional power analysis

The sample size for H1 was estimated for analyses using the Pearson correlation (r) coefficient. Existing research showed medium to large correlations (range .34-.54) for mindfulness and subclinical delusional ideation (Oliver et al., 2012b), rumination and nonclinical paranoia (Martinelli et al., 2013), and self-consciousness and nonclinical paranoia (Fenigstein & Vanable, 1992). Therefore, with power at .80, alpha of 0.05 (1-tailed test), and predicting a medium effect size using a correlational design (i.e. Cohen's $d = .30$), a sample size of 70 participants was required to examine the cross-sectional association between the study variables.

2.3.2. Prospective power analysis

The effect size used to calculate the sample size for the prospective component of the study was the Regression (β) coefficient, which represents a) the contribution of trait paranoia to the prediction of variability in state measures over 2 weeks (H3), and b) the prediction of paranoid experiences at follow-up (i.e. end of 2-week period) from baseline (H4) and state (H5) measures. Relevant studies showed regression coefficients ranging between 20-.43 for the prediction of a) subclinical delusional ideation from mindfulness over 6 months (Oliver et al., 2012b), b) persecutory delusions from rumination over 6 days (Hartley et al., 2013), and c) subclinical psychosis-related symptoms from premorbid psychosis vulnerability over 7 days (Verdoux, Gindre, Sorbara, Tournier, & Swendsen, 2003a).

Therefore, with power at .80, alpha of 0.05, and predicting a medium effect size using multiple regression analysis (Cohen's $d = .15$), with 4 independent variables (i.e. trait paranoia, self-consciousness, rumination and mindfulness at baseline), a sample of 84 participants was required to examine the prediction of paranoid experiences at follow-up (see Fig. 1 above).

Therefore, a sample size of at least 84 participants was required to ensure there was enough power to detect a significant effect both cross-sectionally and prospectively.

2.4. Recruitment

A number of strategies were used to recruit RHUL students to the study: the Psychology Experiment Management System (PEMS), advertisements on the RHUL main website's notice board, and by sending an email notifying all RHUL academic departments about the study.

Along with other ongoing research studies, the current project was advertised to first year psychology undergraduate students via the PEMS. The advert summarised the study, including details regarding the three stages of data collection (see Fig. 1 above) and respective procedures (see section 2.6.2. below). The 'message of the day' scheme which uses the RHUL intranet system and the circulation of emails advertising the study to all academic departments facilitated the recruitment of undergraduate and postgraduate students from courses other than psychology. The project was advertised as a voluntary study investigating 'thoughts, feelings and experiences' over a 2-week period, and provided an email address for interested students to contact the researcher (appendix 1). Undergraduate psychology students received course credits for taking part and all other participants were entered into a prize draw for Amazon vouchers.

2.5. Measures

A total of 11 measures were used in the study and these can be found in appendices 2-4. A summary description of each of the measures used is presented below.

2.5.1. Socio-demographic questionnaire

A short questionnaire was devised to gather socio-demographic information including the participants' age, gender, ethnicity, and course details. Other aspects included: whether they had previous knowledge/experience of mindfulness, and whether they had ever been diagnosed with a mental health problem. The latter information helped ensure the study assessed nonclinical paranoia and that previous mindfulness knowledge/practice would not have a confounding effect on findings (i.e. ensuring measurement of dispositional mindful abilities among a non-meditating sample).

2.5.2. Baseline Measures

The Paranoia Scale (PS; Fenigstein & Venable, 1992) is a 20-item measure of nonclinical paranoia, including beliefs that others or external sources are trying to influence one's behaviour or thinking, and of a conspiracy against oneself or of being spied on; suspiciousness, and resentment. The PS items are rated on a 5-point scale (1 = not at all applicable to me, 5 = extremely applicable to me) and the measure ranges from 20 to 100, with higher scores indicating higher levels of subclinical paranoia. The PS has shown good internal consistency ($\alpha = .84$) and has demonstrated adequate test-retest reliability ($r = .70$) (Fenigstein & Venable, 1992). In this sample, the PS had good internal consistency ($\alpha = .89$).

The ***Self-Consciousness Scale (SCS; Fenigstein et al., 1975)*** is a 23-item measure of public self-consciousness (i.e. attentiveness to aspects of the self, which are presented to others, such as physical appearance) and private self-

consciousness (i.e. attentiveness to internal aspects of the self, such as negative feelings). The public self-consciousness subscale consists of 7 items and the private self-consciousness subscale consists of 16 items. Each item of the SCS is scored on a 5-point scale (0 = extremely uncharacteristic, 4 = extremely characteristic). The SCS ranges from 0 to 92 (i.e. ranges from 0-35 and from 0-64 for public and private self-consciousness, respectively), with higher scores indicating higher levels of self-consciousness. In nonclinical samples, the SCS has shown relatively good reliability, as well as discriminate and convergent validity (Fenigstein et al., 1975; Govern & Marsch, 2001). In this sample, the SCS showed good internal consistency ($\alpha = 0.78$).

The ***Perseverative Thinking Questionnaire (PTQ; Ehring, Zetsche, Weidacker, Wahl, Schonfeld, & Ehlers, 2011)*** is a 15-item measure of repetitive negative thinking. Items are rated on a 5-point scale (0 = never, 4 = almost always) and the measure ranges from 0 to 60, with higher scores indicating higher levels of trait rumination. In nonclinical samples, the PTQ has shown good internal consistency ($\alpha = 0.95$), adequate test-retest reliability ($r = 0.69$), and good construct validity, positively correlating with measures of depressive rumination ($r = 0.72$) and worry ($r = 0.70$) (Martinelli et al., 2013). In this sample, the PTQ showed good internal consistency ($\alpha = 0.93$).

The ***Five Facet Mindfulness Questionnaire (FFMQ, Baer et al., 2006)*** is a 39-item measure of five mindfulness skills: 'describing' (i.e. ability to label one's emotions/thoughts), 'non-reactivity' (i.e. to experience and let thoughts/feelings pass), 'acting with awareness' (i.e. attend to one's actions in the moment), 'non-judging' (i.e. have noncritical reaction to one's

thoughts/feeling), and 'observing' (i.e. attend to external environment, thought processes and emotional states) (Baer et al., 2006). The FFMQ items are rated on a 5-point scale (1 = never or very rarely true, 5 = very often or always true), and scores for all five facets are combined to yield a total score, which reflects a global measure of dispositional mindfulness. When validated in a nonclinical sample, the FFMQ initially showed adequate reliability, validity and consistency (alphas between 0.75-0.91). However, a separate community sample study showed the *Observer* factor did not load significantly on to an overarching mindfulness factor (Williams et al., 2014). Thus, exclusion of the *Observer* factor, when using nonclinical samples, ensures the FFMQ is structurally acceptable. Consequently, only the other four mindfulness facets (as specified above) were used in this study. This 31-item four-factor version of the FFMQ (range from 31 to 155) showed good internal consistency in this sample ($\alpha = .90$).

The ***Composite Measure of Problem Behavior (CMPB; Kingston et al., 2011)*** is a 46-item measure of eight problem behaviours (e.g. self-harm, sexual promiscuity, excessive exercise, and aggression). Items are rated on a 6-point scale (1 = very unlike me, 6 = very like me) and the measure ranges from 46-276, with higher scores indicating higher predisposition to engage in a range of problem behaviours. In a UK student sample, the measure showed good internal consistency (range $\alpha = .73$ to $.91$), good construct validity, with each of its subscales correlating with corresponding validated measures as expected (r 's ranging from $.50$ -. 83), and good test-retest reliability (e.g. for a

2-week period, range r 's = .73-.98) (Kingston et al., 2010). In this sample, the CMPB showed good internal consistency ($\alpha = 0.82$).

2.5.3. State Measures

The ***Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998)*** is a 17-item measure of paranoid (7 items) and depressive (10 items) states of mind, which was derived from validated measures of paranoid and depressive psychopathology. Items are rated on a 6-point scale (1 = not at all, 6 = very often) and the measure ranges from 17 to 102 (i.e. ranges from 7 to 42 and from 10-60 for paranoid and depressive states, respectively), with higher scores indicating higher levels of state paranoia and depression. In a nonclinical sample of undergraduate students, the PDS showed good internal consistency (paranoia - $\alpha = 0.79$; depression - $\alpha = 0.87$), as well as discriminate and convergent validity (Bodner & Mikulincer, 1998). In this sample, the PDS showed good internal consistency ($\alpha = 0.81$).

The ***Situational Self-Awareness Scale (SSAS; Govern & Marsch, 2001)*** assesses naturally occurring fluctuations in self-awareness states and includes three subscales: Public Self-Awareness (3 items), Private Self-Awareness (3 items) and Awareness of Immediate Surroundings (3 items). All items are rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree), and the measure ranges from 9 to 63 (i.e. ranges from 3 to 21 for each of the three subscales above). Responses are based on how one feels *right now, at this instant*, and higher scores indicate higher levels of self-awareness states. In a nonclinical sample of undergraduate students, the SSAS was shown to be internally consistent (Cronbach's alpha ranging from .70-.82) (Govern &

Marsch, 2001). The SSAS was also found to be sensitive to fluctuations in situational self-awareness occurring within individuals over time and across situations (Govern & Marsch, 2001). In this sample, the SSAS showed good internal consistency ($\alpha = 0.74$).

The ***Ruminative Styles Questionnaire – state version (RSQ-s; Ciesla, Reilly, Dickson, Emanuel & Updegraff, 2012)*** is a 12-item scale assessing daily rumination. The items cover three dimensions of rumination: depressive rumination, reflective pondering, and brooding (Treyner, Gonzalez, & Nolen-Hoeksema, 2003) and ratings are given on 4-point scale (0 = not at all, 3 = all the time). The RSQ-s ranges from 0-36, with higher scores indicating higher levels of ruminative states. The RSQ-s is internally consistent (Cronbach's alpha ranging from .91-.94) and has been used in naturalistic studies examining the temporal relationship between daily rumination and other cognitive and behavioural variables. For example, in Ciesla et al.'s (2012) study, increased levels of state rumination over a 7-day period (as assessed by the RSQ-s) was significantly associated with less dispositional mindfulness in a sample of 78 adolescents. In this study, state rumination also mediated the effects of the interaction between stress and mindfulness (Ciesla et al., 2012). In this sample, the RSQ-s showed good internal consistency ($\alpha = 0.92$).

The ***Freiburg Mindfulness Inventory – 14-item short version (FMI-14; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006)*** assesses trait and state-like components of mindfulness, depending on the timeframe specified by researchers. In the current study, the timeframe

chosen to assess state Mindfulness using the FMI-14 was *the last 2 days*. To the author's knowledge, the latter is the shortest timeframe used to assess state Mindfulness to date (i.e. Buchheld, Grossman, & Walach, 2001). The FMI-14 items are rated on a 4-point scale (1 = rarely, 4 = almost always), with higher scores indicating higher state levels of mindfulness. The FMI-14 has shown to be semantically independent from a Buddhist or meditation context, and the measure is recommended for use with clinical and nonclinical samples without previous meditation experience (Walach et al., 2006). The FMI-14 has shown good internal consistency (Cronbach's alpha = .86) and has been validated in both German and English speaking populations (Heidenreich, Ströhle, & Michalak, 2006; Leigh, Bowen, & Marlatt, 2005). In the current study, all the items of the FMI-14 were used except item 13 (i.e. 'I am impatient with myself and with others'), as per Sauer, Ziegler, Danay, Ives, and Kohls' (2012) recommendations. In the latter study, a Rasch model analysis of the FMI-14's psychometric properties concluded that item 13 threatens the validity of the whole scale. The authors also confirmed that only the resulting 13-item version of the scale (FMI-13) showed acceptable approximation to Rasch requirements, whereas the FMI-14 did not (Sauer et al., 2012). Therefore, only the 13-item version of this scale (range from 13-52) was used in the current study. In this sample, the 13-item version of the FMI showed good internal consistency ($\alpha = 0.85$).

2.5.4. Follow-up measure

The ***Personal Experiences of Paranoia Scale (PEPS; Ellett et al., 2003)*** is a 15-item measure aiming to obtain a phenomenological and multidimensional description of paranoid experiences, including cognitive, behavioural and affective aspects of the experience. The PEPS is divided into two main parts – in part I, a paranoia experience is defined according to Freeman and Garety's (2000) criteria (i.e. perceived intentional harm by others). This is followed by examples and by an item asking respondents to answer 'Yes' or 'No' to whether they have had this type of experience. In part II, respondents are asked to describe the cognitive, affective and behavioural dimensions of such experience. The cognitive dimension consists of items of the extent to which an individual feels: a) judged negatively by others, b) blocked from achieving his/her goals, c) powerless to stop what has been done to him/her, d) preoccupied with the event, e) the experience has had an impact of on his/her wellbeing, f) his/her mistreatment by others was deserved, and g) that currently, there has been a change in his/her beliefs. Items a) to f) are rated on a 5-point scale, with ratings ranging from: '1 = not at all' to '5 = very much' for the first four items; '1 = not at all' to '5 = severe' for the fifth item, and '1 = totally undeserved to 5 = totally deserved' for the sixth item. As for item g), this only requires a 'yes/no' answer. The behavioural dimension of the PEPS refers to the preferred courses of action in response to the experience and the actual actions taken, whereas the affective dimension of this measure taps into the emotions experienced at the time. In a student sample (N = 324), 47% reported a paranoia experience using the PEPS. In this group, scores on the

Paranoia Scale (PS) were significantly higher than among individuals who reported no experiences of paranoia, and greater levels of paranoia were associated with lower self-esteem (Ellett et al., 2003). In the current study, the PEPS was used to examine whether trait and state measures of paranoia and the three cognitive factors predicted endorsement of personal paranoia experiences at the end of the 2-week period (i.e. H4 and H5). Therefore, for the purposes of hypothesis testing, only the 'Yes' and 'No' answers to the PEPS (i.e. part I, as explained above) were included as the DV in this study. Regarding the multidimensional components of paranoia experiences (i.e. part II), a brief overview of the participants' responses to the cognitive aspects of such experiences was also provided in the form of a descriptive analysis as shown in the Results section (i.e. p. 77 below).

2.6. Procedure

2.6.1. Piloting

The piloting phase of the study involved creating online versions of all questionnaires (i.e. baseline, state and follow-up measures) using the RHUL Psychology Online Survey system. Ten individuals, known to the researcher, were approached to complete the study measures, over a two week period, and provide feedback on the content (e.g. items clarity), technical issues (e.g. effectiveness of online system) and the time spent completing each set of measures. Five individuals took part and their feedback helped confirm the content of the questionnaires was deemed clear and understandable for research purposes and the online system was quick and easy to use. Information regarding questionnaires' completion times (i.e. 20-30mins for

baseline measures, 5mins for state measures, and 10-15mins for the PEPS) also helped refining the study's procedures.

2.6.2. Data collection procedures

The study involved three stages of data collection (Fig. 1 above). To ensure researcher effects were minimised for all stages of the study, procedures across participants were standardised by following scripted instructions (appendices 5 and 6).

At baseline, participants met with the researcher, who described the study (appendix 7), answered questions, and obtained written consent (appendix 8). As part of consent, participants were asked to opt in to receiving an email prompting them to complete stage 2 of the study. Consenting participants then completed baseline questionnaires, online, without the researcher present. Following this, participants were given three questionnaire packs, each containing a set of state measures. Each participant was made aware they would need to complete these packs during the subsequent two weeks, and would be instructed about when to do this by email. A date and time for the final point of data collection (i.e. completion of the PEPS) was then arranged before the participant left. Participants were also required to return all three completed questionnaire packs to the researcher when they met again for stage 3 of the study.

Completion of stage 2 involved sending each participant an email at three random times during the 2-week period reminding them to complete one questionnaire pack per time point. Participants were given a 3-hour window

after receiving the initial email prompt, within which to complete each pack. The 2-week period to collect state measures is consistent with the timeframes used in similar naturalistic prospective studies, whereby periods of 1-2 weeks have usually been reported (e.g. Scollon, Kim-Prieto, & Diener, 2003; Thewissen et al., 2011).

To complete stage 3, all consenting participants met with the researcher again at the date/time and location agreed at the initial meeting, 2 weeks earlier. Initially, the researcher collected the three completed questionnaire packs from the participant and subsequently asked him/her to complete the follow-up questionnaire (i.e. PEPS) online, without the researcher present. The researcher then joined the participant again and answered any outstanding questions before fully debriefing him/her about the study (appendix 9).

Throughout all stages of the study, anonymity was ensured by allocating a unique research ID number to each participant. The participants' initials and research ID numbers were linked using a password protected Excel document, which was regularly updated. Only the researcher and her supervisors could access this document or any of the participants' data. Furthermore, only when debriefed after completing stage 3 of the study, were participants made aware of the purpose or details regarding the measures they were asked to complete.

2.7. Randomisation

For stage 2 of the study, the days and times for completing state measures were randomised across participants. This strategy ensured expectancy effects were minimised (i.e. completion of questionnaires at random times ensured data collected corresponded to participant's 'spontaneous'/naturally occurring behaviour rather than potentially modified behaviour if they already knew when to complete the measures). An online website (www.randomization.com) was used to randomise three blocks of 5 days each (i.e. block 1 corresponding to days 1-5, block 2 to days 6-10 and block 3 to days 11-15) across all 86 participants, as well as three time points per day (morning, afternoon and evening periods of the day i.e. 10am, 2pm and 6pm). This resulted in three random time points, for each participant, across the two-week period. At these times, the participant was contacted by email and asked to complete the corresponding set of state measures. This meant that participants could be sent email prompts at any day during the 2-week period, including weekends and all were made aware of this prior to consenting to the study. Similar time periods for prompts to be sent on a daily basis have been reported in other relevant naturalistic prospective studies (e.g. Verdoux, et al., 2003a).

Email prompts were sent to each participant using the researchers' University email address. All email prompts were drafted in advance and they all contained the same message, as well as specifying which questionnaire pack needed completing at each time point.

To control for order effects, the same website above was used to randomly select three different ordering sequences of the state measures contained in each questionnaire pack. All 86 participants were randomised to three sequences (termed A, B and C) in which to present the state measures in packs 1-3. When going through the randomisation results, the researcher ensured that each participant would be allocated the three different sequences so avoiding any repetition of the same sequence across packs 1-3. These three sequences were chosen arbitrarily and each consisted of the following order:

Sequence A = FMI-13; PDS; SSAS; RSQ-s

Sequence B = SSAS, FMI-13, RSQ-s; PDS

Sequence C = PDS; RSQ-s; FMI-13; SSAS

The set of three packs randomly containing either sequence A, B, or C each, was prepared in advance of the first meeting with prospective participants. After consenting to participate in the study, each participant was given a set of packs 1-3. For ease of identification, each pack was labeled with the participant's unique research ID, the pack No (i.e. 1, 2 or 3) and the specific sequence (i.e. A, B, or C). When completing the state measures contained in each pack, participants were also asked to write down their research ID, and the date and time they completed that specific pack.

2.8. Ethics

The study was granted ethical approval (code: 2014/080) prior to commencing recruitment (appendix 10). All participants gave written consent to take part.

The main ethical considerations of the study concerned the possibility that by reflecting on potentially distressing experiences (i.e., paranoia, rumination) over a 2-week period, this could temporarily affect participants' mood, although such experiences were not expected to have a lasting effect. To minimize the potential impact of the study on participants' mood, they were provided with information both at the initial (appendix 7) and last (appendix 9) stages of the study, advising them to see their GP, contact the Samaritans, or access the University Health Centre if they experienced any difficulties or had any concerns during/following participation.

RESULTS

3.1. Overview

The first section of this chapter describes the data cleaning methods used to prepare the data prior to statistical analysis, including examining normality of distributions and homogeneity of variance. Details regarding the procedures used to manage missing data and outliers are then provided. This is followed by a brief rationale regarding the data analytic strategy to calculate 'variability' in state measures over time, and a descriptive analysis of the sample and the study variables. The five hypotheses are then outlined and the statistical analyses employed to test each of them along with the respective findings are also reported. Main findings concerning the study's directional hypotheses (i.e. H1 and H4) are reported using significance levels for one-tailed tests (i.e., $p = .05$), whereas results regarding non-directional hypotheses (i.e. H2, H3 and H5) are reported using significance levels for two-tailed tests (i.e., $p = .05$; see section 3.6. below). All statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS), version 21.

3.2. Data cleaning

Data cleaning consisted of examining the whole dataset using descriptive statistics, which helped confirm if all available data were within expected ranges. Screening for missing values was carried out for the study variables over each of the different data points (i.e. baseline assessments, three sets of state measures over 2 weeks, and personal experiences of paranoia at the

end of the 2-week period) (Drotar, 2009). Examination of frequencies revealed that there were no missing values for any of the baseline measures and for paranoia experiences as measured by the PEPS (Ellett et al., 2003). A small amount of missing data was detected for state measures (1-2 data points). Given the overall low frequency of missing values in the dataset, no specific statistical method was chosen to replace missing data (Drotar, 2009). Instead, handling of missing data relied on SPSS' default procedures of listwise (i.e. removing cases with missing values on variables under analysis) and pairwise (i.e. removing specific missing values from the analysis rather than whole cases) deletion.

Further screens were also carried out to identify outliers and to ensure normality assumptions for use of parametric tests were met (Miles & Shevlin, 2005). These are described below.

3.2.1. Outliers

Outliers were defined as scores that were three or more standard deviations from the sample mean (Field, 2009). One to two outliers were identified for a small number of measures. Extreme scores did not affect normality of distributions (see section 3.2.2. below) and were retained to prevent loss of power (Osborne, 2002; Field, 2009).

3.2.2. Normality assumptions

The study variables were checked for normality and homogeneity of variance through inspection of histograms with normal curve and by calculating skewness and kurtosis z-scores according to the following formulae:

$$Z \text{ skewness} = \frac{S-0}{\text{SE skewness}} \qquad Z \text{ kurtosis} = \frac{\sqrt{K-0}}{\text{SE kurtosis}}$$

Distributions were considered normal if z-scores for both skewness and kurtosis were lower than 2.58 ($p < .01$) (Field, 2009). All variables had acceptable levels of skew and kurtosis, with skewness ranging between 0.13-0.66 for trait measures and between 0.02-0.95 for state measures, whereas kurtosis ranged between 0.25-.0.66 for trait measures and between 0.37-0.65 for state measures. Therefore, normality assumptions were met and no data transformations were needed.

3.3. Data analysis strategy – ‘variability’ in state measures over time

According to Eid and Diener (1999), ‘variability’ concerns the temporal amplitude of individual psychological states and is the statistical equivalent of within-person standard deviation (SD) or variance in such states across time. Thus, higher variability in a specific psychological dimension, indicates dynamic patterns characterised by more extreme deviations from an individual’s mean level (close to zero) regarding that psychological process or factor, whereas lower variability characterises the opposite pattern (Kernis, Lakey, & Heppner, 2008; Zeigler-Hill & Showers, 2007). This approach has

guided research looking at the association between variability/instability in specific cognitive-affective factors (e.g. self-esteem) and paranoia (e.g. Thewissen, Myin-Germeys, Bentall, de Graaf, Vollebergh, & van Os, 2007). Therefore, to ensure consistency with previous literature in the field, when testing H3 in this study (see section 3.6.3 below), state variability was calculated by computing the standard deviation of each participant's total state scores across the three random time point assessments during the 2-week period, such that higher standard deviation scores indicate increased state variability/instability.

3.4. Sample characteristics

The sample characteristics are presented in Table 2 below.

Table 2 – Sample characteristics

	Total N = 86
Age in years	
Mean	20.71
Standard Deviation	4.92
Gender N (%)	
Male	14 (16.3%)
Female	72 (83.7%)
Field of study N (%)	
Psychology degree	62 (72.1%)
Other degree	24 (27.9%)
Ethnicity N (%)	
White British	37 (43.0%)
White Other	24 (27.9%)
Asian British	7 (8.1%)
Asian Other	14 (16.3%)
Other	4 (4.7%)
Mindfulness knowledge N (%)	
Yes	25 (29.4%)

No	60 (70.6%)
Mindfulness practice N (%)	
Yes	14 (16.5%)
No	71 (83.5%)
Mindfulness competence N (%)	
Beginner	11 (78.6%)
Intermediate	3 (21.4%)
Self-reported Mental Health Diagnosis N (%)	
Yes	15 (18.3%)
No	67 (81.7%)

Note: No differences were found on any of the study variables when comparing participants who self-reported a mental health diagnosis and those who did not.

According to the information above, the sample predominantly comprised of female psychology students, of White ethnicity, with no previous knowledge or experience of mindfulness, and without a self-reported mental health diagnosis.

3.5. Descriptive analysis of study variables

3.5.1. Trait and state measures

Means and standard deviations were computed for the main study variables corresponding to baseline and state measures, as shown in Table 3.

Table 3 – Descriptive statistics for baseline (trait) and state measures

	Baseline:		State:	
	Mean (SD)	Range actual	Mean (SD)	Range actual
Paranoia	44.60 (13.10)	23-82	15.47 (5.40)	7-33
Public Self- Consciousness	18.86 (4.40)	5-28	10.94 (4.04)	3-19
Rumination	31.48 (11.41)	5-59	10.25 (7.43)	0-33
Mindfulness	97.24 (15.33)	57-129	20.47 (6.40)	7-38
Problem Behaviour	120.15 (23.58)	69-195	--	--

Note. Total N=86 for trait measures. Total N's ranged between 82-83 for state measures.

As shown in Table 3 above, mean levels of trait paranoia, as assessed by the Paranoia Scale (PS), were similar to those found in the validation paper (Fenigstein & Venable, 1992) and other nonclinical studies (e.g. Ellett et al., 2003).

3.5.2. Personal experiences of paranoia

In relation to self-reported paranoia experiences from the PEPS, 21% of participants (N=18) reported a paranoid experience, which occurred during the two-week study period. A descriptive analysis of the cognitive dimension of the PEPS (see section 2.5.4. above) also revealed that most of the participants who endorsed a paranoid experience at the end of the 2 weeks, reported feeling negative judgement by others ($M = 3.94$, $SD = 1.00$), and preoccupation with these feelings ($M = 3.78$, $SD = 1.11$). Paranoia experiences also had a significant impact on the wellbeing of most

participants ($M = 3.28$, $SD = 0.75$), feeling powerless to stop what was happening to them ($M = 3.33$, $SD = 1.14$), as well as feeling blocked from achieving their goals ($M = 2.83$, $SD = 1.20$). Only a minority of participants ($M = 2.06$, $SD = 1.21$) described their paranoia experience as deserved, whereas 14 out of 18 participants answered 'No' to the question: 'at the present moment, has there been any change in your beliefs?'

3.6 Hypothesis testing

3.6.1. (H1): *At baseline, trait paranoia will be associated with trait measures of public self-consciousness, rumination (positive correlation) and mindfulness (negative correlation), and with a global measure of problem behaviour (positive correlation).*

Pearson's Product Moment Correlation coefficients were calculated to examine the associations between baseline trait variables. Regarding the correlations between baseline measures and the PEPS, these were conducted using a point biserial correlation, as the PEPS produces a binary outcome (i.e. 'yes' or 'no' answers as to whether participants have had an experience of paranoia in the last 2 weeks) (Table 4).

Consistent with prediction, trait paranoia was positively correlated with trait measures of public self-consciousness and rumination and negatively correlated with trait mindfulness. This suggests that higher levels of paranoia are associated with higher levels of public self-consciousness and rumination, and lower levels of mindfulness. The positive correlation between trait paranoia and the global measure of problem behaviour was also consistent

with prediction, suggesting that higher levels of paranoia were associated with the propensity to engage in a range of maladaptive behaviours. All aforementioned correlations were statistically significant, and therefore the findings fully support H1.

Table 4. Correlations of paranoia (PS scores) and personal experiences of paranoia (PEPS scores) with baseline measures

Baseline measures	Trait Paranoia (PS scores)	Paranoia Experiences
Trait Paranoia	--	.24*
Trait Public Self- Consciousness	.27**	.30**
Trait Rumination	.62***	.33**
Trait Mindfulness	-.57***	-.32**
Problem Behaviour	.38***	.20*

Note. Total N for trait measures = 86. Total N for PEPS = 84. * $p < .05$; ** $p < .01$; *** $p < .001$ (all p 's one-tailed)

3.6.2. (H2): *State paranoia, public self-awareness, rumination and mindfulness taken at three random time points over the 2-week period will correlate.*

H2 tests the relationships between state measures of paranoia, public self-awareness, rumination and mindfulness across all three random time points during the 2-week period. Testing of this hypothesis was carried out using Pearson's Product Moment Correlations between mean scores of each of the four state measures. Mean scores were calculated by averaging the total scores for each state measure across all three time points. Point biserial

correlations were also carried out to examine the relationship between the PEPS and the four state measures.

As shown in Table 5 below, for all three random time points over the 2-week period, statistically significant positive correlations were found between state paranoia and state measures of public self-awareness and rumination, whereas statistically significant negative correlations were also found between state mindfulness and state measures of paranoia, public self-awareness and rumination. These findings suggest that higher levels of state paranoia are associated with, or co-occur with, higher levels of state public self-awareness and state rumination, whereas lower levels of state paranoia, rumination and public self-awareness, are associated with higher levels of state mindfulness. These findings fully support H2.

Table 5. Inter-correlations between state measures (mean scores) and association with paranoia experiences (PEPS scores)

Measures	1	2	3	4	5
1. State Paranoia (mean score)	--	.44***	.67***	-.40***	.34**
2. State Public Self-Awareness (mean score)		--	.46***	-.26*	.04
3. State Rumination (mean score)			--	-.39***	.26*
4. State Mindfulness (mean score)				--	-.31**
5. Paranoia experiences (PEPS scores)					--

Note. Total N's ranged between 81-83 for state measures. Total N for PEPS = 84. * $p < .05$, ** $p < .01$, *** $p < .001$ (all p 's two-tailed)

3.6.3. (H3): *Trait paranoia will predict variability in state measures of paranoia, public self-awareness, rumination and mindfulness.*

H3 tests whether trait paranoia predicts variability in state measures of paranoia, public self-awareness, rumination and mindfulness, across a 2-week period.

Prior to conducting the regression analyses, correlations were first computed to examine the relationships between trait and variability in state measures. As previously discussed (see section 3.3. above, p. 74), state variability was calculated by computing the standard deviation of each participant's total state scores across the three random time point assessments during the 2-week period. Correlations between trait and state variability measures revealed that only the association between trait paranoia and variability in state paranoia was statistically significant. Therefore, Standard Linear Regression was performed with variability in state paranoia as the DV and trait paranoia at baseline as the IV. When running this analysis in SPSS, several strategies were used to check whether assumptions for Standard Linear Regression had been met. These included examination of: a) the scatterplot of normalised vs. predicted residuals to identify linearity and homogeneity of variance violations; b) the residuals' histogram and cumulative probability plot to identify normality violations, and c) the residuals scatterplot and the Durbin-Watson statistic to evaluate independence of errors (Miles & Shevlin, 2005). These checks revealed that in this study, assumptions for Standard Linear Regression were met. Regarding the outcome of the regression model, results showed that trait paranoia at

baseline significantly predicted variability in state paranoia ($\beta = .32$, $t(81) = 3.00$ $p < .01$). Trait paranoia also explained a significant proportion of variance in variability in state paranoia scores ($R^2 = .10$; $F(1,81) = 9.03$, $p < .01$). These findings partially support H3.

3.6.4. (H4): *Trait paranoia, public self-consciousness, rumination (positive correlation) and mindfulness (negative correlation) at baseline will predict paranoia experiences as measured by the PEPS after 2 weeks.*

H4 tests whether trait measures (IVs) predict personal experiences of paranoia (DV). As previously mentioned, the PEPS produces a dichotomous categorical variable, consisting of two distinct categories (i.e. '0' for absence of a paranoid experience and '1' for presence of a paranoia experience). Therefore, the testing of this hypothesis was carried out using Binary Logistic Regression coefficients. Because all four trait measures significantly correlated with paranoia experiences (see Table 4 above) they were all entered simultaneously as IVs in the regression model. When running this analysis in SPSS, only linearity assumption checks were carried out as logistic regression is usually thought as having no other assumptions (Weunsch, 2014). These checks consisted of using the Boxwell-Tidwell Test, whereby the interactions between the continuous predictor variables and their logs are included in the regression model and if found significant this indicates linearity is not assumed (Wuensch, 2014). In the current model none of the interactions were significant; therefore, linearity assumptions for Binary Logistic Regression were met.

Regarding the outcome of the binary logistic regression, results showed that the full logistic regression model containing the aforementioned four predictors was statistically significant ($X^2(4) = 15.48$, $df = 8$, $N = 84$, $p < .01$) indicating that the independent variables (i.e. trait measures of paranoia, public self-consciousness, rumination and mindfulness) significantly predicted the outcome variable, endorsement of personal paranoid experiences. The results of the data analysis presented in Table 6 below show the logistic regression coefficients, Wald test, and odds ratios for each of the predictor variables. The results of Cox & Snell, and Nagelkerke R squared estimates indicated that the whole model explained between 16.8% and 26.0% of the variance that can be predicted from the independent variables. The model classified correctly 27.8% of the respondents who endorsed a personal paranoid experience and 98.5% of those who did not endorse such experience, for an overall classification success rate of 83.3%. As shown in Table 6 below, of all independent variables, only one predictor - public self-consciousness - was statistically significant. Thus, after controlling for shared variance with the other three independent variables, only public self-consciousness proved to be an independent and significant predictor of endorsement of paranoid experiences ($B = 0.17$, $SE = 0.09$, $p = .025$), whereas trait measures of paranoia, rumination and mindfulness were not independently predictive of such experiences ($B = -0.00$, $SE = 0.03$, $p = .431$; $B = 0.04$, $SE = 0.04$, $p = .140$; $B = -0.03$, $SE = 0.03$, $p = .132$, respectively).

Table 6 – Prediction of paranoia experiences (PEPS scores) from trait measures

Trait measures	Paranoia (PEPS scores)				
	<i>B</i>	<i>S.E.</i>	<i>Wald X²</i>	<i>P (one tailed)</i>	<i>Odds Ratio</i>
Paranoia	-0.00	0.03	0.03	0.431	0.99
Public Self-Consciousness	0.17	0.09	3.83	0.025	1.18
Rumination	0.04	0.04	1.17	0.140	1.04
Mindfulness	-0.03	0.03	1.24	0.132	0.04

According to the information above, although trait measures of paranoia, public self-consciousness, rumination and mindfulness had a combined predictive effect on personal experiences of paranoia at the end of the 2-week period, only public self-consciousness was independently predictive of such experiences. These findings partially support H4.

3.6.5. (H5): *State paranoia, public self-awareness, rumination and mindfulness will predict paranoia experiences as measured by the PEPS after 2 weeks.*

H5 tests the prediction of paranoia experiences from state measures of paranoia, public self-awareness, rumination and mindfulness. As with H4, the testing of this hypothesis was carried out using Binary Logistic Regression coefficients given the categorical nature of the DV (i.e. PEPS). For each of the state measures, the total mean score, across the three random time point assessments was used. Only state measures that significantly correlated with the PEPS were entered as IVs in the regression model. As shown in Table 5

above, state measures of paranoia, rumination and mindfulness significantly correlated with the PEPS; therefore, they were entered simultaneously as IVs in the regression model. When running this analysis in SPSS, only linearity assumption checks were carried out as logistic regression is usually thought as having no other assumptions (Weunsch, 2014). As with H4, these checks consisted of using the Boxwell-Tidwell Test, whereby the interactions between the continuous predictor variables and their logs are included in the regression model and if found significant this indicates linearity is not assumed (Wuensch, 2014). In the current model none of the interactions were significant; therefore, linearity assumptions for Binary Logistic Regression were met.

Regarding the outcome of the binary logistic regression, results showed that the full logistic regression model containing the aforementioned three predictors was statistically significant ($X^2(3) = 12.30$, $df = 8$, $N = 81$, $p < .01$) indicating that the independent variables (i.e. state measures of paranoia, rumination and mindfulness) significantly predicted the outcome variable, endorsement of personal paranoid experiences. The results of the data analysis presented in Table 7 below show the logistic regression coefficients, Wald test, and odds ratios for each of the predictor variables. The results of Cox & Snell, and Nagelkerke R squared estimates indicated that the whole model explained between 14.1% and 21.9% of the variance that can be predicted from the independent variables. The model classified correctly 29.4% of the respondents who endorsed a personal paranoid experience and 96.9% of those who did not endorse such experience, for an overall

classification success rate of 82.7%. As shown in Table 7 below, none of the independent variables was statistically significant. Thus, after controlling for shared variance between the three variables, none of these (i.e. state measures of paranoia, rumination and mindfulness) were independently predictive of endorsement of paranoid experiences ($B = 0.10$, $SE = 0.08$, $p = .172$; $B = 0.00$, $SE = 0.05$, $p = .948$; $B = -0.10$, $SE = 0.05$, $p = .069$, respectively). However, a trend was identified whereby the independent predictive status of mindfulness with regard to endorsement of paranoid experiences almost reached statistical significance.

Table 7 – Prediction of paranoia experiences (PEPS scores) from state measures

State measures (mean scores)	Paranoia (PEPS scores)				
	<i>B</i>	<i>S.E.</i>	<i>Wald</i> <i>X²</i>	<i>P</i> <i>(two-tailed)</i>	<i>Odds</i> <i>Ratio</i>
Paranoia	0.10	0.08	1.86	0.172	1.11
Rumination	0.00	0.05	0.00	0.948	1.00
Mindfulness	-0.10	0.05	3.32	0.069	0.90

According to the information above, although state measures of paranoia, rumination and mindfulness had a combined predictive effect on personal experiences of paranoia at the end of the 2-week period, none of these variables was independently predictive of such experiences. Therefore, findings do not support H5.

DISCUSSION

4.1. Overview

The current study made novel theoretical and methodological contributions to paranoia research by investigating correlates and predictors of paranoid cognitions and personal experiences of paranoia in a nonclinical student sample. Specifically, this study: (1) examined the associations between paranoia and three cognitive factors (i.e. self-consciousness, rumination, and mindfulness) that have been theoretically implicated in paranoid cognitions formation and maintenance; (2) investigated the association between paranoia and a global measure of problem behaviour; (3) examined the temporal and dynamic relationships between paranoia and the three aforementioned cognitive factors, by investigating the concurrent and predictive association between these variables at trait and state levels over a period of 2 weeks; and (4) investigated the prediction of individual experiences of paranoia, as measured by the PEPS (Ellett et al., 2003) from pre-defined/standard trait and state measures of paranoia and the three cognitive factors.

This chapter will initially present the study's main findings, which will be divided into three different sections, and related to each of the hypotheses under investigation (see below). Each set of findings is discussed based on relevant theory and empirical research, followed by recommendations for future research. Theoretical and clinical implications of the research are then

outlined, after which strengths and limitations of the study are also discussed. The chapter will then close with a conclusion section.

4.2. Main findings

4.2.1. Cognitive and behavioural correlates of trait paranoia.

Contemporary models of paranoid delusions have identified a number of cognitive factors as being directly implicated in the formation and maintenance of paranoid cognitions (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001; Chadwick, 2006; Freeman et al., 2012). Among those factors postulated to exacerbate and/or maintain these distressing beliefs/experiences are public self-consciousness (Fenigstein & Vanable, 1992) and ruminative thinking (Freeman et al., 2002), whereas mindful responses can help minimise the impact of such experiences (Chadwick, 2006). In light of the common, recurrent and distressing nature of nonclinical paranoia (Ellett et al, 2003; Freeman et al., 2011), it would also be advantageous to determine the associations between these variables and paranoid thinking in nonclinical samples. However, whilst several studies have found an association between public self-consciousness and nonclinical paranoia (e.g. Bodner & Mikulincer; 1998; Fenigstein & Vanable, 1992; Martin & Penn, 2001; von Gemmingen et al., 2003), research focusing on the association between paranoia, rumination and mindfulness is less well established (Simpson et al., 2012; Oliver et al., 2012b). Furthermore, often these factors are studied in isolation rather than together, which precludes more theoretical integration in this line of research (Freeman et al., 2007). One of the aims of this study, therefore, was to concurrently examine the

association between nonclinical paranoia and public self-consciousness, rumination and mindfulness, at trait level.

In line with a priori prediction, nonclinical paranoia was significantly associated with all three cognitive factors; trait paranoia correlated positively with public self-consciousness and rumination, and negatively with a trait measure of mindfulness. These findings support and extend existing research on correlates of nonclinical paranoia, as well as being consistent with theoretical models that highlight cognitive processes in the development and persistence of paranoid cognitions (Chadwick, 2006; Freeman et al., 2002).

For example, the association between nonclinical paranoia and public self-consciousness replicates findings from earlier studies using student samples (Fenigstein & Venable, 1992; Martin & Penn, 2001). The tendency to be publicly self-conscious or direct one's attention towards aspects of the self which are presented to others (e.g. appearance and social behaviour), has long been identified as a defining characteristic of paranoid thought in both clinical and nonclinical samples (Haynes, 1986; Fenigstein & Venable, 1992). The association between paranoia and public self-consciousness also serves to reinforce the notion of paranoid beliefs as inherently interpersonal in nature (Freeman & Garety, 2000), as it highlights the sense of perceived threat, vulnerability and mistrust of others which underlies (and potentially maintains) such beliefs (Combs & Penn, 2004; Freeman et al., 2002; von Gemminen et al., 2003).

The strong association between trait paranoia and dispositional rumination also replicates findings from a limited number of studies focusing on this relationship (Melo & Bentall, 2010; Simpson et al., 2012). Theoretically, rumination has been identified as playing a crucial role in perpetuating the distress associated with persecutory delusions (Chadwick, 2006; Freeman et al., 2007). Although not directly assessing rumination, clinical research has provided some evidence supporting a link between RNT processes and delusions (e.g. Freeman & Garety, 1999; Startup, Freeman, & Garety, 2007). Regarding nonclinical research, the association between trait paranoia and dispositional rumination has recently been investigated in a student sample by Simpson et al. (2012). The authors reported a large correlation between these variables, therefore mirroring the findings of this study. However, the strong association between trait paranoia and trait rumination reported by Simpson et al. (2012) is potentially confounded with depression as their trait rumination measure included items relating to negative mood states, prompting participants to rate their ruminative responses when “feeling down, sad or depressed” (Simpson et al., 2012, p. 616). In contrast, the measure of trait rumination used in the current study does not contain items, which explicitly focus on negative affect (i.e. do not contain words such as ‘sad’ or ‘depressed’) but rather captures specific aspects of RNT (e.g. level of thought repetitiveness, intrusiveness, and unproductiveness) (Ehring et al., 2011). Therefore, compared to Simpson et al.’s (2012) study and as highlighted by Treynor et al. (2003), the current findings of a large correlation between trait paranoia and dispositional rumination are more likely to suggest a fundamental association between these constructs rather than being the

product of measurement artifact (i.e. due to shared items which tap similar experiences such as depression). Notwithstanding these considerations, findings from both studies suggest that in keeping with substantial evidence of the transdiagnostic role of rumination across several disorders (Ehring & Watkins, 2008), this cognitive process may also be a cardinal feature of paranoid thinking in nonclinical samples.

The large negative correlation between trait paranoia and dispositional mindfulness is also consistent with Chadwick's (2006) model describing mindful responses as effective coping strategies to reduce the distress associated with psychotic sensations. Furthermore, this finding adds to an emerging evidence base linking mindfulness with delusional beliefs, which is predominantly derived from intervention studies carried out with clinical samples (e.g. Chadwick, Taylor, & Abba, 2005; Chadwick et al., 2009; Langer, Kangas, Salcedo, & Fuentes, 2012). Furthermore, the suggestion that increased mindfulness abilities are related to reduced paranoid ideation is in line with nonclinical research showing that mindfulness predicts less delusional ideation over time (Oliver et al., 2012b). However, in the latter study, only the 'accept without judgement' mindfulness dimension was predictive of decreased subclinical delusions at 6 months follow-up, whereas associations between other mindfulness constructs and delusions were counterintuitive (e.g. the 'Observe' subscale positively correlated with all delusional dimensions) (Oliver et al., 2012b). More recently, recommendations have been made to exclude the 'Observe' facet so as to ensure mindfulness measures are more structurally acceptable for use with

nonclinical samples (Williams et al., 2014). This recommendation was followed in the current study. Therefore, it is possible that compared to Oliver et al.'s (2012b) investigation, findings from the current study more accurately capture the relationship between paranoia and mindfulness in a nonclinical student sample.

Maladaptive coping behaviours have also been identified as having a key role in the emergence and maintenance of persecutory delusions (e.g. Chadwick, 2006). It has also been suggested that behavioural avoidance, withdrawal and impulsivity are common in samples that experience paranoid thinking and may serve an emotion regulation function (e.g. Kesting, Bredenkohl, Klenke, Westermann, & Lincoln, 2013; Westermann & Lincoln, 2011). Evidence has also been found linking subclinical paranoia and discrete problem behaviours such as substance misuse (Freeman et al., 2011) and aggressive behaviour (Fanning et al., 2011). However, by mostly focusing on discrete maladaptive behaviours, the above research often fails to recognize the comorbidity characterizing problem behaviours, whereby dysregulated behaviour in a specific area usually co-exists with behavioural difficulties in other areas (Wupperman et al., 2012). Therefore, the current study aimed to investigate the association between trait paranoia and a global measure of problem behaviour. A strong positive association (moderate in size) was found between both variables. One way of interpreting this association is through the emotion regulation framework, which suggests emotional dysregulation is a key process underlying both nonclinical paranoia and problem behaviours

(Hayes et al., 1996; Kingston et al., 2010; Westermann & Lincoln, 2010; Westermann, Kesting, & Lincoln, 2012).

This finding is also consistent with nonclinical research showing that individuals with higher levels of paranoia are prone to using maladaptive behaviours as a way of coping, such as 'dangerous activities' (e.g. using alcohol, drugs), 'emotional outbursts' and 'disinvestment in their social network' (Melo & Bentall, 2010).

To advance knowledge of correlates and predictors of nonclinical paranoia further, future research could employ more powerful statistical strategies such as Structural Equation Modelling to help identify the unique and shared contribution of cognitive, affective, and behavioural variables to paranoid thinking. For stronger inferences of causality to be made regarding the association between nonclinical paranoia and theoretically relevant cognitive and behavioural processes, designs that allow examination of the temporal association between these variables (i.e. longitudinal) are also warranted. For example, naturalistic prospective studies may be particularly useful in disentangling how the cognitive factors of interest in this study relate to day-to-day behavioural manifestations of paranoia (e.g. social isolation). This approach can also help refine theoretical models by clarifying the nature of the relationship between paranoia and a wider range of theoretically relevant cognitive processes such as reasoning biases (e.g. jumping to conclusions), self-consciousness, rumination and mindfulness. Naturalistic prospective research could also usefully focus on the association between cognitive processes and the different dimensions of paranoia (i.e. frequency, conviction,

preoccupation, deservedness, and distress levels). Although these multidimensional aspects of delusional thinking have been found to fluctuate over time and be predicted by different cognitive variables in clinical samples (e.g. Ben-Zeev, Morris, Swendsen, & Granholm, 2012; Peters et al., 2012), this is yet to be demonstrated among nonclinical populations.

4.2.2. Temporal and dynamic relationship between nonclinical paranoia, public self-awareness, rumination and mindfulness over a 2-week period:

4.2.2.1. Inter-correlation between state measures

Naturalistic prospective research has shown there is short-term (within hours and days) fluctuation in delusional beliefs in both clinical and nonclinical samples (e.g. Myin-Germeys, Nicolson, & Delespaul, 2001; Thewissen, Bentall, Lecomte, van Os, & Myin-Germeys, 2008). Collectively, these studies have advanced current knowledge of the psychological mechanisms underlying the maintenance of paranoid beliefs in the context of daily life by using ecologically valid methods (e.g. ESM in computerised or booklet versions) (Myin-Germeys et al., 2009). Such methodologies are suitable for examining the dynamic processes emphasised in influential models of delusion formation and maintenance (Chadwick, 2006; Freeman et al., 2002). ESM-based clinical research has mostly focused on contextual factors associated with affective variables and psychosis (Myin-Germeys et al., 2005; Vilardaga et al., 2013), whereas nonclinical research using ESM has mainly focused on the association between natural variation in paranoia and temporal variability in a range of cognitive-affective factors such as negative

affect (Kramer et al., 2013), self-esteem (Thewissen et al., 2011) and experiential avoidance (Udachina et al., 2009). Therefore, the study of nonclinical paranoia from a dynamic perspective is yet to consider its temporal relationship with other theoretically relevant cognitive factors, such as those identified in the current study.

Using a naturalistic prospective design, this study aimed to provide unique evidence of the temporal relationship between momentary levels of state paranoia and natural fluctuation in state public self-awareness, rumination and mindfulness, as well as examining the interrelationship between these processes over time. As predicted, state measures of paranoia, public self-awareness, rumination and mindfulness taken at three random times over the course of two weeks, significantly correlated. All correlations were in the expected direction, whereby higher levels of state paranoia were associated with higher levels of public self-awareness and rumination, and with lower levels of state mindfulness over the 2-week period. This finding is consistent with the aforementioned association between these variables at a trait level (see section 4.2.1. above, p. 88). Together, these findings support theory that highlights processes of high self-consciousness about others' judgements, repetitive negative thinking and decreased mindful abilities as inherent to the emergence and maintenance of paranoid beliefs (Chadwick, 2006; Fenigstein & Vanable, 1992; Freeman et al., 2007).

Furthermore, the temporal interrelationship between the three state cognitive measures also suggests that these processes naturally fluctuate and co-occur over time in a consistent fashion. Thus, current perception's of oneself as the

focus of others' attention co-occurs with pondering/dwelling on the causes and implications of one's problems, in the context of low mindful awareness. This finding is also consistent with cross-sectional research, which although not specific to paranoia, has shown higher dispositional mindfulness is associated with lower rumination (e.g. Raes & Williams, 2010) and public self-consciousness (e.g. Perona-Garcelan et al., 2014) at a trait level. Results are also similar to evidence showing reductions in state rumination following both a mindfulness induction (Hilt & Pollak, 2012), and interventions (e.g. Shahar, Britton, Sbarra, Figueredo, & Bootzin, 2010; Snippe, Bos, van der Ploeg, Saderman, Fleer, & Schroevers, 2014; van Aalderen, Donders, Giommi, Spinhoven, Barendregt, & Speckens, 2012).

The current finding of a relationship between mindfulness and rumination, also seems to fit with other theoretical accounts, which emphasise mindfulness ability (whether at trait or state level) as helping individuals from disengaging in negative cognitive processes known to exacerbate psychological distress, such as perseverative and judgemental brooding (Garland, Gaylord, & Park, 2009; Garland, Fredrickson, Kring, Johnson, Meyer, & Penn, 2010). In their 'upward spiral' mindful coping model, Garland and colleagues (Garland et al., 2009) highlight a dynamic process whereby mindfulness helps disengage from rumination via an increased ability for psychological flexibility or capacity to use a wider range of adaptive cognitive strategies (such as positive reappraisal of stressful events), which in turn substantially reduces psychological distress over time (Garland, Gaylord, & Fredrickson, 2011). This is particularly relevant to paranoia, given evidence

showing that among individuals experiencing psychotic-like experiences mindfulness in the form of increased psychological flexibility (i.e. reappraising stressful events in a non-judgemental and decentred way) predicts less symptom-related distress (Morris, Garety, & Peters, 2014). Thus, the dynamic processes described in Garland et al.'s (2010) model, may also underlie the naturally ongoing interplay between momentary paranoid thinking and other co-occurring cognitive processes or states, which is suggested by the current findings. However, this interpretation is only tentative as measures of cognitive reappraisal were not included in the present study.

4.2.2.2. Prediction of variability in state measures from trait paranoia

Although some evidence suggests the cognitive variables under investigation are subject to natural variability over time (e.g. see Dickson et al., 2012 for rumination variability), this is yet to be shown in relation to psychotic-related phenomena. Besides triggering and maintaining persecutory ideation and psychosis-related distress, these cognitive processes may also be influenced by pre-existing vulnerability to paranoid thinking (Chadwick, 2006; Freeman et al., 2002). Thus, a reasonable assumption is that dispositional paranoia may alter the dynamics of natural variation in current paranoid thinking and cognitive states of public self-awareness, rumination and mindfulness. Testing this hypothesis in a nonclinical sample was a novel aim of this study. The hypothesis that trait paranoia will predict variability in state measures was only partially supported, as results showed that trait paranoia significantly predicted variability in state paranoia but did not predict variability in state measures pertaining to the three cognitive factors.

The prediction of variability in 'paranoid' states from trait paranoia is consistent with evidence showing individuals with higher psychosis vulnerability are more likely to experience psychotic experiences (e.g. unusual perceptions or thought interference) in daily life (Verdoux et al., 2003a). Furthermore, results also highlight that even in the context of higher pre-existing vulnerability to paranoia, individuals experience short-term fluctuations in such thinking rather than constantly feeling similar levels of 'paranoia' across time.

Contrary to prediction, trait paranoia did not predict variability in state measures of public self-awareness, rumination and mindfulness. This could be attributed to overall low levels of temporal variation in cognitive processes found in this nonclinical sample (i.e. at each time point, variability values ranged between 1.07 and 1.52SD from the mean, which is around zero). These lower variability levels may be indexing 'cognitive stability' over time characterizing a nonclinical 'healthy' population, as opposed to more variable or unstable patterns, which often underlie dysregulation in psychological processes among clinical samples (e.g. Myin-Germeys et al., 2003, Myin-Germeys et al., 2009; Varese, Udachina, Myin-Germeys, Oorschot & Bentall, 2011). More adaptive/stable patterns have also been shown to be less predictive of psychological maladjustment (Houben et al., 2015). Therefore, overall stability of cognitive states in this study could possibly explain the failure in finding a significant effect regarding the prediction of variability in these variables from trait paranoia.

Equally plausible is that the 2-week period may have also been too short for any meaningful fluctuation in the abovementioned cognitive states to take place and to significantly impact the predicted associations with trait paranoia (Oliver et al., 2012b). This is however unlikely given evidence showing the prediction of psychotic symptoms from 'variability' in cognitive-affective processes (e.g. negative affect and 'suspiciousness') over a briefer timeframe (i.e. 5 consecutive days) (Kramer et al., 2013). However, unlike the current investigation, the latter study used a much more time and resource-intensive methodology (i.e. ESM) enabling multiple assessments on a daily basis.

The current findings can also be interpreted as potentially highlighting that factors, other than a general tendency to experience paranoid thinking (i.e. trait paranoia) may also influence short-term variability in state paranoia and other cognitive states. For example, it is worth considering the extent to which variation in cognitive states among individuals prone to paranoid thinking may also be explained by person-environment interactions rather than by pre-existing vulnerability *per se* (Oorschot, Kwapil, Delespaul, & Myin-Germeys, 2009). In fact, naturalistic prospective research has shown that individual characteristics interact with contextual variables to influence natural variation in delusional experiences in both clinical and nonclinical samples (e.g. Myin-Germeys et al., 2001; Verdoux, Husky, Tournier, Sorbara, & Swendsen, 2003b). This research includes Verdoux et al.'s (2003b) nonclinical study which showed participants with higher psychosis vulnerability reported more psychosis-related experiences (i.e. unusual perceptions) when accompanied by unfamiliar people than when spending time alone (Verdoux et al., 2003b).

As the current study examined the predictive association between trait paranoia and variability in cognitive states without accounting for the potential influence of contextual variables, this may also help explain the lack of a significant effect regarding this association.

By studying the dynamic relationship between paranoia and the three cognitive factors in the 2-week period, a novel contribution of this study was to show that a) at state level, these variables fluctuate concurrently over time in an intuitive manner, and b) variability in paranoid states is directly influenced by trait paranoia. Future naturalistic prospective research could build on from these findings in several ways. First, more firm conclusions could be drawn regarding the role of the abovementioned cognitive factors in triggering and maintaining paranoia by examining which of these cognitive states (either individually or in combination) precede or influence subsequent paranoid thinking. Second, if the dynamic association between paranoia and these cognitive processes is examined in populations presenting with different levels of vulnerability to paranoid thinking, this may help in obtaining a wider range of variability in cognitive states. This strategy may in turn increase power to detect significant effects when testing hypotheses concerning explanatory factors and/or causal mechanisms underlying natural variation in paranoia and relevant cognitive states over time. Third, this line of inquiry may also benefit from examining the environmental circumstances in which variability in publicly self-aware, ruminative and mindful states is more likely to increase and/or decrease in the context of pre-morbid/trait paranoia, as well as exploring how such contextual factors may interact with this trait to influence

subsequent paranoid states. Fourth, compared to the current study, the use of ESM-based multiple daily assessments to capture ‘in-the-moment’ cognitive states will constitute a more methodologically sound and robust strategy for carrying out detailed examination of the temporal relationship between paranoia and the abovementioned cognitive factors.

4.2.3. Personal experiences of paranoia: prediction from trait and state measures

There is evidence that idiosyncratic measures of paranoia such as the PEPS can usefully examine the phenomenology of paranoia in nonclinical samples both cross-sectionally (Ellett et al., 2003) and in the context of qualitative descriptions of reasons for change in belief dimensions over time (Allen-Crooks & Ellett, 2014). However, studies are yet to examine what factors may prospectively explain or influence occurrence of paranoid experiences when focusing on personally defined accounts and in the context of daily life.

Furthermore, the extent to which idiosyncratic paranoid experiences may be influenced by theoretically relevant cognitive processes is currently unknown. Thus, a novel aim of this study was to use a naturalistic prospective design to examine the predictive relationship between pre-defined/standard measures of paranoia and theoretically relevant cognitive processes (at the trait and state levels) with personal paranoid experiences, as measured by the PEPS (Ellett et al., 2003).

The only supported prediction was that trait public self-consciousness significantly predicted personal accounts of paranoid experiences. This finding is consistent with theoretical and empirical work confirming high public self-consciousness is a prominent feature of paranoid thinking, whereby increased attentiveness to aspects of the self which are presented to others contributes to irrational misinterpretations about others' motives and actions towards the self (Fenigstein & Vanable, 1992; Freeman et al., 2002; von Gemmingen et al., 2003). Publicly self-conscious individuals are more likely to believe they are the centre of other's attention, thus perceiving themselves as potential targets of others' malicious intentions against them; this tendency to perceive others' covert and/or overt actions as being intentionally directed towards oneself is also known as the self-referent bias (Fenigstein, 1984; Fenigstein & Vanable, 1992; von Gemmingen et al., 2003). An information-processing style characterised by the combination of high suspiciousness and self-referent ideas is also thought to constitute a marker of cognitive vulnerability preceding the onset of delusional ideation (Bentall et al., 2001). This interpretation also fits in with current findings concerning the descriptive analysis of the PEPS, which confirmed most participants who endorsed a paranoid experience over the 2-week period, felt they had been the target of negative judgement by others and felt powerless to stop what others had done to them. Furthermore, only a small minority of these individuals felt that what had been done to them was totally undeserved. Thus, in a nonclinical sample, endorsement of paranoia experiences linked to the perception of deliberate harm from others (i.e. PEPS responses) over a brief period of time (i.e. 2 weeks) appears to be characterised by thoughts and feelings of interpersonal vulnerability and

undeserved victimisation by others. The latter correspond to a specific self-focussed attentional style (i.e. public self-consciousness) characterising pre-existing cognitive vulnerability contributing towards clinical delusions formation and maintenance (Bentall et al., 2001; Freeman et al., 2002; Freeman et al., 2007).

The null findings concerning the prediction of PEPS from the remaining (trait and state) measures may be due to low levels of power. In this study, the percentage of participants reporting a paranoia experience episode over the last 2 weeks was 21%. This finding contrasts the results from the PEPS' original validation paper, where a more balanced sample of positive vs. negative cases (i.e. with N = 324, the proportion of 'yes' responses to the PEPS was 47%) was obtained. However, unlike Ellett et al.'s (2003) investigation, which covered a longer time period (i.e. presence/absence of paranoid experiences was recorded if participants 'had ever had' such experiences), the current study was the first to employ a much shorter timeframe of 2 weeks in which to record a personal experience of paranoia. This shorter timeframe may therefore account for the imbalanced number of PEPS 'positive cases' or 'events' characterising this student sample. This imbalance may have affected the validity and precision of regression coefficients in the logistic models, leading to biased parameter estimates and invalid significance tests (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996), and potentially resulting in null findings.

In line with theory and empirical work, the fact that rumination and mindfulness (both trait and state) did not significantly predict the PEPS may suggest that, unlike public self-consciousness, these cognitive processes are subsequent to rather than antecedents of distressing threat beliefs (Bentall et al., 2001; Chadwick, 2006; Freeman et al., 2002; Freeman et al., 2007; Martinelli et al., 2013; Melo & Bentall, 2010; Vilardaga et al., 2013).

Furthermore, recent evidence suggests that whilst avoidant-type responses (e.g. rumination) to paranoid experiences (as measured by the PEPS) are more characteristic of clinical populations, nonclinical groups rely more on 'confronting' reactions (e.g. directly seeking to discuss one's concerns with their perceived persecutor) to such experiences (da Motta et al., 2014). Thus, 'confronting the situation' appears to be a strategy regularly used by healthy individuals in an attempt to minimise the impact of distressing paranoid experiences (da Motta et al., 2014). This 'confronting' style of reacting also seems to be clearly distinguishable from the ability to relate with distressing experiences in a decentred, non-evaluative and accepting manner (Chadwick, 2006). Although analysis of responses (including cognitive reactions) to paranoid experiences as measured by the PEPS was beyond the scope of this study, it is possible that rumination and mindfulness are not the type of cognitive strategies on which students usually rely as a way of dealing with these distressing experiences.

Notwithstanding the above considerations regarding the prediction of PEPS' null findings, it is worth noting that one result closely reached statistical significance. This was the case of the prediction of PEPS from state

mindfulness (p value of .06), thus potentially indicating a trend characterised by increased endorsement of personal paranoid experiences occurring over brief periods of time among individuals who are less able to respond to these distressing experiences with mindful awareness and acceptance. Such trend would be consistent with theory and emerging evidence linking increased psychotic-related distress with decreased mindfulness abilities, and vice-versa (Chadwick, 2006; Oliver et al., 2012b; Vilardaga et al., 2013).

Future research investigating personal experiences of paranoia may benefit from using a combination of clinical and nonclinical samples and compare data from each group in terms of the cross-sectional and predictive relationship between these idiosyncratic experiences and the three above-mentioned cognitive factors. This approach will help establishing whether the prediction of PEPS from public self-consciousness can be replicated in a clinical sample. This strategy will also allow testing the unique vs. cumulative contribution of public self-consciousness to paranoid experiences over and above rumination and mindfulness in clinical populations.

Even though further examination of different dimensions of paranoia was beyond the scope of this study, descriptive analysis of the PEPS revealed the majority of individuals who endorsed a paranoid experience expressed there had be no change in their beliefs over the 2-week period. This finding is consistent with previous nonclinical research suggesting belief conviction tends to remain unchanged over time (Ellett et al., 2003). Furthermore, recent evidence also suggests healthy individuals do not differ from clinical groups regarding their degree of belief conviction (da Motta et al., 2014), and the

higher the belief conviction among nonclinical samples, the more detrimental the behavioural and emotional consequences of paranoid ideation (Moritz & van Quaquebeke, 2014). Therefore, future naturalistic prospective research should also consider examining the extent to which different dimensions of paranoid experiences as measured by the PEPS (e.g. preoccupation, powerlessness, conviction) may vary in intensity over time and the extent to which such variability may predict cognitive, behavioural and/or emotional responding to such distressing experiences.

4.3. Strengths and limitations

The next section will consider the strengths and limitations of the current research.

4.3.1. Design

To investigate the association between trait measures at baseline, the study employed a cross-sectional design. This strategy was deemed appropriate in that it allowed for the simultaneous examination of several variables.

However, the use of a cross-sectional design means that causal links between these variables cannot be inferred and caution is warranted when interpreting these data.

This study also used a naturalistic prospective design to examine the temporal association between paranoia and the three cognitive factors. This strategy is not only more ecologically valid but also permits more substantial inferences of causality. Furthermore, the use of a prospective design fits in with recent recommendations for further research to include examination of

the impact of different factors (including cognitive regulation strategies) on future expression of psychotic-like experiences (Collip et al., 2013b).

However, there are also some limitations. First, the 2-week period may have been too short a timeframe for a more meaningful proportion of 'PEPS positive cases' to be found in this nonclinical sample (see section 4.2.3. above). As specified earlier, this resulted in an imbalanced number of cases/events per variable analysed, which consequently may have affected the validity of the logistic models (Pedduzi et al., 1996).

Second, in this study 'variability' in the cognitive processes under examination may not have been adequately captured as it only relied on three measurement time-points over 2 weeks. It is plausible that multiple assessments (e.g. daily measures) of these variables could have resulted in more valid and reliable variability measures, However, this is unlikely as the same variability assessment strategy (i.e. three measurement time points) has been adopted by naturalistic prospective research showing a significant association between paranoid states and variability in cognitive processes (i.e. self-esteem) over time (Thewissen et al., 2007).

4.3.2. Sample

The total number of participants recruited in this study slightly exceeded the sample size recommended by the power analysis calculations. This suggests the sample used was sufficiently powered to enable detection of significant effects, whilst reducing the likelihood of a Type II error.

However, the sampling strategy also presents key limitations. These include the use of a convenience sample, which in spite of its cost and accessibility

advantages it may also limit the generalisability of the findings. Using student samples may also result in an overestimation of the level of delusional beliefs compared with samples drawn from the general population, thus also limiting the generalisability of findings (Lincoln & Keller, 2008). However, in the current study the mean levels of paranoia as measured by the PS (i.e. a measure of trait paranoia specifically designed for use with student populations) were consistent with prior nonclinical research (e.g. Ellett et al., 2003; Fenigstein & Vanable, 1992). Furthermore, the overall findings regarding the study hypotheses are also consistent with other prospective studies using a range of samples (e.g. Brett et al., 2014; Kramer et al., 2013; Thewissen et al., 2011), which supports generalisability of the current findings.

Attention should also be drawn to the fact that the sample was predominantly female, University educated (i.e. undergraduate and postgraduate levels), the majority of which considered themselves as being of White ethnic backgrounds. Therefore, the sample demographics may also limit the generalisability of the findings.

4.3.3. One-tailed hypothesis testing

As specified earlier (see section 1.5.2. above, p. 51), the study tested five hypotheses, two of which were directional (H1 and H4) whereas the remaining three were non-directional (H2, H3 and H5). Formulation of directional hypotheses was deemed appropriate given the strong, prior theoretical framework (i.e. see section 1.3. above), which underlies expectations about

the direction of effects (i.e. positive and negative correlations between trait paranoia, the three cognitive factors and problem behaviour at baseline as stated in H1, and the prediction of PEPS from trait paranoia and the three cognitive factors as stated in H4). When testing these directional hypotheses, one-tailed significance levels were applied. Although this approach has the potential to increase power to detect a significant effect, it constitutes a key limitation of the study in that it may have led to increased type I error rates (Sapp, 2006). However, the latter is unlikely given that the findings of the abovementioned directional hypotheses remained statistically significant even when more conservative two-tailed significance levels were applied.

4.3.4. Measures

The data collected for the current study were based on self-report measures, which are known to be vulnerable to informant bias (e.g. social desirability) and method error (e.g. item-wording and scaling interpretation). However, all measures were carefully chosen in light of their robust psychometric properties, and the study findings were in the expected direction and consistent with prior theory and empirical work. Furthermore, self-report measures are also advantageous in that they enable large quantities of data to be collected within short periods of time, are cost-effective, minimise possibility of experimenter bias, and provide anonymised information, which can be quickly quantified and objectively analysed.

However, between the four state measures, assessment of cognitive states relied on different timeframes. That is, whereas state paranoia and self-awareness measures captured ‘in the moment’/‘right now’ paranoid and self-aware states, the state rumination measure captured ‘daily’ ruminative states and the state mindfulness measure captured mindful states experienced ‘within the last 2 days’. This may have potentially compromised the validity of momentary data, as the different state measures may have been susceptible to varying levels of recall accuracy (Oorschot et al., 2009). Ideally, the timeframes for all state measures would have relied on ‘the here and now’ ratings to minimise recall bias. However, more suitable alternative state measures of mindfulness and rumination were unavailable at the time of planning the research and during the completion of the study.

Nevertheless, a key strength of this study was the use of a naturalistic approach to assess state paranoia and the cognitive processes of public self-awareness, rumination and mindfulness. By asking participants to complete the state measures in their own environment, the data obtained has higher ecological validity than more traditional cross-sectional and prospective research methods (Myin-Germeys et al., 2009). The use of state measures in the current study also contrasts the type of momentary assessments often used in other prospective research employing naturalistic methodologies, such as ESM-based studies. In the latter, momentary assessments usually rely on very narrow definitions of the constructs measured (i.e. single ESM question items) so unable to cover a fuller range of possible dimensions operationalising constructs of interest (Ben-Zeev, Ellington, Swendsen, &

Granholm, 2011). This is an important limitation as cognitive processes are fleeting in nature so especially difficult to capture as they occur (Ben-Zeev et al., 2012). Therefore it is important that underlying the momentary assessment of such processes are measures that can more fully capture their defining features something which this study was able to do, by using state measures of the variables of interest.

Another key strength of the current study is the use of the PEPS (Ellett et al., 2003), as it emphasises the idiosyncratic nature of paranoid experiences rather than relying on paranoia measures which employ pre-defined/standard and/or broader definitions of this construct only (see section 4.2.3. above). However, endorsement of paranoid experiences over the 2-week period could have been the result of 'real' events as opposed to unfounded beliefs, so potentially defying more traditional conceptualisations of paranoia emphasising 'falsity' or 'false beliefs' as its key defining feature (Freeman, 2008). Nevertheless, the definition of a 'paranoid experience' provided by the PEPS is consistent with advocates of the continuum view, who describe paranoia as the perception of/belief about planned and intentional harm by others (Ellett et al., 2003; Freeman & Garety, 2000). By including "a clear perception of intended harm" (Ellett et al., 2003, p.427), the PEPS definition of paranoid experiences also ensures its distinctiveness from social anxiety, an important conceptual differentiation given the considerable overlap between both conditions (Freeman & Garety, 2000).

An additional issue that warrants some discussion relates to the fact that affective variables were not measured and examined in relation to this study's main constructs (i.e. paranoia, public self-consciousness, rumination and mindfulness). This is a significant limitation in light of theory and extensive empirical work suggesting the prominent role of emotion in the development and maintenance of persecutory delusions (e.g. Ben-Zeev et al., 2011, Freeman et al., 2002; Freeman et al., 2007; Myin-Germeys et al., 2009; Smith, Fowler, Freeman, Bebbington, Bashforth, Garety, et al., 2006). In fact, cognitive models propose that in the context of anomalous experiences (e.g. threat beliefs) and stressful events, emotional changes occur, which impact the moment-to-moment cognitive processing of such experiences, influencing their content and perpetuating their occurrence (e.g. through rumination) (Freeman et al., 2002; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001).

The above mentioned theoretical accounts are supported by evidence showing that the link between persecutory ideation and a range of cognitive processes (e.g. hyperalertness and negative ideas about the self) is partially explained by anxiety and depression (Freeman et al., 2012) and negative affect is a significant predictor (rather than a consequence) of delusional thinking (Fowler, Hodgekins, Garety, Freeman, Kuipers, Dunn, et al., 2011; Freeman et al., 2011). Research has also consistently identified depression as a strong correlate and predictor of paranoia (e.g. Freeman et al., 2011; Freeman et al., 2012; Hartley, Barrowclough, & Haddock, 2013), and more recently, depression has also been found to associate with state paranoia and

other cognitive correlates of current paranoid thinking (e.g. anticipation of threat to the self, negative interpretations of ambiguous events and negative ideas about the self) (Freeman et al., 2013). Furthermore, when examining the correlates and predictors of paranoia in the context of daily life, naturalistic prospective research has also identified depression as a key factor contributing towards the persistence of moment-to-moment paranoid thinking (Kramer et al., 2013) and a predictor of distress following prior persecutory ideation (Ben-Zeev et al., 2011). Compared to previous research and given their powerful repeated measures methodology, these naturalistic prospective studies provide a stronger test of the directionality of the association between depression and paranoia and the extent to which depressive mood may interact with other cognitive processes which are also likely to impact current paranoid thinking.

In light of the considerations above, it is therefore plausible that affective processes (and depressive mood in particular), which were not accounted for in the current study, could potentially have more explanatory power in relation to the hypothesized relationships and mechanisms of influence between paranoia and the cognitive factors under examination. In fact, the potential for depression to impact nonclinical paranoia via its interaction with the three cognitive factors measured in this study is of particular interest given the already known associations between depressed mood, high levels of self-consciousness and rumination, and low mindful abilities in the context of persecutory delusions (e.g. Freeman et al., 2013; Startup et al., 2007; White, Gumley, McTaggart, Rattrie, McConville, & Cleare, 2013). Future research

would therefore benefit from pursuing this line of inquiry as the role of depression in contributing towards formation and maintenance of paranoia, over and above other cognitive processes relevant to paranoid thinking remains currently unknown.

4.4. Clinical implications

Consistent with the continuum view (e.g. Freeman et al., 2005), the current study showed that paranoid cognitions are commonly experienced in nonclinical populations and key cognitive correlates and predictors of such experiences have also been found to associate with clinical manifestations of paranoia. A direct clinical implication of these findings concerns the normalisation of paranoid experiences. Normalising paranoia is an important aspect of therapeutic work in that it can encourage individuals to share their experiences (which, at the cognitive level, may include their focus of attention, and ruminative and/or mindful responses), which may in turn help minimise the distress related to their symptoms (Turkington, Kingdon, Rathod, Hammond, Pelton, & Mehta, 2006).

Clinical implications can also be derived from the contribution of public self-consciousness to subsequent paranoid experiences. Keeping in mind the continuum view, a possible extrapolation of this finding to individuals presenting with clinical delusions is that prompt identification and ongoing monitoring of self-focussed attentional processes, should be an integral part of standard approaches to assessment, formulation and treatment of psychotic disorders. This is especially relevant when considering evidence

that 'attentional processing' (i.e. self-consciousness) in clinical paranoia is fluid over time, moving between an exaggerated focus on the self (as the target of external threat) and others (as the source of malicious intent) (Stopa et al., 2013). Therefore, careful examination of self-conscious processes may benefit from using personal account-based measures such as the PEPS, as these methods provide rich and detailed descriptions of thoughts/perceptions of harm underlying paranoid experiences. Such approaches to measurement are seldom used in routine clinical practice (Stopa et al., 2013), which potentially explains why most treatments offered to psychotic populations are psychopharmacological in nature, rather than based on a formulation-based understanding of psychological processes contributing to psychosis-related symptoms (Vilardaga et al., 2013).

Public self-consciousness may also constitute a key target for change earlier in the treatment process. Addressing change in this exaggerated self-focussed attentional style is already a fundamental aspect of traditional CBT approaches, which emphasise thought challenging, generating alternative explanations for internal and/or external events and reality-testing (Freeman et al., 2012). However, and consistent with a formulation-based approach to treatment, prior to promoting change the role of psycho-education in helping clients understand the link between public self-consciousness and paranoid thinking is key in this process. By raising awareness about the type of cognitions that characterise a public self-conscious attentional style, individuals may feel more empowered in their ability to independently

recognise and monitor these ways of thinking and the extent to which these cognitive processes contribute to their paranoid beliefs over time.

The current study also suggests that self-consciousness operates together with other maladaptive cognitive processes such as ruminative thinking and non-mindful coping to maintain paranoid thinking. Therefore, shifting attentional focus coupled with the learning of more adaptive cognitive coping strategies is likely to be a crucial target of successful clinical interventions. In this sense, an integrative approach to psychosis intervention combining elements of traditional CBT (e.g. thought challenging and testing out paranoid ideas) with third wave approaches such as Mindfulness-based programmes (e.g. Chadwick et al., 2009) and ACT (Hayes et al., 1999) could potentially increase treatment effectiveness. In fact, there is emerging evidence attesting the clinical benefits of applying Mindfulness approaches and ACT to the treatment of psychotic individuals (e.g. Bach & Hayes, 2002; Bach, Hayes, & Gallop, 2012; Chadwick et al., 2005; Chadwick et al., 2009). Common to both approaches is the emphasis placed on changing one's relationship with their symptoms rather than focusing on the symptoms themselves, and draw on mindfulness abilities (through learning and/or regular practice) to directly address unhelpful cognitive coping in the form of rumination, avoidance and/or judgemental appraisals of internal/external experiences (Bach, Gaudiano, Pankey, Herbert, & Hayes, 2006; Chadwick, 2006). This shift in treatment focus is also consistent with the observation that although paranoia is common among healthy individuals, one of the possible reasons as to why the vast majority do not go on to develop clinical psychopathology, is their

increased tendency to respond to these experiences in more adaptive/helpful ways (Lincoln et al., 2010). Findings from the current study also seem to support this view.

Clinical implications can also be tentatively derived from the correlational evidence obtained in this study of an association between paranoia and a range of maladaptive behaviours. Besides characterising several psychological disorders (Kingston et al., 2011; Wuppermann et al., 2012), behavioural dysregulation in the form of co-occurring problem behaviours such as substance misuse and aggression appears to be a key feature of emotional regulation deficits underlying paranoia in both clinical and nonclinical samples (e.g. Lincoln et al., 2010; Lincoln et al., 2014). In the current study, findings only suggest that, rather than being a cause or a consequence of paranoid thinking, diverse problem behaviours co-occur with paranoia. However, in addition to the evidence above, this finding potentially highlights the relevance of accounting for behavioural dysregulation as a comorbid feature of paranoia in clinical settings. By incorporating this information as part of the formulation process, this may in turn guide the development and implementation of individualised/tailored interventions specifically designed to target such comorbidity. As previously suggested, effective interventions in this area are likely to be transdiagnostic in nature (e.g. including Mindfulness and/or ACT-based approaches), which target change in common processes underlying both paranoia and problem behaviours such as emotional regulation deficits and experiential avoidance (Kingston et al., 2010; Lincoln et al., 2014; Wuppermann et al., 2012).

4.5. Conclusion

The current study addressed theoretical and methodological gaps in the literature concerning the correlates and predictors of nonclinical paranoia. The following key findings emerged: (1) higher trait paranoia was associated with higher trait public self-consciousness and rumination, and with lower trait mindfulness; (2) higher trait paranoia is associated with a global measure of problem behaviour; (3) trait paranoia predicted variability in state paranoia over the course of 2 weeks; (4) an association was found between three random time samples of state paranoia, public self-awareness, rumination (positive correlations) and mindfulness (negative correlation) over the 2-week period, and (5) trait public self-consciousness predicted endorsement of paranoid experiences as measured by the PEPS (Ellett et al., 2003) at the end of 2 weeks. Collectively, the current findings support contemporary models of delusion formation and maintenance (Chadwick, 2006; Freeman et al., 2002), and provide a foundation for further research into the dynamic interplay between cognitive processes contributing towards the onset and/or persistence of paranoid thinking.

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APPENDICES

APPENDIX 1: STUDY FLYER

Enter a prize draw (vouchers worth £100 total!) by taking part in psychology study

A research study is currently ongoing at the Clinical Psychology Department focusing on thoughts, feelings and experiences among University students. By taking part in this study, participants will be entered into a **prize draw for vouchers worth a total of £100!**

This study is open to all RHUL students (undergraduate and postgraduate).

If you are interested in taking part, please contact:

Carla.Matias.2012@live.rhul.ac.uk

If you are a member of the Psychology Experiment Management System, you can also check the study details there (see listings under the paid pool only), and book in a time slot to participate in the study.

Thank you!

**This study has been reviewed and approved by the
Psychology Department Research Ethics Committee,
Royal Holloway University London**

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Contact:

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

Study: Thoughts, feelings & experiences

APPENDIX 2: BASELINE MEASURES (STAGE 1)

Before completing the questionnaires below, please make sure you enter your research participation ID number.

Your research participation ID No:

Socio-demographic questionnaire

Please provide the following information:

1. Please state your age

2. Your gender (circle chosen option):

Male Female Transgender

Other, please specify _____

3. Your ethnicity (circle chosen option):

White British White Other Black British Black Other Asian British Asian Other

Other, please specify _____

4. Course/degree title & year _____

5. Have you ever been diagnosed with a mental health problem? (circle chosen option)

Yes No

The following questions ask you about your previous knowledge and/or experience of mindfulness.

Mindfulness is a form of meditation, which has increasingly been taught and practiced in the West but has its roots in Eastern (Buddhist) philosophy.

6. Have you ever learnt/been taught about mindfulness? (circle chosen option)

Yes No

7. Have you ever practiced any form of mindfulness-based technique (e.g. mindful meditation)? (circle chosen option)

Yes No

Continue to questions 8-10 below if answering 'YES' to question 7 above.

8. Please indicate the type of mindfulness-based technique(s) you have practiced

9. Please indicate how long have you been practicing mindfulness?

10. What is your competence level in mindfulness practice (e.g. beginner, intermediate, advanced?)

Thank you for filling in this questionnaire.

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)

Please read each statement below and tick the box that indicates how applicable each statement is to you.

	Never or very rarely true	Rarely true	Sometimes true	Often true	Very often or always true
I'm good at finding words to describe my feelings.					
I criticize myself for having irrational or inappropriate emotions.					
I perceive my feelings and emotions without having to react to them.					
When I do things, my mind wanders off and I'm easily distracted.					
I can easily put my beliefs, opinions, and expectations into words.					
I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.					
I watch my feelings without getting lost in them.					
I tell myself I shouldn't be feeling the way I'm feeling.					
It's hard for me to find the words to describe what I'm thinking.					
I am easily distracted.					
I believe some of my thoughts are abnormal or bad and I shouldn't think that way.					
I have trouble thinking of the right words to express how I feel about things.					
I make judgements about whether my thoughts are good or bad.					
I find it difficult to stay focused on what's happening in the present.					
When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.					
In difficult situations, I can pause without immediately reacting.					
When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.					
It seems I am "running on automatic" without much awareness of what I'm doing.					
When I have distressing thoughts or images, I feel calm soon after.					

I tell myself that I shouldn't be thinking the way I'm thinking.					
Even when I'm feeling terribly upset, I can find a way to put it into words.					
I rush through activities without being really attentive to them.					
When I have distressing thoughts or images I am able just to notice them without reacting.					
I think some of my emotions are bad or inappropriate and I shouldn't feel them.					
My natural tendency is to put my experiences into words.					
When I have distressing thoughts or images, I just notice them and let them go.					
I do jobs or tasks automatically without being aware of what I'm doing.					
When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.					
I can usually describe how I feel at the moment in considerable detail.					
I find myself doing things without paying attention.					
I disapprove of myself when I have irrational ideas.					

Thank you for filling in this questionnaire.

The Paranoia Scale (PS; Fenigstein & Venable, 1992)

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

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

19. I am bothered by people outside, in cars, in stores, etc watching me.					
20. I have often found people jealous of my good ideas just because they had not thought of them first.					

Thank you for filling in this questionnaire.

The Self-Consciousness Scale (SCS; Fenigstein et al., 1975)

Below are statements that may or may not be characteristics of the way you see yourself as a person. Read each carefully and rate whether the statement is characteristic or uncharacteristic of you ticking the box that indicates how applicable each statement is to you.

	Extremely uncharacteristic	Generally uncharacteristic	Equally characteristic & uncharacteristic	Generally characteristic	Extremely characteristic
1. I'm always trying to figure myself out.					
2. I'm concerned about my style of doing things.					
3. Generally, I'm very aware of myself.					
4. It takes me time to overcome my shyness in new situations.					
5. I reflect about myself a lot.					
6. I'm concerned about the way I present myself.					
7. I'm often the subject of my own fantasies.					
8. I have trouble working when someone is watching me.					
9. I constantly scrutinize myself.					
10. I get embarrassed very easily.					
11. I'm self-conscious about the way I look.					
12. I find it hard to talk to strangers.					
13. I'm generally attentive to my inner feelings.					
14. I usually worry about making a good impression.					
15. I'm constantly examining my motives.					
16. I feel anxious when I speak in front of a large group.					
17. One of the last things I do before I leave the house is look in the mirror.					
18. I sometimes have the feeling that I'm off somewhere watching myself.					
19. I'm concerned about what other people think of me.					

20. I'm alert to changes in my mood.					
21. I'm usually aware of my appearance.					
22. I'm aware of the way my mind works when I work through a problem.					
23. Large groups make me nervous.					

Thank you for filling in this questionnaire.

The Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011)

In this questionnaire, you will be asked to describe how you typically think about negative experiences or problems. Please read the following statements and rate the extent to which they apply to you when you think about negative experiences or problems.

	Never	Rarely	Sometimes	Often	Almost always
1. The same thoughts keep going through my mind again and again.					
2. Thoughts intrude into my mind.					
3. I can't stop dwelling on them.					
4. I think about many problems without solving any of them.					
5. I can't do anything else while thinking about my problems.					
6. My thoughts repeat themselves.					
7. Thoughts come to my mind without me wanting them to.					
8. I get stuck on certain issues and can't move on.					
9. I keep asking myself questions without finding an answer.					
10. My thoughts prevent me from focusing on other things.					
11. I keep thinking about the same issue all the time.					
12. Thoughts just pop into my mind.					
13. I feel driven to continue dwelling on the same issue.					
14. My thoughts are not much help to me.					
15. My thoughts take up all my attention.					

Thank you for filling in this questionnaire.

The Composite Measure of Problem Behavior (CMPB; Kingston et al., 2011)

This questionnaire is designed to ask you about a range of behaviours that you may, or may not, engage in. You are required to rate the extent to which each statement below characterises you, using the following scale:

1 ----- 2 ----- 3 ----- 4 ----- 5 ----- 6 -----

Very unlike me Quite unlike me A little unlike me A little like me Quite like me Very Like me

For example, if you read a statement and think “it’s very unlike me to do X” you would circle option “1” for that statement. If you think “that’s only very slightly like me” circle option ‘4’, or if you think “it’s very like me to do that”, circle option ‘6’.

Before completing the questionnaire, please take note of the following points:

Where questions refer to internet use, this means non-work related use such as chat rooms, surfing the net etc. Where questions refer to sexual behaviours, this includes both foreplay and all forms of sexual intercourse. Where questions refer to drugs, this means the use of illegal drugs. This would include, for example, Cannabis, Cocaine, Ecstasy etc. Where questions refer to smoking, this means tobacco.

Please read each statement below carefully and answer as honestly as possible. All answers are anonymous. Please do not leave any answers blank.

It's like me to

1 say no to drugs (this includes cannabis)	1	2	3	4	5	6
2 be pre-occupied by thoughts about smoking when smoking is prohibited	1	2	3	4	5	6
3 sometimes consume more than 6 alcoholic drinks in one evening	1	2	3	4	5	6
4 ignore dietary details (e.g., calorie content) when choosing something to eat	1	2	3	4	5	6
5 exercise even when I am feeling tired and/or unwell	1	2	3	4	5	6
6 sometimes intentionally prevent scars or wounds from healing	1	2	3	4	5	6
7 smoke tobacco	1	2	3	4	5	6
8 surf the net/play computer games before doing something else that needs doing	1	2	3	4	5	6
9 generally have no interest in taking drugs (this includes cannabis)	1	2	3	4	5	6
10 sometimes engage in sexual activities with someone I have only just met	1	2	3	4	5	6
11 find that my work performance or productivity suffers because of my internet/video game use.	1	2	3	4	5	6

12 never resort to violence.	1	2	3	4	5	6
13 sometimes actively seek out drugs for personal use (this includes cannabis).	1	2	3	4	5	6
14 feel irritation/frustration if I am in a non-smoking environment.	1	2	3	4	5	6
15 sometimes scratch or bite myself to the point of scarring or bleeding.	1	2	3	4	5	6
16 sometimes feel pre-occupied with the internet/ computer games.	1	2	3	4	5	6
17 skip doing exercise for no good reason.	1	2	3	4	5	6
18 drink a lot more alcohol than I initially intended.	1	2	3	4	5	6
19 have a long list of things that I dare not eat.	1	2	3	4	5	6
20 feel excitement and/or tension in anticipation of getting drunk.	1	2	3	4	5	6
21 be content if I am prevented from exercising for a week.	1	2	3	4	5	6
22 always stop eating when I feel full.	1	2	3	4	5	6
23 prefer being in places where smoking is prohibited.	1	2	3	4	5	6
24 control my temper.	1	2	3	4	5	6
25 deliberately take small helpings as a means of controlling my weight.	1	2	3	4	5	6
26 exercise more than three times a week.	1	2	3	4	5	6
27 sometimes eat to the point of physical discomfort.	1	2	3	4	5	6
28 sometimes feel tension and/or excitement in anticipation of doing exercise.	1	2	3	4	5	6
29 sometimes cause myself direct bodily harm by, for example, cutting or burning myself.	1	2	3	4	5	6
30 only eat when I am hungry.	1	2	3	4	5	6
31 unsuccessfully try to cut back my use of the internet/ computer games	1	2	3	4	5	6
32 be excited by the opportunity of taking drugs (this includes cannabis)	1	2	3	4	5	6
33 sometimes get so angry that I break something	1	2	3	4	5	6
34 sometimes have more than one sexual partner.	1	2	3	4	5	6
35 sometimes engage in sexual actives with someone when I						

really shouldn't	1	2	3	4	5	6
36 easily limit my use of the internet or video games	1	2	3	4	5	6
37 feel the urge to have a cigarette.	1	2	3	4	5	6
38 sometimes feel that I need to take drugs (this includes cannabis)	1	2	3	4	5	6
39 go out with friends who are drinking, but opt to stay sober	1	2	3	4	5	6
40 sometimes think that I might have a drugs problem (this includes cannabis).	1	2	3	4	5	6
41 avoid eating when I am hungry	1	2	3	4	5	6
42 find it difficult to stop eating after certain foods	1	2	3	4	5	6
43 be aggressive when sufficiently provoked	1	2	3	4	5	6
44 feel the urge to intentionally harm myself	1	2	3	4	5	6
45 sometimes feel that I need an alcoholic drink	1	2	3	4	5	6
46 sometimes claim I have already eaten when this is not true	1	2	3	4	5	6

Thank you for filling in this questionnaire.

You have now completed all 6 baseline questionnaires for STAGE 1 of the study. Please ask the researcher for details regarding completion of STAGES 2 and 3.

Thank you.

APPENDIX 3: STATE MEASURES (STAGE 2)

Before completing the questionnaires below:

1. please make sure you enter you research participation ID number.

Your research participation ID No: _____

2. please indicate the date and time when you finish completing this questionnaire pack.

Date: ____/_____/_____

Time:

----//-----

The Freiburg Mindfulness Inventory – 14-item short version (FMI-14; Walach et al., 2006)

Please use **the last 2 days** as the time-frame to consider each item below. Provide an answer for every statement as best you can. Please answer as honestly and spontaneously as possible. There are neither 'right' nor 'wrong' answers, nor 'good' or 'bad' responses. What is important to us is your own personal experience.

	Rarely	Occasionally	Fairly often	Almost always
1. I am open to the experience of the present moment.				
2. I sense my body, whether eating, cooking, cleaning or talking.				
3. When I notice an absence of mind, I gently return to the experience of the here and now.				
4. I am able to appreciate myself				
5. I pay attention to what's behind my actions.				
6. I see my mistakes and difficulties without judging them.				
7. I feel connected to my experience in the here-and-now.				
8. I accept unpleasant experiences.				
9. I am friendly to myself when things go wrong.				
10. I watch my feelings without getting lost in them.				
11. In difficult situations, I can pause without immediately reacting.				
12. I experience moments of inner peace and ease, even when things get hectic and stressful.				
13. I am able to smile when I notice how I sometimes make life difficult.				

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

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

	Not at all	A little	More than a little	Quite a lot	Frequently	Very often
1. I believe that my behaviour is being analysed.						
2. I feel that people talk about me.						
3. I feel that people are hostile to me.						
4. I feel that others are picking on me.						
5. I feel that others are examining my actions.						
6. I feel that others influence my performance.						
7. I do not trust people's intentions.						

The Situational Self-Awareness Scale (SSAS; Govern & Marsch, 2001)

Please respond to each statement below based on how you feel **RIGHT NOW, AT THIS INSTANT** (not how you feel in general, or at this point in your life). Tick the box with the number that corresponds to your answer. There are no “right” or “wrong” answers.

Strongly Disagree

Strongly Agree

	1	2	3	4	5	6	7
1. RIGHT NOW, I am keenly aware of everything in my environment.							
2. RIGHT NOW, I am conscious of my inner feelings.							
3. RIGHT NOW, I am concerned about the way I present myself.							
4. RIGHT NOW, I'm self-conscious about the way I look.							
5. RIGHT NOW, I am conscious of what is going on around me.							
6. RIGHT NOW, I am reflective about my life.							
7. RIGHT NOW, I am concerned about what other people think of me.							
8. RIGHT NOW, I am aware of my innermost thoughts.							
9. RIGHT NOW, I am conscious of all objects around me.							

The Ruminative Styles Questionnaire – state version (RSQ-s; Ciesla et al., 2012)

Using the scale below, please indicate how frequently have you done each of the following today:

- (0) Not at all**
- (1) Occasionally**
- (2) Often**
- (3) All the time**

1.	Thought “Why do I always react this way?”	0	1	2	3
2.	Thought “What am I doing to deserve this?”	0	1	2	3
3.	Thought “Why do I have problems other people don’t have?”	0	1	2	3
4.	Thought “Why can’t I handle things better?”	0	1	2	3
5.	Analyzed recent events to try to understand your feelings	0	1	2	3
6.	Went away by yourself and thought about why you felt how you did	0	1	2	3
7.	Wrote down what you are thinking and analyzed it	0	1	2	3
8.	Analyzed your personality to try to understand why you are depressed	0	1	2	3
9.	Tried to understand yourself by focusing on your depressed feelings	0	1	2	3
10.	Thought about how sad you feel	0	1	2	3
11.	Isolated yourself and thought about the reason you feel sad	0	1	2	3
12.	Thought about all your shortcomings, faults, and mistakes	0	1	2	3

APPENDIX 4: FOLLOW-UP MEASURE (STAGE 3)

Personal Experiences of Paranoia Scale (PEPS; Ellett et al., 2003)

Before completing this questionnaire, please make sure you enter your research participation ID number.

Your research participation ID No: _____

----//-----

Research has shown it is normal to believe that sometimes people are deliberately trying to harm or upset you, or are working together against you. For example, when you unexpectedly get a lower mark in an exam, you may think that the examiner doesn't like you and therefore deliberately gave you a low mark. Or alternatively, you may believe that others are trying to harm or upset you by deliberately excluding or rejecting you.

Please state whether in the last 2 weeks you had a feeling that people were deliberately trying to harm or upset you in some way? (Please circle the appropriate response)

Yes / No

If replying YES to question 1 above, please answer the following questions:

2. Please describe an example of the situation where you felt someone deliberately trying to harm/upset you.

3. In the above situation that you have described, at that time did you feel that the other people involved actively intended to harm you? (Please circle the appropriate response)

Yes / No

4. In the situation that you have described, how much did you feel that you were:

Judged negatively by others

1 (Not at all) 2 3 4 5 (Very much)

Blocked from achieving your goals

1 (Not at all) 2 3 4 5 (Very much)

Powerless to stop what was being done to you

1 (Not at all) 2 3 4 5 (Very much)

5. What was the main emotion that you felt?

6. What other feelings did you experience?

APPENDIX 5: SCRIPT FOR STUDY PARTICIPANTS (FIRST MEETING)

Hello, my name is Carla, nice to meet you. Can I just check with you you're here to find out more about a study focusing on thoughts, feelings and experiences in university students? Also, can you please confirm how did you find out about the study? Ok. The purpose of our meeting today is to give you a brief overview of the study, what is involved should you chose to participate, and to answer any additional questions you may have. I will also be giving you an information sheet, which summarises in detail our conversation today. At the end of our meeting, you are welcome to go through the information sheet, after which I will ask you if you're happy with the information I have provided and I will answer any outstanding queries you may have. I will then ask you if you would like to participate, and you are free to say 'no' as participation in the study is voluntary. If you chose to participate, you will need to sign a consent form. Any questions so far? Ok. Now, I will explain the main procedures of the study.

The study will focus on how thoughts, feelings, and individual experiences in students relate to one another over a 2-week period. This study therefore takes approximately 2-weeks to complete.

Now I am going to tell you about the details of taking part. If you decide to take part in this study you will be asked to complete three stages of data collection. The data we will be collecting from you is questionnaire data. You will be asked to complete online questionnaires at the beginning and at the end of the two-week period. On three random occasions over the 2 weeks I will also be emailing you to prompt you to complete a set of short paper-based questionnaires. Therefore, if you agree to participate in this study you will need to provide me with your email address. To ensure confidentiality from the start, you will only be known by an ID number rather than by name, and your contact details will be safely stored before being deleted at the end of the study. Regarding your responses to our questionnaires, these will also be safely stored and can only be accessed by my supervisors and myself.

Now I would like you to have a look at this **flow chart** [*hand in flow chart to student*]. According to this information, the three stages of the study can be summarized as follows:

Stage 1 begins today. You will be asked to complete a set of online questionnaires using a laptop/PC, which I will give you access to. You will need to complete the questionnaires all in one go. There are 6 questionnaires to this stage and it should take approximately 30 minutes to complete them all. If you chose to take part you will complete the questionnaires in this room whilst I wait for you to complete them in a separate room. Once you have completed the questionnaires you enter the next stage.

To complete **stage 2**, and before we end our meeting today, I will give you 3 packs labeled 'pack 1', 'pack 2, and 'pack 3', which contain a set of 4 brief questionnaires each. You will then take these 3 packs home with you and over the course of the next 2 weeks, I will send you 3 emails at different times and days. After receiving each of the 3 emails, you will need to complete the questionnaires in 'pack 1', 'pack 2' and 'pack 3' all in one go, in the order they are presented, and within 3 hours of receiving the initial emails. In this stage, each set of questionnaires should take about 5mins to complete. Once you complete each set of questionnaires, please put them back in their respective packs, indicating the time and date you completed them in the front of the envelope provided. You will then need to bring the completed questionnaires to our second meeting at the Department of Clinical Psychology (Boywer Building) during which you will be completing stage 3 of the study.

To complete **stage 3**, and before we end our meeting today, I will confirm with you the date of our second meeting here at the Bowyer Building. On this date, I will be meeting you to ask you to complete one final questionnaire online. You can do this by using one of the laptops/PCs available at our department. As before, I will wait in a separate room whilst you complete the online questionnaire. This will take about 10-15mins to complete and once you do this I will debrief you about the study.

Unless you are a first year psychology student (in which case you will be awarded a total of 4 course credits for your participation), you will be entered into a prize draw for vouchers worth a total of £100 (i.e. 2 vouchers of £25 each, 2 vouchers of £20 each and 1 voucher worth £10).

Do you have any questions about what I've just explained to you? *[if 'yes' to this question, answer student's further questions; if 'no' proceed as explained below]*

Ok, now that I have talked you through the study, I want to let you know that I will be carrying out this study under the supervision of Dr Kingston and Dr Ellett, from the

Clinical Psychology Department. Throughout the study, you're welcome to get in contact with me if needed. Because I will be asking you about your thoughts, feelings and experiences, this could affect your mood, in which case you may wish to contact other sources of support such as the University Counselling Service. Although not everybody will need this type of support, we wanted to ensure you have this option, if you think you may benefit from it. You can find all the useful contact details in the information sheet.

I have an information sheet to give you that reiterates everything I have told you so far. Before handing you the information sheet, I just would like to add that if you chose not to participate or to withdraw from the study at any stage, this will not affect your studies in any way.

[hand in info sheet]

Ok, I will now give you a few mins for you to go through the information sheet. Please let me know when you're finished and if there is anything you need me to clarify.

[after student finishes with info sheet and has no further questions]

Ok, now that you have had an opportunity to read the information sheet and get further clarification about the study, I would like to ask you whether you will be happy to participate.

[if student says no]: Ok, that's fine. Thank you so much for your time.

[if student says yes]: Ok, thank you so much for agreeing to participate. Now, I just need you to read our consent form. After going through this information, you will need to check a few tick boxes, date and sign the form. I will also need you to give me your contact details in the form of your email address.

[hand in consent form + pen]: ok, here is the consent form. Please have a read and let me know if you have any queries. If not, please complete the form and make sure you also include your email address.

[after obtaining signed consent form + contact info]: Ok, thank you so much once again. I will now ask you to complete the first set of online questionnaires. The computer/laptop you will be using is the one available in this room. I will now open the web link for the questionnaires so you can complete them. When you access the questionnaires, there will be instructions for you to follow at each stage. However, if

you have any queries whilst completing the questionnaires just let me know and I will help you. You can find me in room XXX, where I'll wait for you to tell me when you're finished.

Ok, now I will open the web link for you so you can access the questionnaires.

[student accesses the questionnaires and is happy to continue]

Ok, I will let you get on with it now. Remember, I'll be in room XX in case you need any assistance. Otherwise, just let me know when you're done.

[student notifies researcher when he/she has finished the questionnaires]

Thank you once again for completing the first set of questionnaires.

As I've explained before, to complete stage 2, here are packs 1, 2 and 3 with sets of 4 short questionnaires each [*hand in packs to student*]. In the next 2 weeks, I will email you on the email address you have provided at different times and days. After receiving each email, please remember to complete the questionnaires in each pack within the next 3 hours. Once you have all 3 packs completed you will need to bring them back to our next meeting.

The date of our next meeting is XXX. As I've explained before, when meeting again, besides bringing your 3 packs back, you will also be completing one final questionnaire online, as we did today. Once you do this, you will be fully debriefed and compensated for your participation.

Ok, so before you go today, is there anything about the study you need me to clarify? Is it clear what you need to do in the next 2 weeks?

[clarify if student says 'no']

[if student says 'yes':]

Ok, brilliant. So I'll see you again on XXX. Please keep the information sheet with you in case you have any further queries during the next two weeks. Thank you, bye.

APPENDIX 6: SCRIPT FOR STUDY PARTICIPANTS (SECOND MEETING)

Hi again, and thank you for coming back. Before we proceed with stage 3 today, can I just ask you for the 3 packs I gave you at our first meeting? Did you manage to complete them all? Where there any difficulties with it? *[clarify if student says 'yes']*.

Ok, now that I have your 3 packs, I will ask you to complete one final questionnaire online. As we did before, I will now ask you to use the computer/laptop available in this room so you can complete this questionnaire.

Before you start, let me just open the web link for the questionnaire. Ok, now that you have access to it, just follow the instructions when completing the questionnaire. However, if you have any queries whilst completing the questionnaires just let me know and I will help you. You can find me in room XXX, where I'll wait for you to tell me when you're finished.

[student accesses the questionnaires and is happy to continue]

Ok, I will let you get on with it now. Remember, I'll be in room XX in case you need any assistance. Otherwise, just let me know when you're done.

[student notifies researcher when he/she has finished the questionnaires]

Thank you for completing the last questionnaire.

Now, I'd like to debrief you about the study, by giving you this information for you to read first *[had in the debrief form]*. Once you finish reading this, let me know if you have any further questions.

[student reads debrief and has no further questions:]

Ok, brilliant. You can keep the debrief information if you want to. Before we finish today, I will now confirm you will: be awarded 4 course credits for your participation *[if participant is a first year psychology student]*/be entered into a prize draw for vouchers worth a total of £100 *[if participant is not a first year psychology undergraduate]*.

Ok, thanks once again for agreeing to participate. Should you have any further questions you can always contact me on my email address. It was nice meeting you and wishing you all the best in your studies.

APPENDIX 7: INFORMATION SHEET

Department of Psychology
Royal Holloway, University of London
Egham, Surrey TW20 0EX
www.royalholloway.ac.uk/psychology

+44 (0) 1784 443526
PSY-enquiries@rhul.ac.uk



Two weeks in the life of a university student: thoughts, feelings and experiences

The study

My name is Carla Matias and I am a Clinical Psychology doctoral student at Royal Holloway, University of London. I am carrying out a study focusing on thoughts, feelings and experiences in university students over a 2-week period, supervised by Dr. Jessica Kingston and Dr. Lyn Ellett.

Contact information

If you would like to discuss any aspect of the research, you can contact me on Carla.Matias.2012@live.rhul.ac.uk or call me on 01784 414105. If you need to contact Dr. Jessica Kingston, you can contact her by email on Jessica.Kingston@rhul.ac.uk or by phone on 01784 414105.

Your participation in this research study would be greatly appreciated.

How long will the study last?

The study will be carried out over the course of 2 weeks.

What do I have to do if I take part?

The study consists of three main stages.

Stage 1 will involve meeting with you at the Clinical Psychology Department (Bowyer Building) for approximately 1 hour. The plan for this meeting is to first introduce you to the study and answer any questions you may have about participating. You will then be asked whether you consent to take part. As part of consent, you will be asked to opt in to receiving an email prompting you to complete stage 2 of the study. Therefore, if you consent to taking part, you will be asked to confirm your email address. After you provide consent, I will then ask you to complete 6 questionnaires online and you will be given access to a departmental computer to do this. Completion of online measures will take about 30mins, after which I will give you 3 questionnaire packs in a sealed envelope, labelled 'pack 1', 'pack 2', and 'pack 3', for you to take home with you to be able to complete stage 2 of the study. We will also agree a time to meet for **stage 3**.

In **stage 2** you will receive 3 emails on random days during the 2-week period, following the completion of stage 1. After receiving the first email, you will need to complete the questionnaire pack labelled 'pack 1', which was given to you in stage 1. Equally, 'pack 2' and 'pack 3' will need to be completed after you receive the second

and third email prompts, respectively. You will need to be complete each pack as soon as you receive the email, and within 3 hours of receiving the initial email prompt. Each pack will take 5mins to complete. You will be required to return all 3 completed packs to me when we meet for stage 3 of the study.

Stage 3: at the end of the 2-week period, you will be meeting with me again at the Clinical Psychology Department (Bowyer Building) for approximately 20-30 minutes, during which I will collect your 3 completed questionnaire packs. I will then ask you to complete one questionnaire online, and you will be given access to a departmental computer to do this. This questionnaire will take about 10-15mins to complete. I will then answer any outstanding questions you may have and will fully debrief you about the study.

What happens if I choose to participate?

Once you have completed all 3 stages of the study, and unless you are a first year psychology student, in which case you will be granted 4 course credits for your participation, you will be entered into a prize draw for vouchers worth a total of £100 (i.e. two vouchers worth £25 each, two vouchers worth £20 each and one voucher worth £10) as compensation for your participation in this study.

Confidentiality

Nobody except my supervisors and I will be allowed to see any of your data. In the study you will be identified by number only. All information is completely confidential and will be stored securely at all stages of the study. Once your participation in the study has ended, your contact information (email address) will be deleted.

Purpose of the study

This study is important in contributing knowledge about the relationship between thoughts, feelings, and individual experiences in students. This study has been subject to review and approval by the Psychology Department Ethics Committee.

Do I have to take part?

You do not have to take part in this study if you do not want to. It is entirely voluntary. If you decide to take part, you are free to decline answering any questions that you do not want to, and 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.

Will the study impact on my wellbeing?

Some people may find that repeatedly reflecting on thoughts, feelings and experiences over the 2-week period may affect their mood. Although such experiences are not expected to have a lasting effect, if at any stage of your participation in this study, you have any concerns about your wellbeing, please contact the University Counselling Service on counselling@rhul.ac.uk or 01784 443128, the Samaritans (08457 90 90 90), and/or your GP.

Please keep this part of the sheet for your own reference. Please feel free to ask any questions before you complete the consent form below, then tear off and hand the completed consent form to the researcher.

✂.....

APPENDIX 8: CONSENT FORM

Two weeks in the life of a university student: thoughts, feelings and experiences

ID Number:

You have been asked to participate in a study focusing on thoughts, feelings and experiences in university students over a 2-week period.

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 satisfactory 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 affecting your education)?	YES	NO
Understood that you are free to decline answering any questions that you do not want to?	YES	NO
Understood that to complete stage 2 , you will be required to opt in to an email prompting you to complete each of the 3 questionnaire packs?	YES	NO
Understood that each questionnaire pack needs to be completed as soon as possible and within 3hrs of receiving each email prompt?	YES	NO
Understood you can seek support/advice from your GP, Samaritans and/or University Counselling Service if you have any concerns about your wellbeing at any stage of the study?	YES	NO
Do you agree to take part in the study?	YES	NO

Signature _____

Name in block letters _____

Date _____

NB: This consent form and your email address will be stored separately from the anonymous information you provide.

APPENDIX 9: DEBRIEF FORM

Department of Psychology
Royal Holloway, University of London
Egham, Surrey TW20 0EX
www.royalholloway.ac.uk/psychology

+44 (0) 1784 443526
PSY-enquiries@rhul.ac.uk



Two weeks in the life of a university student: thoughts, feelings and experiences

Thank you for your participation in this study.

The aims and hypotheses of this study were not made explicit prior to data collection. This was done to ensure participants do not alter their behaviour whilst participating in the study. A summary of the background and aims of the study is presented below.

Background of the study

In this study we were interested in understanding suspicious or 'paranoid-like' thoughts in students. Previous research has suggested such thoughts are common in the normal population, occur in every day life and are associated with feelings of anger and frustration as well as having an impact on behaviour. It is also thought that certain factors may serve to protect against or exacerbate these 'paranoid-like' experiences.

Aims of the study

The main aim of the study was to find out more about paranoia-like experiences in students, and how such experiences may affect thoughts, feelings, and everyday behaviour. Therefore, this study replicated the methodology previously used by another researcher, which consists of a questionnaire focusing on personalised accounts of paranoid-like experiences, differentiating between feelings, thoughts and behaviour.

Previously, researchers have also shown that people admitting to having suspicious or paranoid-like thoughts are also more likely to experience increased worry and/or have a tendency to be highly self-centred (i.e. preoccupied with how one is seen/perceived by others). Recently, it has also been suggested that an increased ability to be aware and accepting of one's difficult thoughts and feelings may help prevent the occurrence of paranoid-like experiences. Thus, another aim of the study was to understand the factors that over time may trigger paranoid-like experiences in everyday life.

We were also interested in exploring whether there is a link between paranoid-like thoughts/feelings and behaviour among students. This will help in gaining a better understanding about the types of behaviour, which may characterise paranoid-like experiences in nonclinical populations. This knowledge can also help in understanding whether those that are more prone to paranoid-like thinking, behave differently as a way of coping with these difficult thoughts/feelings.

Because it is very important that participants do not know the above information beforehand, please do not share this information with any other students.

The potential impact of reflecting on paranoid experiences

We sincerely hope that you have not experienced any adverse effects from taking part in this study. Some people may find that repeatedly reflecting on potentially distressing experiences (i.e., paranoia, rumination) over the 2-week period may affect their mood. However, if this study has had a lasting effect on your mood or if you have any concerns about your wellbeing having taken part, please contact the University Counselling Service on counselling@rhul.ac.uk or 01784 443128, the Samaritans (08457 90 90 90), and/or your GP.

If you have any questions about this study or you would like to have a copy of the results, please contact me on Carla.Matias.2012@live.rhul.ac.uk or Dr. Jessica Kingston on Jessica.Kingston@rhul.ac.uk, and we will provide you with a summary of the findings. I'd like to remind you that your participation in this study was voluntary and you have the right to withdraw permission for your data to be used.

Thank you again for your participation in this study.

APPENDIX 10: RHUL ETHICS COMMITTEE APPROVAL NOTIFICATION

From: Psychology-Webmaster@rhul.ac.uk <Psychology-Webmaster@rhul.ac.uk>

Sent: 05 August 2014 10:23

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Subject: Ref: 2014/080R1 Ethics Form Approved

Application Details: View the form click [here](#) Revise the form click [here](#)

Applicant Name: **Carla Fialho Matias**

Application title: **Personal paranoid experiences in a nonclinical student sample: prediction from mindfulness, rumination and self-consciousness**