Mindfulness for paranoia, loneliness and forgiveness

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Abstract

Paranoia is widely recognised as an experience that is common in the general population and associated with reduced emotional wellbeing and social functioning, making it an experience for which effective interventions are warranted. Preliminary findings suggest mindfulness is an intervention of potential value. There are various types of meditative practice and a growing interest in comparing the clinical utility of different meditations. The aim of the current study was to investigate the effectiveness of two distinct mindfulness practices: insight and loving kindness meditations. An idiographic approach to non-clinical paranoia was taken by using an idiosyncratic, multi-faceted measure, assessing change across the key dimensions of paranoia. The study also explored the effects of insight and loving kindness meditation on the associated interpersonal constructs of loneliness and forgiveness.

An adult sample consisting of individuals higher in non-clinical paranoia was used (n= 100). Participants were randomly allocated to one of two intervention conditions: insight or loving kindness meditation. The intervention involved two-weeks of 10-minute daily-guided mindfulness practice. Measures of paranoia, mindfulness, loneliness and forgiveness were administered at three time-points: baseline, post intervention and one-month follow-up. The results found both insight and loving kindness mindfulness to be comparably effective in significantly reducing non-clinical paranoia across the key dimensions of conviction, preoccupation, impact and distress. Both meditative practices also resulted in significant reductions in loneliness and increases in forgiveness and mindfulness pre to post intervention. All gains were maintained at the one-month follow-up. No differential effects were found between conditions, suggesting the two meditative practices were equally effective on

all variables studied. This study strengthens existing evidence for the effectiveness of insight meditation on non-clinical paranoia, and provides novel findings of the utility of loving kindness meditations for this experience. It is also the first demonstration of the effectiveness of both insight and loving kindness practices on loneliness and forgiveness using a comparative randomised design. The findings provide a foundation for further research examining the comparative effects of different mindfulness practices, which could potentially have important implications for the treatment of distressing interpersonal experiences in both clinical and non-clinical populations.

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Chapter 1: Introduction

1.1 Overview of chapter

Paranoia is widely recognised as an experience that is common in the general population, and best understood as a phenomena that exists on a continuum of normal human experiences, ranging from everyday thoughts of mistrust and suspicion through to severe persecutory delusions (Bebbington et al., 2013; Freeman, 2007; van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). As well as a potential analogue to the clinical phenomenon, non-clinical paranoia is a subject of interest in its own right, having been linked with poorer social and emotional wellbeing (e.g. Freeman et al., 2011). Many factors have been found to be associated with paranoia, including the important interpersonal constructs of forgiveness and loneliness. Given the common and distressing nature of non-clinical paranoia it is important that effective interventions are available to people across the continuum of experience. Preliminary investigations suggest mindfulness is an intervention of value in both clinical (e.g. Ellett, 2013; Chadwick, Hughes, Russell, Russell, & Dagnan, 2009) and non-clinical populations (e.g. Shore, Strauss, Cavanagh, Hayward, & Ellett, 2015). There are various types of meditative practice and a growing interest in comparing the clinical utility of different meditation practices, with particular attention being placed on novel interventions known as loving kindness meditation (Shonin, Van Gordon, Compare, Zangeneh, & Griffiths, 2015). To date, the promising findings found for mindfulness and non-clinical paranoia have been based on the use of only traditional insight practices. Loving kindness is an alternative meditative technique that has been identified as being of particular value for

difficulties that are interpersonal in nature, but has not yet been explored with non-clinical paranoia.

Based on this empirical background, the current study aims to investigate the comparative effectiveness of two types of mindfulness practice – insight mindfulness (IM) and loving kindness mindfulness (LKM) – on non-clinical paranoia, mindfulness, forgiveness and loneliness. This chapter will begin by introducing non-clinical paranoia and the continuum theory. It will review the evidence supporting the presence of paranoia in the general population and comment on the measurement of paranoia; presenting a justification for the use of more idiosyncratic, multidimensional measures. Loneliness and forgiveness are then described and the evidence linking these concepts with paranoia is presented. Mindfulness is next introduced, starting with its definition and a review of the evidence supporting its use with paranoia, loneliness and forgiveness. The chapter will then go on to explore loving kindness as a novel meditative approach to the treatment of non-clinical paranoia. Lastly, the theoretical and empirical evidence exploring the comparative effects of insight meditation and loving kindness mindfulness practices is discussed. Consideration of the limitations of the literature will be addressed throughout. The chapter will conclude by outlining the aims of the current research and stating the study's hypotheses.

1.2 Paranoia

1.2.1 Defining paranoia

Psychosis is a broad term, which encompasses a number of related disorders characterised by the presence of "delusions, hallucinations, disorganized thoughts, grossly disorganized or abnormal motor behaviour, and negative symptoms" (Bhati,

2013 p. 409). Over the past two decades, research into psychosis has experienced a shift from studying broadly defined psychotic syndromes like ‘schizophrenia’, towards the investigation of specific individual symptoms such as delusions and hallucinations, which have been found across disorders (Bentall,1990). The study of specific symptoms has grown in popularity due to the mounting evidence that the main diagnoses of psychosis do not necessarily capture single unique disorders (Allardyce, Gaebel, Zielasek, & van Os, 2007). Freeman and Garety (2014) view the study of broad diagnoses as a potential “obstacle” to improving our understanding and treatment of difficult experiences, and advocate for the study of specific symptoms such as paranoia.

Paranoia is recognised as being a complex and multidimensional experience. Evidence of its frequency in the general population has led to the reconceptualisation of paranoid thinking as an everyday psychological experience, rather than just diagnostic symptoms suggestive of mental illness (Ellett et al., 2003; Freeman et al., 2011). The term can refer to beliefs ranging from everyday social evaluative thoughts through to severe persecutory delusions (Freeman & Garety, 2000). The current study used Freeman and Garety's (2000) criteria for defining persecutory delusions and therefore, paranoia. They clarify that for an individual to be experiencing a persecutory delusion, they must believe that harm is occurring, or is going to occur, to him or her, and that a persecutor has the intention to cause harm (Freeman & Garety, 2000). Figure 1 presents the full criteria.

Criteria A and B must be met:

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:

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 belief

***Figure 1*: Criteria for identifying paranoid beliefs (taken from Freeman & Garety, 2000, p.412)**

These criteria have been used to define paranoia in both clinical (e.g. Foster, Startup, Potts, & Freeman, 2010; Freeman et al., 2003) and non-clinical (e.g. Ellett et al., 2003) populations, so are deemed appropriate for use in the current research. A strength of these criteria is that they successfully establish the distinction between paranoia and other anxiety related disorders, such as social anxiety. Whilst both presentations involve perceptions of interpersonal threat (Ellett et al., 2003), in paranoia, it is the belief in the intentional malice of others that is the main source of social threat, rather than the individual's own perceived social inadequacies, as is characteristically the case in social anxiety (Clark & Wells, 1995; Gilbert, Boxall, Cheung, & Irons, 2005). Importantly for the current study, these criteria do not equate to a clinical diagnosis and are also in line with the theoretical perspective that

paranoia is dimensional. Supporting this perspective, evidence indicates there is considerable individual variability in the characteristics of delusional experience (Garety & Hemsley, 1997). For example, those experiencing paranoid ideation can differ in the level of conviction with which they hold their beliefs, how 'unfounded' they are and how much distress they cause (Freeman, 2007). This dimensionality has led to the suggestion that paranoia is an experience best understood as being on a continuum with normal experience, rather than something unique to pathological disorders (e.g. Peters, Joseph, & Garety, 1999; Strauss, 1969; van Os, Hanssen, Bijl, & Ravelli, 2000).

1.2.2 The paranoia continuum

Historically, paranoia has been conceptualised from a categorical viewpoint (Jones, Delespaul, & Os, 2003). This approach to psychopathy assumes that symptoms such as those seen in psychosis are qualitatively different to the experiences of those in non-clinical populations (van Os et al., 2000). It therefore assumes that paranoid thinking is not a part of 'normal' psychological functioning. This is in contrast to the common perspective taken with affective disorders, the symptoms of which are accepted as being present in the general as well as clinical populations, and become clinically significant at a certain threshold (e.g. Judd, Paulus, Wells, & Rapaport, 1996). While this approach has been regarded as useful in providing a framework that has facilitated diagnostic reliability and consistency in the treatment and management of clinical disorders (Lawrie, Hall, McIntosh, Owens, & Johnstone, 2010), its validity has been questioned. Importantly, it fails to account for the heterogeneity seen between individuals with the same diagnosis and the high levels of comorbidity observed between disorders (Lawrie et al., 2010). Strauss

(1969) was one of the first to challenge the categorical conceptualisation of paranoia with the introduction of the idea of dimensionality.

The dimensional approach suggests that clinical symptoms like paranoia also exist in milder forms within the general population, and are not qualitatively different from 'normal' experience (Costello, 1994; Strauss, 1969). Strauss (1969) identified four dimensions by which one may determine the position of a paranoid delusion on the continuum between non-clinical paranoid beliefs and clinical persecutory delusions. These included preoccupation, degree of conviction, cultural acceptability and implausibility of the belief. Empirical support for the continuum view comes from epidemiologic studies (e.g. Freeman et al., 2011; Bebbington et al., 2013), which have demonstrated a symptomatic continuum of paranoia-like experiences within the general population. Studies of non-clinical populations have also found evidence to suggest that the same affective and cognitive variables believed to contribute to the formation and maintenance of clinical delusions are also present in non-clinical paranoia. These include anxiety, depression, low self-esteem, (Combs & Penn, 2004; Fenigstein & Vanable, 1992; Freeman et al., 2005) experiential avoidance, judgment, rumination and attributional biases (Allen, Freeman, Johns, & McGuire, 2006; Gardner, 2013; Martinelli, Cavanagh, & Dudley, 2013). Significantly, this empirical research has also been recognised by the American Psychiatric Association (2013). Despite the DSM-5s (Diagnostic and Statistical Manual of Mental Disorders) continued categorical classification of psychiatric disorders, there has been a distinct change with the acknowledgement that there are varying degrees of severity within diagnoses, and the signs and symptoms of psychosis are on a continuum with normal mental states (Heckers et al., 2013).

Within this approach, a further distinction has been made by Costello (1994) between the phenomenological view and the vulnerability view. The phenomenological view suggests that symptoms in non-clinical populations may be "less intense, persistent and debilitating, but not qualitatively different" from those seen in clinical populations (Costello, 1994, p.397). Alternatively, the vulnerability view suggests that there are qualitative differences between 'paranoid symptoms' and their 'normal counterparts' and the frequency and severity of symptoms is an index of a person's vulnerability for the disorder (Costello, 1994, p.391). In this thesis, the widely held phenomenological view is adopted.

The continuum perspective provides a rationale for studying individual symptoms in non-clinical groups, and indicates such research has both clinical and theoretical value (Combs & Penn, 2004; Freeman et al., 2010). Importantly, it implies that the study of non-clinical paranoia can inform our understanding and ability to treat clinically severe persecutory delusions (Freeman, 2007). There are also recognised advantages to the use of non-clinical samples; these include easier access to large samples (Freeman 2011), and the avoidance of confounding factors which can modify symptoms, such as medication effects, comorbidity and cognitive decline (Combs & Penn, 2004; Galbraith, Manktelow, & Morris, 2008). The next section will explore the evidence that paranoia, as defined by Freeman and Garety (2000), exists within the general population supporting the continuum view.

1.2.3 Prevalence of non-clinical paranoia

Over the years, investigations into the prevalence of paranoia in the general population have varied in their estimates, ranging from between 1% (Eaton, Romanoski, Anthony, & Nestadt, 1991) to 20-30% (Bebbington et al., 2013;

Bebbington, 2015). Reasons for such variation has been attributed to the differences in the characteristics of the populations studied, and variability in the measures used to assess the construct (Freeman, 2007). One of the earliest robust large-scale studies conducted was by van Os et al (2000), using a sample of over 7,000 adults in the Netherlands. Participants were initially interviewed using the Composite International Diagnostic Interview (CIDI; World Health Organisation, 1990), and those with evidence of psychosis were additionally interviewed by a psychiatrist. Results revealed 1% of their sample reported delusions of equivalent severity to those found in clinical groups, and a further 5.8% described milder paranoid ideation unassociated with distress or help seeking. Significantly, the authors found no significant differences between non-clinical delusions and clinical symptoms in terms of psychopathology, risk factors or wellbeing, indicating a qualitative continuity between the two.

In a UK based epidemiological study, Johns et al (2004) surveyed over 8,000 people using the Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995). They found 20% of participants reported having had thoughts in the past year that people were at some point against them, and 10% felt people had deliberately acted to harm them. In another study using the Paranoia Checklist Questionnaire, a measure specifically designed for use in non-clinical populations, Freeman et al (2005) found that in a large sample of university students (n= 1202), 42% reported feeling that personal negative comments were circulated about them at least on a weekly basis. In a review of a number of studies, including those described here, Freeman (2006) concluded that there was clear evidence that thoughts of a paranoid nature, consistent with Freeman and Garety's (2000) definition, are common in the

general non-clinical population.

As well as evidence of its prevalence, Freeman and his colleagues (2005, 2011) have also identified a hierarchy to paranoid thinking, consisting of three different levels of severity. At the bottom of the hierarchy is the most common form of paranoid thought, which relates to social evaluative concerns. The next level relates to ideas of reference. Then persecutory thoughts with increasingly severe levels of threat attached sit atop the hierarchy. Similar findings were subsequently reported by Bebbington et al (2013) in a more epidemiologically representative sample. Following a confirmatory factor analysis of a large set of British national survey data, the authors suggested that non-clinical paranoia falls into four defined factors: mistrust, ideas of reference, interpersonal sensitivity and ideas of persecution. The implication of this hierarchical structure to paranoia is that less common, but more severe or odder paranoid thoughts, are built on more common and plausible ones, supporting the existence of a continuum of paranoid thinking (Freeman et al., 2005).

Whilst the research above provides clear evidence for the existence of paranoia in the general population and therefore for the continuum model, these large scale survey studies have their limitations. Firstly, their cross-sectional design means no conclusions can be made regarding causation. Secondly, they are almost entirely dependent on self-report measures. The main disadvantage to assessing paranoia by self-report alone is that answers may be subject to responder biases. Research suggests that there are subgroups of individuals in general population samples who tend to over-report symptoms (Merckelbach & van de Ven, 2001), potentially leading to an overestimation of the true rates of paranoia. Furthermore, standardised self-report measures provide no data on the precise nature of paranoia experiences in the

general population. The next section will discuss the measurement of paranoia in more detail.

1.2.4 Measuring paranoia

Despite increased recognition of the idiosyncratic and multifaceted nature of paranoia, the existing literature has largely relied on using standardised questionnaire based methods of assessment (Ellett et al., 2013). A widely used and well-validated measure for non-clinical populations is Fenigstein and Vanable's (1992) Paranoia Scale (PS). This is a unidimensional measure in that it determines the degree of presence of non-clinical paranoid thinking (Freeman & Garety, 2000). However, paranoia is recognised as being multidimensional, comprising the key dimensions of conviction, distress, preoccupation and impact on wellbeing (Green et al., 2008: Peters et al., 1999). Previous research has shown that people vary in the extent to which they believe their paranoid thoughts and the extent to which they are preoccupied and distressed by them (Ellett et al., 2003; Freeman et al., 2005). The advantage of using dimensional assessment measures for paranoia is that they not only indicate the severity of symptoms, but also provide insight into where an individual lies on the continuum from psychological health to mental illness (Peters et al., 1999). A more multidimensional measure is the Paranoid Checklist (PC; Freeman et al., 2005). This measure moves beyond assessing the mere presence of paranoid thinking by measuring its content, frequency and the related degree of conviction and distress associated with the experience.

A constraint however of most questionnaire-based methods such as these is that often they take a pre-defined approach to measuring paranoia. Given the individual nature of the process and outcome of change in paranoia, authors such as

Chadwick and Lowe (1994) have advocated for the use of more idiosyncratic measures in this field. To address this issue, Ellett et al (2003) developed the Personal Experience of Paranoia Scale (PEPS), a novel measure which asks the individual to describe an idiosyncratic experience of paranoia, and provide ratings of the affective, cognitive and behavioural components of the experience (Ellett et al., 2003). Paranoia is defined in the PEPS, in line with Freeman and Garety's (2000) criteria, as when there is a perception of intended harm from another. Administered in a student sample, non-clinical paranoia was associated with feelings of powerlessness, anger and feeling negatively judged by others. Paranoia also appeared persistent over time and characterised by engagement in avoidant-type behaviours. Comparative statistics of participant's scores on the PS indicated concurrent validity between the two measures (Ellett et al., 2003). Although there is increasing acceptance of the value of methodologies that capture idiosyncratic accounts along the different dimensions of paranoia, research using such approaches remains limited (Campbell & Morrison, 2007). In particular, it is not known how interventions designed to elicit change in paranoia operate along the dimensions that make up these experiences.

1.3 Factors associated with non-clinical paranoia

Empirical evidence of the association between non-clinical paranoia and mental health has led to a growing interest in investigating non-clinical paranoia as a phenomena in its own right, independent of its analogue role. It has been shown to be associated with difficulties such as anxiety, worry, depression, low self-esteem, emotional wellbeing and poorer social functioning (Combs, Finn, Wohlfahrt, Penn, & Basso, 2013; Freeman et al., 2011; Ellett et al., 2003). Additionally relevant to the importance of research in this area is literature suggesting that non-clinical paranoia is

associated with an increased likelihood of developing clinical symptoms (Dominguez, Wichers, Lieb, Wittchen, & van Os, 2011; van Os et al., 2000).

1.3.1 Loneliness and forgiveness

Paranoia is inherently an interpersonal phenomenon. At its core, it concerns threat and perceptions of others' intentions towards oneself (Freeman & Garety, 2000). Two important interpersonal constructs that have been linked with paranoia are loneliness and forgiveness. In their own right, loneliness and forgiveness are also experiences associated with psychological and physical wellbeing, making them subjects of research interest (e.g. Hawkley & Cacioppo, 2010; Hawkley, Masi, Berry, & Cacioppo, 2006; Webb, Toussaint, & Conway-Williams, 2012). For example, loneliness has been shown to be associated with depressive symptoms and perceived stress (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006). Similarly, forgiveness has been found to be negatively correlated with general wellbeing, pain, anger and rumination (Carson et al., 2005a; McCullough, Bono, & Root, 2007; Toussaint & Friedman, 2009).

Loneliness is typically defined as an emotional state experienced when a discrepancy exists between the interpersonal relationships one wishes to have and those one actually perceives to have (Peplau & Perlman 1982). Asher and Paquette (2003) emphasise that, whilst the features of one's social networks can influence it, the experience of loneliness is predominately a consequence of one's subjective appraisal. Akin to paranoia, lonely people have a higher tendency to perceive threats in everyday events than non-lonely individuals (Hawkley, Burleson, Berntson, & Cacioppo, 2003). Unsurprisingly, loneliness has been linked with paranoia in both

clinical (Sündermann et al., 2013) and non-clinical populations (Raine, 2016; Lamster, Nittel, Rief, Mehl & Lincoln, 2017).

Investigation of individuals in their first episode of psychosis found that higher loneliness ratings were associated with greater symptomology and levels of depression (Sündermann et al., 2013). In a student sample, Riggio and Kwong (2009) found loneliness was positively correlated with the frequency, intensity and distress of participants' paranoid-like thinking. Similarly Raine (2016) demonstrated that experimentally inducing paranoia in non-clinical subjects resulted in an increase in loneliness ratings and a reduced sense of belonging. Unfortunately, without a control comparison, causal implications could not be made from these findings. More recently Lamster and collegues (2017) reported findings supporting a causal role for loneliness in state paranoia. With a non-clinical sample of 60 individuals, they showed experimentally manipulating feelings of loneliness using a false feedback design altered participants self-reported levels of paranoia. Following manipulation, participants in the low loneliness condition experienced a significant reduction in paranoid thoughts.

Forgiveness is a complex concept, the definition of which has been debated within the literature (Rye et al., 2001). Rye et al (2001) note that there appears to be greater consensus as to what forgiveness is not, than on what constitutes forgiveness. For example, it is generally agreed that it is distinct from reconciliation, excusing, condoning, and forgetting (McCullough & Witvliet, 2002). Core to most definitions however, is that when people forgive, their responses (including their thoughts, feelings and behaviours) towards another who has offended or injured them, become less negative and more positive or pro-social (McCullough & Witvliet, 2002). In line

with other researchers, forgiveness will be defined in this study as the reframing of an offence, involving the weakening of negative feelings, thoughts and behaviours combined with the development of more positive responses towards an offender (e.g. Honeybourne, 2016; Rye et al., 2001; Thompson et al., 2005).

Similar to paranoia, forgiveness is interpersonal in nature and involves transgressions (Honeybourne, 2016). In validating a measure of forgiveness, Tangney et al (1999) were the first to report a link between these concepts with findings that the tendency to forgive self and others was related to lower paranoid ideation. However, a limitation of all studies using self-report measures is that findings are vulnerable to social desirability bias and can lack ecological validity. To address this limitation, Honeybourne (2016) utilised the Prisoners Dilemma Game (Wu & Axelrod, 1995), a game involving an interpersonal interaction with an opponent, to experimentally examine the relationship between forgiveness and paranoia. Results showed trait and state forgiveness were inversely correlated with trait paranoia in non-clinical participants.

Together these studies provide strong evidence that higher loneliness and lower levels of forgiveness are associated with non-clinical paranoia; furthermore loneliness may even play a causal role in the development of paranoid thinking. This ties in with Freeman et al's (2002) cognitive model of persecutory delusions, which acknowledges the important maintaining influence of interpersonal processes in paranoia. Given Freeman and Garety's (2014) suggestion that maintenance/causal factors have the potential to be translated into effective treatments for delusional thinking, loneliness and forgiveness are constructs that warrant further study in the context of paranoia.

In summary, non-clinical paranoia is a common, multidimensional experience associated with wellbeing and distress and the interpersonal processes of loneliness and forgiveness. The evidence reviewed above highlights the importance of positive social relations to psychological wellbeing and health (Bono, McCullough, & Root, 2008). They also clearly suggest the importance of developing effective interventions for those experiencing distress from paranoia across the continuum of experience. In those with psychosis, paranoia has been found to be particularly resistant to change using traditional cognitive reappraisal approaches (Ellett et al., 2013; van der Gaag, Valmaggia, & Smit, 2014). It has therefore been suggested that the reduction of distress related to paranoia may be better achieved through experiential approaches, such as mindfulness, which avoid directly challenging the content of beliefs (Chadwick, Taylor, & Abba, 2005). Preliminary studies using mindfulness for paranoia have produced promising results in both clinical (e.g. Ellett et al., 2013) and non-clinical populations (e.g. Shore et al., 2015). This literature will be reviewed in the following section.

1.4 Mindfulness

1.4.1 Definition and measurement

The concept of mindfulness originates from Buddhist and other contemplative traditions. It has been conceptualised as an inherent human disposition towards conscious attention and awareness, which is cultivated and refined through meditation. Mindfulness involves a state of mind in which one observes experiences as they arise in the present moment, without judgment or interference (Brown & Ryan, 2003). Grossman (2011) described it as "an active, investigative practice or process that inherently involves cognitive, attitudinal, affective, and even social and

ethical dimensions" (Grossman, 2010 cited in Grossman 2011 p. 1035). For the purpose of the current study, mindfulness will be defined according to Kabat-Zinn's (2003) widely used description as; "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experiences moment to moment" (p. 145). From this perspective, distress is viewed not as an inherent part of our experiences, but rather caused by our reactive relationship to them (Kabat-Zinn, 1994).

The literature identifies three main categories of meditation: concentrative meditation (CM), directed meditation (DM) and insight meditation (IM) (Kristeller & Johnson, 2005). The goal of concentrative meditation is to maintain ones focus on a particular object, a word, mantra or the breath as best as is possible. In directed meditation the content carries significance to the individual and tends to engage a particular aspect of their self, using a non-judgemental approach. In insight meditation practices, the attention is purposely kept open to note, without judgement, whatever enters one's awareness. The aim is to be fully aware and present, whilst refraining from evaluating or becoming entangled in one's own thoughts (Kristeller & Johnson, 2005). The object of attention may be, for example, an emotion, a physical feeling, an image, or again the breath, but there is more flexibility in the object of awareness than in concentrative meditation (Kristeller & Johnson, 2005). Whilst regarded as distinct meditative traditions, there is considerable overlap between the practices. Among these forms of meditations, insight has received the most attention in the literature to date (Baer, 2003; Kabat-Zinn, 2003).

Following an exploratory factor analysis of mindfulness measures, Baer, Smith, Hopkins, Krietemeyer and Toney (2006) suggested that there are five distinct

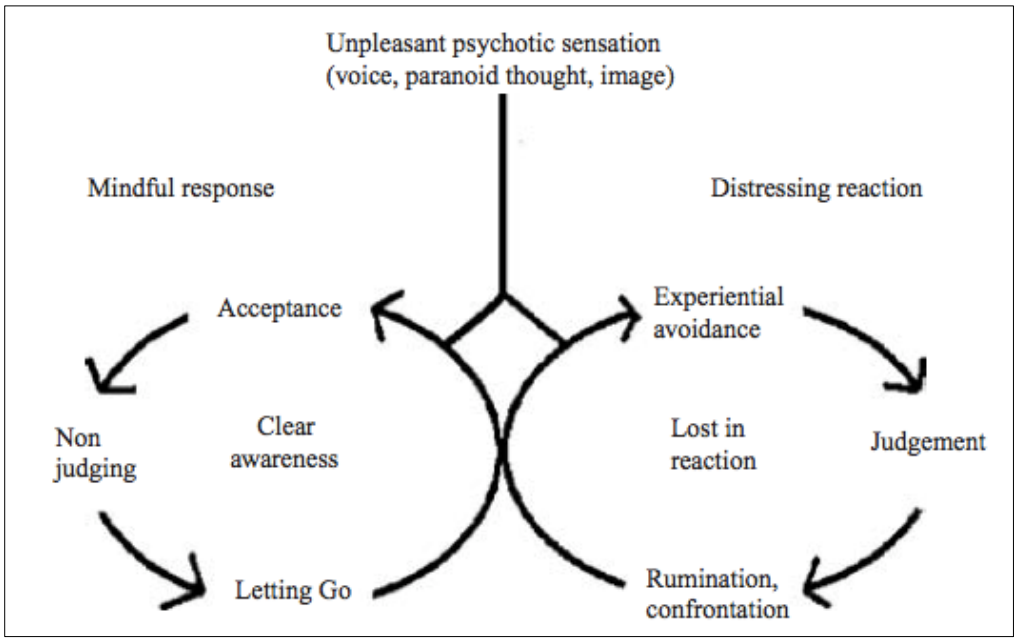
facets to mindfulness; (1) observation of sensations, thoughts, feelings, and perceptions (observing), (2) ability to describe this inner experience with words (describing), (3) the ability to act with awareness, rather than being on autopilot (acting with awareness), (4) being non-judgmental of one's experience (non-judging), and (5) being non-reactive to one's experience (non-reacting). However, more recently the validity of this five-factor structure has been questioned (Gu et al, 2016). Although found to fit samples of individuals experienced in meditation (Baer et al., 2006), a series of studies using non-meditator samples (e.g. general community, students, adults with heterogeneous mood and anxiety disorders) have found the 'observing' facet does not load significantly on to the overarching mindfulness factor (Baer et al., 2008; Williams, Dalgleish, Karl and Kuyken 2014). This has led researchers to suggest that a four-facet model is a more adequate fit of the experience of mindfulness, particularly for non-meditator samples (Gu et al., 2016). A possible explanation for the difference between meditators and non-meditators is that the qualities of observing between these two groups may differ, and that it is meditative practice that strengthens the relationships between observing and the other mindfulness facets (Baer et al., 2008).

1.4.2 Why mindfulness for paranoia?

Clinical studies have shown that not all those who experience psychotic experiences (i.e. voices and paranoia) are distressed by them. This has led researchers to the suggestion that it is not the symptoms per se which cause distress or lead one to seek help, but rather how one interprets and relates to their experiences (Romme, Honig, Noorthoorn, & Escher, 1992). Consistent with this idea, the aim of mindfulness is to change an individual's relationship with their experience, rather

than altering the experience itself (Abba, Chadwick, & Stevenson, 2008). It aims to alleviate the symptom related distress people experience by encouraging the development of more adaptive responses (Chadwick, 2014; Garety & Freeman, 2013; Oliver, McLachlan, Jose, & Peters, 2012). From this, Chadwick et al (2005) developed a model (Figure 2.) illustrating the rationale for applying mindfulness to psychotic experiences. The model suggests that mindfulness works by providing an alternative way of relating to distressing experiences.

Figure 2: **Chadwick et al (2005) model of applying mindfulness to psychotic experiences**



In support of this model, numerous researchers have demonstrated the detrimental effects of non-mindful response strategies on clinical psychotic symptoms. For example, more frequent and distressing paranoia has been associated with suppression (Morrison, Haddock, & Tarrier, 1995), avoidance (Freeman, Garety, & Kuipers, 2001), judgments about psychotic symptoms (Baker & Morrison, 1998)

and a confrontational response style (Romme, Honig, Noorthoorn, & Escher, 1992). Chadwick (2014) reports that those coping better with their symptoms typically describe a more accepting attitude towards, and a capacity to disengage from their experiences; two mechanisms integral to mindfulness. Notably, the same cognitive processes identified as operating in psychotic symptoms (e.g. experiential avoidance, judgment and rumination) have also been identified as occurring in non-clinical paranoia (Gardner, 2013; Martinelli et al., 2013), supporting the use of mindfulness as an intervention for paranoia across the continuum of experience.

1.4.3 Evidence-base for mindfulness and paranoia

Evidence for the potential benefits of insight mindfulness practices for those with distressing psychotic experiences, including paranoia is growing. In an initial uncontrolled study and randomised feasibility trial, Chadwick and colleagues (2005, 2009) found significant pre to post improvement in clinical functioning following a group mindfulness intervention amongst 11 participants with psychotic symptoms including paranoid beliefs and hallucinations. Group comparisons revealed medium level effect sizes (Chadwick et al., 2009). In another study, 12 participants with psychosis randomised to an eight-week mindfulness intervention showed significantly more improvements in mindfulness of distressing thoughts than the 11 randomised to a waitlist control (Langer, Cangas, & Gallego, 2010). In addition to this quantitative research, qualitative studies have also started to identify the possible mechanisms of change in mindfulness for psychosis. Abba et al (2008) identified a three-stage process, which included enhanced awareness; allowing psychotic sensations to come and go without reacting; and reclaiming power through acceptance of psychosis and the self. More recently, findings from the publication of two case studies suggest that

mindfulness training can also result in reductions in the key dimensions of paranoid beliefs in individuals experiencing persecutory delusions in the absence of voices (Ellett, 2013).

1.4.4 Evidence for mindfulness in loneliness and forgiveness

Given the commonalities between paranoia, loneliness and forgiveness (i.e. they are all interpersonal concepts involving perceptions of others) it may reasonably be assumed that, as with paranoia, mindfulness may also be an intervention of benefit for forgiveness and loneliness. To date, one small-randomised control trial has been conducted investigating the effects of mindfulness on loneliness. Creswell et al (2012) compared an eight-week Mindfulness-Based Stress Reduction program (MBSR) with a waitlist control group using the UCLA-R Loneliness Scale (Russell, Peplau, & Cutrona, 1980). The sample consisted of 40 older adults (aged 55-85). Participants who underwent the mindfulness program experienced a greater reduction in loneliness post intervention compared to wait-list controls. Given the limitations of the study, the authors suggest these findings be taken as an "initial indication" for the use of mindfulness-based interventions for loneliness (Creswell et al., 2012). Limitations included the use of a waitlist control, making it difficult to determine to what extent improvements were due to the mindfulness as opposed to other factors, such as social support from other group members and contact with an instructor. In addition, the sample consisted exclusively of older adults, limiting the generalisability of the findings. The effectiveness of mindfulness on loneliness in the general adult population has yet to be studied. There is also a need for research comparing mindfulness with active control conditions in order to establish its true effects on loneliness.

While it has been argued that mindfulness-based practice is consistent with the process of forgiveness (Orcutt, 2006), only three known empirical studies have explored the effects of mindfulness interventions on forgiveness, with mixed results. When compared with a waitlist control, Oman, Shapiro, Thoresen, Plante and Flinders (2008) found that meditation led to an increase in forgiveness of others in a sample of 29 students. However, in a follow up analysis, these findings were not replicated (Shapiro, Oman, Thoresen, Plante and Flinders, 2008). Mindfulness as measured by the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) was found not to mediate changes in forgiveness. Shapiro et al (2008) suggested that this may have been due to the fact that the MAAS captures only the attentional component of mindfulness; and as such, the gains in forgiveness noted by Oman et al (2008) may have been mediated by other dimensions of mindfulness not measured by the MAAS, such as attitudinal qualities of acceptance, kindness, and openness (Shapiro, Carlson, Astin, & Freedman, 2006).

The third study, conducted by Klevnick (2008), found MBSR programs to be effective in improving forgiveness, when compared with controls. Post intervention, participants (n= 60) reported significant reductions in negative affect and increases in positive cognitions towards individuals who had hurt them. The effect sizes reported were moderate for self-forgiveness and small for forgiveness of others (Klevnick, 2008). A limitation of this work however was that participants were not blind to the condition that they were in, meaning placebo or social desirability effects may have accounted for the observed changes. Furthermore, the cross-sectional correlational design means causation cannot be inferred.

Overall, this group of studies provides preliminary evidence that mindfulness may enhance forgiveness. However, these findings must be interpreted cautiously due to the methodological limitations discussed. As it stands, further exploration of the effects of mindfulness on forgiveness using more methodologically robust designs is needed.

1.4.5 Evidence for mindfulness and non-clinical paranoia

To the author's knowledge, only three studies to date have investigated the use of mindfulness-based therapies as an intervention for non-clinical paranoia (e.g. Collip et al., 2013; Shore et al., 2015). Using an experience sampling method, (ESM - a momentary real-time assessment approach which repeatedly assesses participants in their daily lives), Collip et al (2013) first reported supportive evidence for the use of mindfulness-based cognitive therapy (MBCT) on sub-clinical paranoia. The sample they used consisted of 129 adults with residual depressive symptomatology following an episode of depression, and so considered at risk of experiencing elevated levels of paranoia (Wigman et al., 2012). Paranoia was determined by participant's repeated ratings on the single item 'I feel suspicious', measured on a 7-point Likert scale (ranging from not at all to very). Pre to post intervention, participants in the MBCT group reported significant reductions in feelings of paranoia, while paranoia grew worse in the control group. Additionally, those in the MBCT condition experienced significant increases in feelings of social acceptance. In discussion of the strengths and limitations of the chosen methodology, Collip et al (2013) acknowledged that whilst ecological validity was high, the study's construct validity was restricted by the fact that variables were measured using only a single item. The particular single items used however have been previously used by the authors in other studies, and found to

have predictive validity. The absence of an active control condition meant the authors were unable to rule out the contribution of non-specific factors to the changes observed. Furthermore, generalisability of the findings were restricted by the selective sample used.

The other two studies to have researched mindfulness and non-clinical paranoia have used student populations (Gardner, 2013; Shore et al., 2015). Gardner (2013) explored the effects of a brief 10-minute mindfulness task on non-clinical state paranoia, as measured by the Paranoia and Depression Scale (PDS; Bodner & Mikulincer, 1998), compared with a matched control. Post task participants showed significant reductions in state paranoia and increases in state mindfulness. Although contrary to prediction, paranoia and mindfulness did not differ significantly between the experimental and control conditions. Gardner (2013) proposed several possible explanations as to why no significant difference was found. Firstly, despite randomisation, participants' in the control group were significantly more mindful at baseline and rated their level of attendance to the audio recording as higher than participants who completed the mindfulness task. This could have masked the true condition effects, although effect of condition remained non-significant after statistically controlling for state mindfulness at baseline. Secondly, the control task may have been too similar to the experimental condition and so unintentionally cultivated mindfulness. The control condition required participants to attend to two educational documentaries matched in delivery and duration to the brief mindfulness audio. Given that mindfulness can be fostered in relation to internal and external experiences (Brown, Ryan, & Creswell, 2007), Gardner (2013) proposed both conditions might have cultivated different types of mindfulness.

Shore and colleagues (2015) conducted the first randomised control trial of an online insight mindfulness intervention with a non-clinical student sample. Participants were randomly allocated to either a two-week online mindfulness intervention involving 10 minutes of daily-guided practice, or to a waitlist control condition. The researchers found that participants who completed the intervention showed significantly greater reductions in paranoia as measured by the Paranoia Scale (PS; Fenigstein & Vanable, 1992) baseline to post intervention (d =.75) and at one-week follow up (d =.62) compared to those in the waitlist control group. Analysis also indicated that increases in mindfulness skills mediated the relationship between the change in levels of paranoia and intervention type (Shore et al., 2015). This is a finding replicated by other researchers. In a comprehensive effect size analysis of the MBT literature in psychosis, Khoury, Lecomte, Gaudiano and Paquin (2013) concluded mindfulness to be a central component of treatment effectiveness.

From these promising findings, the authors concluded that engaging in daily 10 minute mindfulness over two-weeks can reduce levels of paranoia in non-clinical populations. However, as with all research, this study has its limitations. These included the relatively homogenous sample used, which restricts the generalisability of its findings. Shore et al (2015) acknowledge that there was some variability in the length of time for each participant between completion of baseline measures and completion of post intervention measures, depending on how quickly they were allocated to condition. This may have influenced the results given the natural variation that can occur in paranoia over time. However, this was the same for both control and intervention groups, moderating the effect of this limitation. Lastly, Shore et al (2015) used an opportunistic sampling method resulting in a participant group

relatively low in non-clinical paranoia (i.e. average scores on the PS were below the published mean for non-clinical samples). The effects of mindfulness for those higher on the continuum of non-clinical paranoia are unknown. This is of interest given the evidence that those higher in non-clinical paranoia share many of the same clinical and social-cognitive characteristics as those with clinical presentations (Combs et al., 2007).

The studies reviewed above form part of a body of evidence supporting the effectiveness of mindfulness interventions for non-clinical paranoia. However, a limitation common to each one is the absence of an active comparison condition. This limitation is consistent with general critiques of the mindfulness intervention literature, where there is a current lack of comparative studies of mindfulness training with active treatments (Coelho, Canter, & Ernst, 2007; Chiesa & Serretti, 2010). There is a growing interest in comparing the clinical utility of different meditative techniques, with particular attention being placed on novel interventions that incorporate practices known as loving kindness meditation (Shonin et al., 2015). In the discussion of their findings into the causal role of loneliness in paranoia, Lamster et al (2017) suggest the focus of future treatment research for paranoia be on techniques that have been shown to generate feelings of affiliation toward others, which might include loving kindness meditations. The next section will introduce loving kindness mindfulness and discuss the literature pertaining to its application to forgiveness, loneliness and lastly paranoia.

1.5 Loving kindness mindfulness

1.5.1 Definition

Loving kindness is described in the psychological literature as involving the meditative cultivation of feelings of love for all beings (Shonin et al., 2015). It is a mindfulness practice that research has empirically begun to demonstrate as having potential clinical and interpersonal benefits (e.g. Carson et al., 2005b; Fredrickson et al., 2008). Loving kindness meditation has Buddhist origins related to compassion, love, empathy, and connectedness (Kristeller & Johnson, 2005), and is an emotion-based meditation practice designed to cultivate feelings of warmth and caring for self and others (Salzberg, 2002). Its difference to other traditional insight practices is that it explicitly involves the development of positive thoughts and emotions, rather than the sole encouragement of non-judgmental awareness of present experience. During loving kindness meditations, a person is typically guided through a number of stages that differ in their focus; starting by directing feelings of happiness towards oneself and then gradually extending this out to an ever widening circle of others (Salzberg, 2002). Engaging in only a brief, seven-minute loving kindness mindfulness practice has found to be sufficient to induce positive changes of small to moderate effect size in feelings of social connectedness towards a stranger and the self (Hutcherson, Seppala, & Gross, 2008). Preliminary studies also suggest potential benefits to the application of loving kindness meditation as a clinical intervention for psychological problems that involve interpersonal processes, such as depression, social anxiety and anger (see review by Hofmann, Grossman, & Hinton, 2011). Although these findings appear promising, Hofmann et al (2011) note that the studies included in their meta-analysis were mostly small in sample size and varied considerably in the techniques that were used.

1.5.2 Loving kindness mindfulness for loneliness and forgiveness

In light of the explicit focus of loving kindness mindfulness practices on the development of affection for others, and given empirical evidence of its contributory role in increasing feelings of social connectedness (Hutcherson et al., 2008), it would be expected that loving kindness practices should have a positive effect on experiences like loneliness and forgiveness. Surprisingly, only one study to date has explored loving kindness mindfulness in relation to forgiveness (Alba, 2013) and its effects on loneliness have yet to be empirically studied.

The research undertaken by Alba (2013) was exploratory in nature and asked members (n = 13) of a four-day loving kindness meditation retreat to complete a number of self-report measures pre and post. Forgiveness was measured in terms of participant's feelings of revenge and avoidance of an offender. Analysis revealed participants experienced a significant reduction in both features after the retreat and at two-weeks follow-up. However, these findings were not fully replicated when the procedure was repeated in a second larger sample of meditators (n = 31), where only changes in avoidance were observed. The uncontrolled nature of the study means no conclusions can be drawn about causality. Future research employing experimental randomised designs is needed as the next step in exploring the causal effects of loving kindness on forgiveness.

1.5.3 Loving kindness mindfulness and psychosis

To date, only one study has piloted the use of loving kindness mindfulness practices for individuals with distressing psychotic experiences (Johnson et al., 2011). This investigation tested loving kindness meditation on 18 individuals with a schizophrenia-spectrum diagnosis experiencing predominately negative symptoms.

Participants underwent a six-week loving kindness group programme. Although no causal inferences can be made due to the uncontrolled design, post-intervention participants reported significant increases in the frequency and intensity of positive emotions, and decreases in negative symptoms. Johnson et al (2011) found these gains were also maintained at the three-month follow-up assessment. Furthermore, low attrition rates and qualitative feedback attested to the accessibility and perceived utility of the intervention for this clinical group. Limitations were highlighted, including the small sample size and the absence of a control condition. Additionally, the inclusion of mindfulness exercises as part of the loving kindness intervention made it difficult to establish whether loving kindness meditation was in fact the active ingredient underlying the therapeutic change.

In summary, positive initial evidence exists to support the effectiveness of insight meditation practices on non-clinical paranoia, loneliness and forgiveness. However, the methodological designs employed by the previous studies make it difficult to confidently conclude that the benefits observed can truly be attributed to mindfulness. Within the loving kindness mindfulness literature, this practice has successfully been applied to the negative symptoms of psychosis, but not yet studied on paranoia. Its effectiveness for forgiveness remains inconclusive and for loneliness is unknown. May, Weyker, Spengel, Finkler, and Hendrix (2014) highlight the potential clinical value of research comparing different mindfulness practices, as isolating the relative efficacies of various forms of mindfulness could aid more accurate treatment recommendations. In spite of the subjective and theoretical differences between insight and loving kindness meditation practices, few studies have directly contrasted their effects. The findings of studies that have will be

discussed next.

1.6 Insight meditation vs. Loving kindness mindfulness

In one of the first comparative studies conducted, Sears and Kraus (2009) contrasted the effects of loving kindness, insight meditation, an amalgamated practice of the two and a non-meditating control group in a non-randomised cohort of college students (n= 57). Participants in the first two meditative conditions attended weekly group meditation sessions (of 10-15 minutes duration) for 12 weeks. Individuals receiving the combined mindfulness and loving kindness meditative practice attended two-hour weekly group sessions for a seven-week period. Overall, results revealed no significant main effect of group across a range of outcome measures assessing psychosocial functioning (i.e., positive and negative affect, anxiety, irrational beliefs, coping styles, and hope), yet participants in the combined meditation group did demonstrate significant within-group improvements in anxiety, negative affect and hope. The study was limited by a number of design issues. Firstly, the difference in the number and duration of sessions between meditation groups made it difficult to make reliable inferences regarding their relative efficacy. Secondly, post intervention measures were administered at different time points making it hard to account for university related stressors (e.g., exams, coursework etc.) that could have influenced participant's responses. Lastly, group sizes were small (10-15 completed per group), potentially limiting generalisability and level of statistical power.

Using a more theorectically driven outcome measure, Feldman, Greeson and Senville (2010) set out to test the differential effects of mindful breathing (an insight-type practice), loving kindness meditation and progressive muscle relaxation on the variable of decentering. Decentering is regarded as the ability to view internal

experiences with increased objectivity (Fresco et al., 2007). This variable was assessed both directly – using a subscale of the Toronto Mindfulness Scale (TMS, Lau et al., 2006) – and indirectly, by exploring the degree of correlation between the frequency and negative reaction to participant's repetitive thoughts. In line with the author's hypotheses, participants in the mindful breathing group reported higher scores on the decentering scale of the TMS than members of the other two conditions. A stronger association was also found between the frequency of repetitive thoughts and negativity of participant's reactions to them in the progressive muscle relaxation and loving kindness conditions, suggesting weaker decentering than in the mindful breathing group. From these findings, Feldman et al (2010) suggested decentering as a potential mechanism that distinguishes insight-type practices (i.e. mindful breathing) from others such as loving kindness and progressive muscle relaxation. The finding that all three interventions significantly reduced negative affect also helps establish that the benefits of mindfulness practice cannot be solely attributed to relaxation effects common to other stress management programmes (Roemer & Orsillo, 2003).

In another study, May et al (2014) compared the effects of loving kindness mindfulness with an insight meditation-like practice (i.e. concentration meditation) using a repeated measure ABA design. Similar to insight techniques, the focus of concentration in the mindfulness practice May et al (2014) used was on the breath. The variables of interest were presence, acceptance, and positive and negative affect. The method involved the random assignment of a student sample to practice either concentration (n = 15) or loving kindness meditation (n = 16) over a five-week period. Both groups attended an initial training session of guided meditation and then

were instructed to practice their respective meditations for 15-minutes, three days a week. Participants were tested at multiple time points before, during and after the meditation practice on the Freiburg Mindfulness Inventory (FMI; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) and the Positive Affect Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). A hierarchal linear modelling method was used to conduct the statistical analysis.

After completion of the five-week intervention, some differential effects were observed between conditions on the FMI, however these could only be "inferred indirectly" as no differences were seen between groups when directly tested in the combined statistical model (p.257). May et al (2014) suggest the lack of effect may have been due to the small sample size (n= 29), which meant the study was only sufficiently powered to detect large effect sizes (Cohen, 1992). In terms of affect, results suggested that loving kindness meditation might promote longer lasting positive changes; for example, in contrast to the concentration mindfulness group, levels of positive affect in the loving kindness group continued to improve after training. Furthermore, loving kindness participants demonstrated significant reductions in negative affect in the post meditation period whereas no significant changes were observed for the concentration mindfulness group. While these findings imply that loving kindness mindfulness may give rise to more enduring positive effects, there were a number of potentially confounding factors to the study. Firstly, aside from the initial training, participants did not appear to receive any further formal guidance or meditative CD to practice with, meaning participants could have strayed from the technique they were assigned. Secondly, there appeared to be significant overlap between the practices in each condition, for example a concentration-based

body scan was taught as part of both meditative techniques.

Most recently, Logie and Frewen (2015) compared the short-term effects of a 15-minute insight meditation and loving kindness mindfulness practice with a reading control group on measures of explicit and implicit Self-Referential and Other-Referential Processing (SRP-ORP). As measured by self-report questionnaires, both insight and loving kindness meditations were associated with increased decentering and positive affect towards self and others relative to the reading control, however unlike previous studies there was no significant difference between meditation types. Interestingly, using experimental measures in the form of the Visual and Verbal Self/Other Referential Processing Task (VV-SORP-T; Frewen & Lundberg, 2012) differences were found between groups in terms of participant's self-positivity biases (i.e. viewing the self more positively in comparison with others). Post-task, this was found to increase in those randomised to the insight mindfulness group and decreased in those who experienced the loving kindness practice. There were however some limitations to the study that need to be taken into account in interpreting its findings. Despite randomisation, the groups were not comparable on all variables of potential significance such as the mindfulness facet, observing. Additionally, the experimental measure used to assess implicit processing is a relatively new methodology in need of further study to determine its construct validity (Logie & Frewen, 2015).

The studies reviewed above represent the beginning of comparative mindfulness research. The heterogeneity in methodologies and variables studied restrict the conclusions that can be drawn as to the differential effects of insight mediation and loving kindness mindfulness practices. A further limitation relevant to some of the research relates to the duration of mindfulness practices studied. For

example, in both Feldman et al (2010) and Logie and Frewen's (2015) work, comparisons were made after only one 15-minute practice. This may be of significance given evidence of the positive correlation between practice and mindfulness effects (Carmody & Baer, 2007). Indeed, Fredrickson et al (2008) found differences between controls and individuals practicing loving kindness meditation on a daily basis only began to emerge after two-weeks. Additionally, in a number of cases, data regarding participant's adherence to practice was not recorded which means that factors unrelated to participation in loving kindness and/or insight interventions may have had therapeutic influence, confounding the findings. As it stands, in spite of the clear theoretical difference between insight meditation and loving kindness mindfulness practices, empirical evidence to support their distinction remains inconclusive.

1.7 The current study

1.7.1 Current gaps in the literature

This chapter has identified a number of gaps within the existing literature that the current study will address. Firstly, the effectiveness of mindfulness for non-clinical paranoia has yet to be studied using a methodology comparing it with another active treatment. This has restricted the conclusions that can be drawn as to the efficacy of mindfulness for the experience of paranoia. This study introduces loving kindness mindfulness as a novel meditative practice of potential value. Reasons for this choice are: firstly, it is the only other meditative technique to have been used in psychosis in previous research, and secondly, it has been identified as an intervention of particular utility for difficulties that are interpersonal in nature.

In addition, although paranoia is accepted as a complex, multidimensional phenomenon, it is not known how interventions such as mindfulness elicit change along the key dimensions (convictions, preoccupation, impact and distress) that are associated with these experiences in the non-clinical population. Change across these dimensions has also not been examined using a randomised design in either clinical or non-clinical groups. Such knowledge could add to our developing understanding of the treatment of paranoia.

Finally, research is yet to examine the impact of mindfulness interventions on interpersonal factors that are known to be associated with non-clinical paranoia, such as loneliness and forgiveness. These constructs are hypothesised as being possible maintaining factors to paranoia and also associated with wellbeing in their own right.

1.7.2 Aims of the current study

The proposed study will investigate the effectiveness of insight and loving kindness meditations on non-clinical paranoia. An idiographic approach to non-clinical paranoia will be taken; this experience will be measured using an idiosyncratic multi-faceted measure that asks participants for a personal paranoid experience, which is then rated across the key dimensions of conviction, preoccupation, impact and distress. The study will also explore the effects of insight and loving kindness meditations on the associated interpersonal constructs of loneliness and forgiveness in a sample of individuals with high non-clinical paranoia and associated distress.

The proposed study will test the following hypotheses:

1) Insight meditation and loving kindness mindfulness will both lead to a reduction in non-clinical paranoia across the four dimensions of conviction, preoccupation, impact and distress post-intervention and at one-month follow-up.

2) Participants randomised to the insight meditation condition will experience a greater increase in mindfulness post-intervention and at one-month follow-up compared to those in the loving kindness condition.

3) Participants randomised to the loving kindness meditation condition will show greater reductions in loneliness and increases in forgiveness post-intervention and at one-month follow-up compared to those in the insight meditation condition.

Chapter 2: Method

2.1 Design

The study employed a randomised comparison design. Participants were randomly allocated to one of two two-week long mindfulness interventions: insight or loving kindness meditation. This was the between-subject factor. The dependent variables were paranoia, mindfulness, forgiveness and loneliness. These were measured across three time points (baseline, post intervention and one month follow-up) and were the within-subjects factor. Depression, anxiety and trait paranoia were also measured as covariates to allow for control of any confounding influence on intervention outcome. The study was conducted together with another trainee clinical psychologist and so also included a number of other measures to form the other trainee's doctoral thesis. Only the measures and analyses used to test this study's specified hypotheses are reported here.

2.2 Sample

The study used a non-clinical sample regarded as higher than average on the paranoia continuum. Inclusion criteria for the study was a score above the mean of Fenigstein and Vanable's (1992) Paranoia Scale (≥42) and/or endorsement of two or more items as 'at least somewhat distressing' on the distress subscale of Freeman et al's (2005) Paranoia Checklist. All participants were aged 18 or over and residing in the UK at the time of the study. A total of 451 individuals were screened, from which 203 (45%) met the inclusion criteria. From this, 100 agreed to further participation and formed the sample for the current study. Of these individuals, 45 (45%) scored above the mean on the Paranoia Scale, and the remainder endorsed two or more items

as ‘at least somewhat distressing’ on the Paranoia Checklist distress subscale.

In terms of socio-demographics, 83 (83%) participants were female and the mean age of the sample was 28 years (SD = 8.68, range = 18-56 years). Of the participants, 66% defined themselves as ‘White British’, 21% defined themselves as ‘Other White’ and the remainder of participants defined themselves as either ‘Asian British/Other’ (6%) or from other ethnic groups. Participants were a mixture of students (41%) or in either full or part-time employment (54%). The educational status of the sample was high, with 94% at undergraduate level or above. In terms of meditation experience, 47 (47%) participants reported having had some previous experience of practicing mindfulness. The majority of these rated their competency level as beginner (89%). Of the sample, 33% reported having had a past mental health diagnosis.

2.2.1 Recruitment

A number of strategies were used to recruit participants for the study. The project was advertised to Royal Holloway University (RHUL) students via the Experiment Management System (EMS) and the ‘message of the day’ scheme, which uses the RHUL intranet system. Posters (Appendix 1) were circulated to all RHUL academic departments and placed on public notice boards e.g. in libraries and student halls of several London based universities. The project was advertised as a voluntary study investigating ‘the effects of mindfulness on thoughts, feelings and well-being’, and provided the researcher’s email addresses for those interested to get in contact. Social media platforms such as Facebook, Twitter and participant recruitment websites (https://www.callforparticipants.com; https://www.reddit.com/r/SampleSize; http://www.onlinepsychresearch.co.uk) were used as methods of advertising the study

to a wider population of potential participants. All electronic adverts included a hyperlink to the information sheet and initial screening questionnaires. Participants who met the inclusion criteria were contacted by the researchers via an email address provided by the individual to invite them to the second phase of the project (see procedure section 2.6 below). A prize-draw entry for £100 worth of Amazon vouchers was used as a recruitment incentive.

2.2.2 Power analysis

A power analysis was conducted to ascertain the number of participants required for the current research. Shore et al's (2015) study on mindfulness for non-clinical paranoia was one study used to estimate the effect size for the current research. This study was chosen as it used the same intervention (i.e. two-week daily mindfulness practice) and a similar non-clinical sample as to that used in the current study. Shore reported moderate to large between-subjects effect sizes of .75 (pre to post intervention) and .62 (for pre to follow-up) (Cohen, 1992). As this study used a wait-list control, previous research to have compared the effects of different types of meditations was also considered in estimating effect sizes. In comparative studies of a single-session insight meditation and loving kindness practice, effects of a small to moderate size were reported on variables of decentering (d = .36), frequency of negative thoughts (d = .31) (Feldman et al, 2010) and self-positivity bias (d= .38-.63) (Logie & Frewen, 2015). On the combined basis of these studies, a medium effect size was expected.

With power at .80, alpha of 0.05 (Cohen, 1992), and predicting a medium effect size using a three (time: baseline, post intervention, one-month follow up) x

two (intervention: insight or loving kindness meditation) mixed ANOVA design, with four independent variables (i.e. paranoia, loneliness, forgiveness and mindfulness), a total sample of 86 participants was required to ensure the study was sufficiently powered to detect significant change within and between conditions.

The actual sample obtained (i.e. that completed measures at all three time-points) was 84. Post hoc power analyses based on the average between-subjects effect sizes across the four paranoia dimensions (d= .29) indicated the study was still sufficiently powered at 0.86.

2.3 Measures

A total of eight measures and a practice diary were used in the study (see Appendices 2-9). A description of each of these is presented below.

2.3.1 Demographics questionnaire

Socio-demographic information was collected for each participant. This included age, gender, ethnicity, educational and employment status and whether they had ever been diagnosed with a mental health problem. Level of knowledge/previous experience with mindfulness was also included given that past studies with non-clinical samples have shown that meditation experience may impact responses to meditation exercises (Thompson & Waltz, 2007) and scores on measures of traits related to mindfulness (Baer et al., 2006). This was quantified by asking participants to rate themselves as either beginner, intermediate or advanced.

2.3.2 Screening measures

The **Paranoia Scale (PS; Fenigstein & Vanable, 1992)** is a 20-item self-

report measure designed to assess non-clinical levels of trait paranoia, including ideas of persecution and reference. Each item is rated on a five-point scale measuring level of agreement (1 = 'not at all applicable to me', 5 = 'extremely applicable to me'). The total score ranges from 20 to 100, with higher scores suggestive of higher levels of non-clinical paranoia. Across four separate student samples (n= 581) the PS has demonstrated good internal consistency (α =.84), adequate test retest reliability (r =.70) and has been shown to be sensitive to experimental manipulations of paranoia (Fenigstein & Vanable, 1992). To establish the validity of the scale, Fenigstein and Vanable's (1992) also studied the relationship between paranoia and other associated psychological variables. Construct validity was supported by evidence of significant correlations with the associated variables of interpersonal trust (r = -.30, p <.01), anger (r = .45, p <.01) and control beliefs (r = .34, p <.01). The amount of shared variance between these constructs ranged from 10-25%, suggesting the scale also has convergent and discriminant validity. The level of unshared variance between the constructs was deemed considerable enough to preserve the distinctiveness of the paranoia measure (Fenigstein & Vanable, 1992). As well as a screening measure, trait paranoia was also assessed as a potential covariate. Cronbach's alpha for the scale in the current study was .91.

The **Paranoia Checklist (PC; Freeman et al., 2005)** is an 18-item multi-dimensional measure of paranoid ideation. Each item is rated on a five-point scale for frequency (*0* = 'rarely', *4* = 'at least once a day'), degree of conviction (*0* = 'do not believe it', *4* = 'absolutely believe it') and distress (*0* = 'not distressing', *4* = 'very distressing'). Total scores range from 0 to 72. In the current study, only the frequency and distress PC scales were used. Validated with a non-clinical sample the checklist

has demonstrated good internal reliability, with alpha coefficients of 0.9 or above on all three dimensions (Freeman et al., 2005). Convergent validity has also been demonstrated when correlating with the Paranoia Scale; higher PS scores correlated with Paranoia Checklist frequency (r = .71, p < .001) and distress scores (r = .58, p <0.001) (Freeman et al. 2005). Cronbach's alpha in the current study for the frequency scale was .83 and distress scale was .89.

2.3.3 Idiosyncratic paranoia experience measure

Paranoia was measured using questions taken from the Personal Experiences of Paranoia Scale (PEPS; Ellett et al., 2003). The PEPS was developed as a phenomenological and multidimensional measure of paranoid experiences. Akin to the PEPS, the measure devised for the purpose of this study is divided into two main parts. In part one, participants are asked to give an example of a paranoid experience they have had, defined according to Freeman and Garety's (2000) criteria (i.e. perceived intentional harm by others). In part two, respondents are asked to rate their experience, as they felt at the time and how they feel now, along the four dimensions of preoccupation, impact, conviction and distress. Each item is rated on five-point scale for conviction (1 = 'not at all', 5 = 'very') and for preoccupation, impact and distress items (1 = 'none at all', 5 = 'severe'). These dimensions have been identified as key components of paranoia and used to measure change in clinical populations (Peters et al., 1999; Chadwick & Lowe, 1994; Ellett 2013). In a student sample (n= 324), 47% reported a paranoia experience using the PEPS. Additionally, scores on the Paranoia Scale were significantly higher among the individuals who did report an experience compared to those who did not report an experience of paranoia, suggesting concurrent validity between the measures (Ellett et al., 2003).

2.3.4 Dependent variable measures

The **Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)** is a 39-item measure that assesses five facets of mindfulness: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. The measure was developed from a factor analytic study of five independently developed trait mindfulness questionnaires in order to investigate the facet structure of the construct. The above five factors were identified (Baer et al., 2006). It has been used widely in other investigations of mindfulness-based interventions allowing for comparison of effect sizes with other studies. The FFMQ items are rated on a five-point scale (1 = 'never or very rarely true', 5 = 'very often or always true'). Total scores range from 39-195, with higher scores reflecting greater trait mindfulness. Facet scores are summed with each subscale score ranging from 8-40, with the exception of the 'non-react' facet, which ranges from 7-35.

When validated in a non-clinical sample, the FFMQ demonstrated adequate to good internal consistency, with alpha coefficients ranging from .75 to .91 across the facets. Correlations between the facets ranged from .15 to .34 and were all found to be significant with the exception of the correlation between the 'observe' and 'non-judge' facets, suggesting that the facets represent related but distinct constructs. Although the psychometric properties of the FFMQ are supported, findings from a series of confirmatory factor analysis (CFA) studies have led researchers to question the validity of its five-factor structure, and the inclusion of all five subscales particularly in research using non meditator community samples (Gu et al., 2016). For example, Williams et al (2014) showed the 'observe' factor did not load significantly onto the overarching mindfulness factor in a large convenience community sample.

They suggested that exclusion of the 'observe' factor, when using adult community 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 (score range from 31 to 155) showed good internal consistency in this sample (α = .90). Cronbach's alpha for the scale in the current study was .94.

The **UCLA Loneliness Scale (Version 3; Russell, 1996)** is a 20-item scale designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. Each item begins with the stem of "how often do you feel …," and is rated on a four-point scale of frequency (1 = 'never', 4 = 'always'). Total scores range from 20 to 80 with higher scores indicating stronger perceptions of loneliness (Russell, 1996). Across four separate non-clinical samples it has shown high reliability, in terms of internal consistency (alpha coefficients ranging from .89 to .94) and test retest reliability (*r* = .73). The construct validity of the UCLA is supported by evidence of significant correlations with associated variables such as certain personality traits (Neuroticism (*r* = .49) and Introversion-Extroversion (*r* = -.40)) and the adequacy of the individual's interpersonal relationships (amount of support (r = -.48), satisfaction with support (*r* = -.56), self-esteem (*r* = -.60) and depression (*r* = .52)). Although strong correlations, the magnitude of these correlations is less than the association found between the UCLA and other measures of loneliness, supporting the discriminant validity of the measure (Russell, 1996). Cronbach's alpha for the UCLA in the current study was .92.

The **Forgiveness Scale (FS; Rye et al., 2001)** is a 15–item scale designed to measure forgiveness to a particular offender. Items were developed to assess

affective, cognitive, and behavioural responses to wrongdoing. It contains two subscales that measure the absence of negative reactions and the presence of positive reactions. Respondents are instructed to think about their reaction to a person who wronged or mistreated them and answer using a five-point scale of agreement (1 ='strongly disagree' to 5 ='strongly agree'). Total scores range from 15 to 75, with higher scores reflecting higher levels of forgiveness. Scores on the Absence of Negative subscale range from 10-50 and scores on the Presence of Positive subscale range from 5-25. The Forgiveness Scale has shown to have adequate internal consistency with a reported overall alpha of .87 and significant test retest correlations (r = .80), indicating stability of the scale in a non-clinical sample. Construct validity of the measure was demonstrated by significant correlations with the Enright Forgiveness Inventory (Subkoviak et al., 1995; Absence of Negative subscale, r = .52, $p < .001$; Presence of Positive subscale, r = .75, $p < .001$) and related constructs such as religiousness, hope, anger and spiritual well-being (Rye et al., 2001). Cronbach's alpha for the scale in the current study was .87.

2.3.5 Covariate measure

The **Depression Anxiety Stress Scales 21 (DASS-21; Henry & Crawford, 2005)** is a shortened form of Lovibond and Lovibond's (1995) 42-item self-report measure. With a total of 21-items, the measure consists of three seven-item self-report scales developed to measure depression, anxiety and stress. Respondents are asked to rate how applicable each statement has been to them over the past week. Each statement is rated on a four-point scale (0 = 'did not apply to me at all', 5 = 'applied to me very much or most of the time'). Total scores range from 0-61. In a large UK based non-clinical sample (n= 1,794), the DASS-21 demonstrated good internal

consistency with an overall alpha of .88 and correlated significantly with other validated measures of depression and anxiety. Confirmatory factor analyses indicate that together the depression, anxiety and stress scales form a valid measure of general psychological distress (Henry & Crawford, 2005). This measure was included for use as a covariate to ensure that the effect of intervention on the dependent variables was not better accounted for by change in negative mood state. Cronbach's alpha for the full DASS-21 in the current study was .90.

2.3.6 Practice diary

A practice log was devised for participants to record their mindfulness practice (Appendix 10). This asked them to note whether or not the practice took place on each of the 14 days and at what time. The log also provided a space for participants to share any comments about their experience of practising mindfulness. Participants were encouraged to report honestly the amount of practice completed.

2.4 Mindfulness conditions

Both meditation practices were matched in duration (10 minutes) and were recorded by the study's researcher to ensure consistency in delivery across conditions (for scripts see Appendix 11 and 12).

Insight meditation condition

Consistent with previous research, an established insight meditation practice was used (Shore et al., 2015; Chadwick, 2006). This practice involved a guided meditation in which the breath is used as the object of attention to which the listener is encouraged to return to every time they notice the mind has wandered. The insight meditation starts with a brief body scan, followed by mindful breathing and choiceless

awareness. The exercise encourages the redirecting of the focus of one's attention away from distracting thoughts towards focusing on the physical sensations of the breath.

Loving kindness meditation condition

The loving kindness meditation practice was provided by the UCLA Mindful Awareness Research Centre (http://marc.ucla.edu/mindful-meditations). The meditation encourages the development of feelings of warmth and kindness towards the self and others. The practice begins by asking the meditator to contemplate a person for whom they already feel compassion. Individuals are then encouraged to extend this feeling to themselves and then an ever-widening circle of others (e.g. neutral persons, those who have caused difficulty or harm, all people of the world).

2.5 Pilot of the research study

The study was piloted on eight participants. These individuals consisted of a mixture of post graduate RHUL students and members of the general public known to the researchers therefore matching the sample to be recruited, which consisted of students and UK-based adults. Verbal feedback was sought on the content of the information sheet and questionnaire measures, using the online system and how to encourage participant adherence to the mindfulness practice. Following the pilot, two main changes were implemented for the main study a) the frequency scale items from the PC were added to guide participants as to how to answer the distress scale items, b) researchers would send participants a practice reminder halfway through the two-week intervention as a means of aiding adherence.

2.6 Procedure

A flow diagram illustrating the participant's journey through the study is detailed below in Figure 3. Regardless of the method of recruitment all participants accessed the study through a web address. All data were collected through Qualtrics, a password protected online survey system.

Participants were required to first read the information sheet (Appendix 13), and then provide informed consent to take part in the study. Participants then completed the socio-demographic questionnaire and two screening questionnaires, the PS and the PC. Those who met the inclusion criteria were invited via email to participate in the second phase of the study (Appendix 14).

For part two of the study, participants were asked to provide their Skype or phone details and then contacted at a time of convenience to them. Contact was made before and after completion of the online questionnaires to explain the procedure, answer any questions and provide instructions for the mindfulness practice. Each participant was assigned a unique identification number to ensure the anonymity of his or her data. Participants were required to complete the idiosyncratic paranoia experience measure, the FFMQ, the UCLA, the FS, and the DASS-21. Each began with a brief description of the measure followed by the questionnaire items with the respective scales for responding.

On completion of the questionnaire measures participants received one of the two audio meditations (insight or loving kindness), a practice diary and instructions for the remainder of the study (Appendix 15). Allocation of the meditation practice was randomised using the website http://www.randomization.com. A block randomisation sequence using block sizes of 20 was created. Audio files were

anonymised (A and B) by an individual independent to the study therefore researchers were blind to which condition each participant was in. Participants were required to listen to the mindfulness recording once per day for 14 consecutive days. To encourage the practice an email was sent at the end of the participant's first week of participation (Appendix 16).

Post intervention (time-point two), participants completed all questionnaire measures again and were required to electronically return their practice diaries. Participants were requested to cease their mindfulness practice until the completion of the study in a month's time to ensure greater consistency in the amount of practice completed by participants by follow-up. After one month, (time-point three) participants completed all questionnaire measures for the third time. At completion, all were thanked for their participation and fully debriefed about the study's aims and design (Appendix 17 and 18). All participants were entered into a prize draw to win one of two £50 Amazon vouchers.

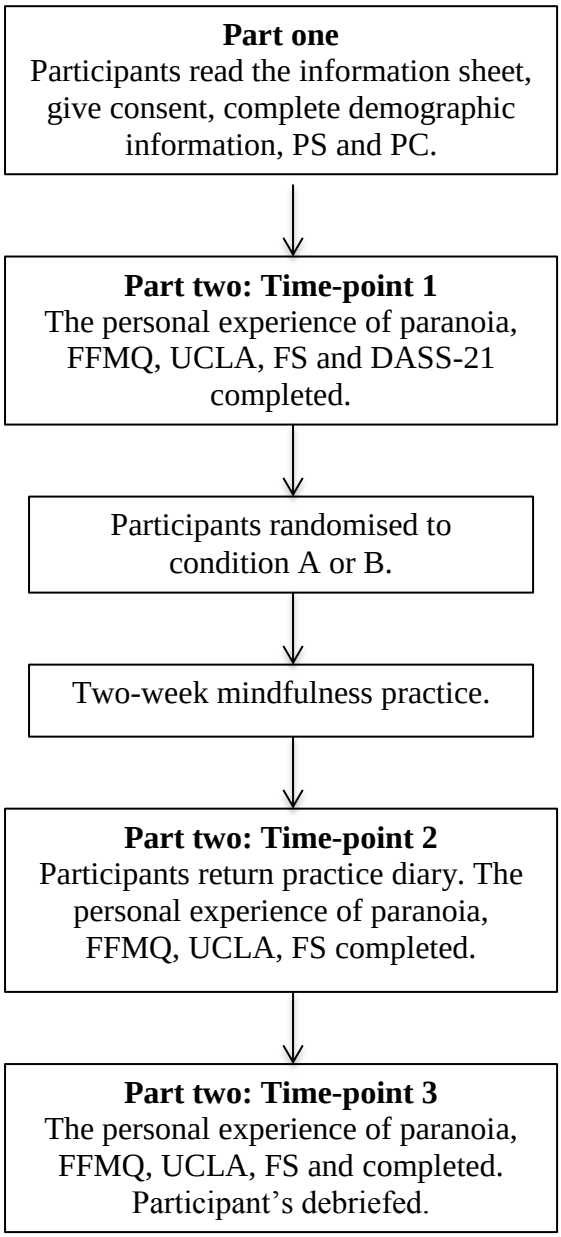


Figure 3: **Participant journey**

2.7 Ethical considerations

Ethical approval was obtained via the Royal Holloway Ethics Committee prior to the commencement of data collection (REC ProjectID: 99). Appendix 19 shows a copy of the approval. All participants gave written consent to take part, were informed of their right to withdraw and fully debriefed at completion. The BPS's

Supplementary Guidance on the use of Social Media (BPS, 2012) was also consulted to ensure the study addressed all potential ethical considerations when recruiting via this method.

The main ethical consideration of the study concerned the inclusion criteria (i.e. being above the norm on a measure of paranoia), and the potential impact of this revelation on participants. To minimise any potential impact, each participant was fully debriefed following completion of the study. Participants were informed of the prevalence and common occurrence of paranoia in the general population and that the thresholds used in the study were low and not suggestive of the presence of any mental health difficulties. All measures were non-diagnostic and did not have clinical cut-offs. In the interest of participant's wellbeing, the debrief page also provided the researcher's contact information along with signposts to their GP, Samaritans or MIND should they experience any difficulties or have any concerns during/following participation. No concerns were raised to the researchers by any of the participants.

Chapter 3: Results

3.1 Overview

This chapter begins by describing the screening methods used to prepare the data prior to statistical analysis. Details are provided regarding the procedures used in the screening and management of missing data, outliers and examining the normality of distributions, including any transformations undertaken for non-normal distributions. The socio-demographic characteristics of the sample are then presented. This is followed by descriptive statistics for the study variables and adherence to the intervention. These statistics will be described for the whole sample, and then for each condition. Finally, the study's three hypotheses are outlined and the related statistical analyses are reported.

All statistical analyses were conducted using the Statistical Package for Social Sciences version 21.0 (SPSS; version 21.0). Unless otherwise stated, findings are reported to two decimal places and exact *p*- values are given. The threshold for statistical significance was set at $p < .05$. All hypothesis testing was one-tailed given the prediction of a direction of effect for each hypothesis. Effect sizes were also calculated for all significant effects in the main analysis; using Cohen's conventions, $d = 0.2$ was considered a 'small' effect size, 0.5 represented a 'medium' effect size and 0.8 a 'large' effect size (Cohen, 1988).

3.2 Data Screening

Prior to carrying out the statistical analyses related to the research hypotheses the dataset was screened for errors in data entry, missing values and to check the data met assumptions for parametric tests.

3.2.1 Data inclusion

100 participants completed the baseline measures. Of these, 84 completed measures at all three time points (45 (53%) loving kindness meditation, 39 (46%) insight meditation condition) with 94 completing the baseline and post intervention measures (48 (96%) loving kindness meditation, 46 (92%) insight meditation). A consort diagram outlining the participant flow through the study is shown in Figure 4. There was no significant difference in the number of drop outs between conditions post intervention ($x^2(1) = .70$, $p = .40$) or at follow-up ($x^2(1) = 2.69$, $p = .10$).

The data set was screened for missing values. Examination of frequencies revealed that there were no missing values for any of the baseline measures or for the paranoia dimensions at each time-point. A small amount of missing data was found on the UCLA and FS at time-points two and three (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. Instead, missing data were managed using 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 (Field, 2009).

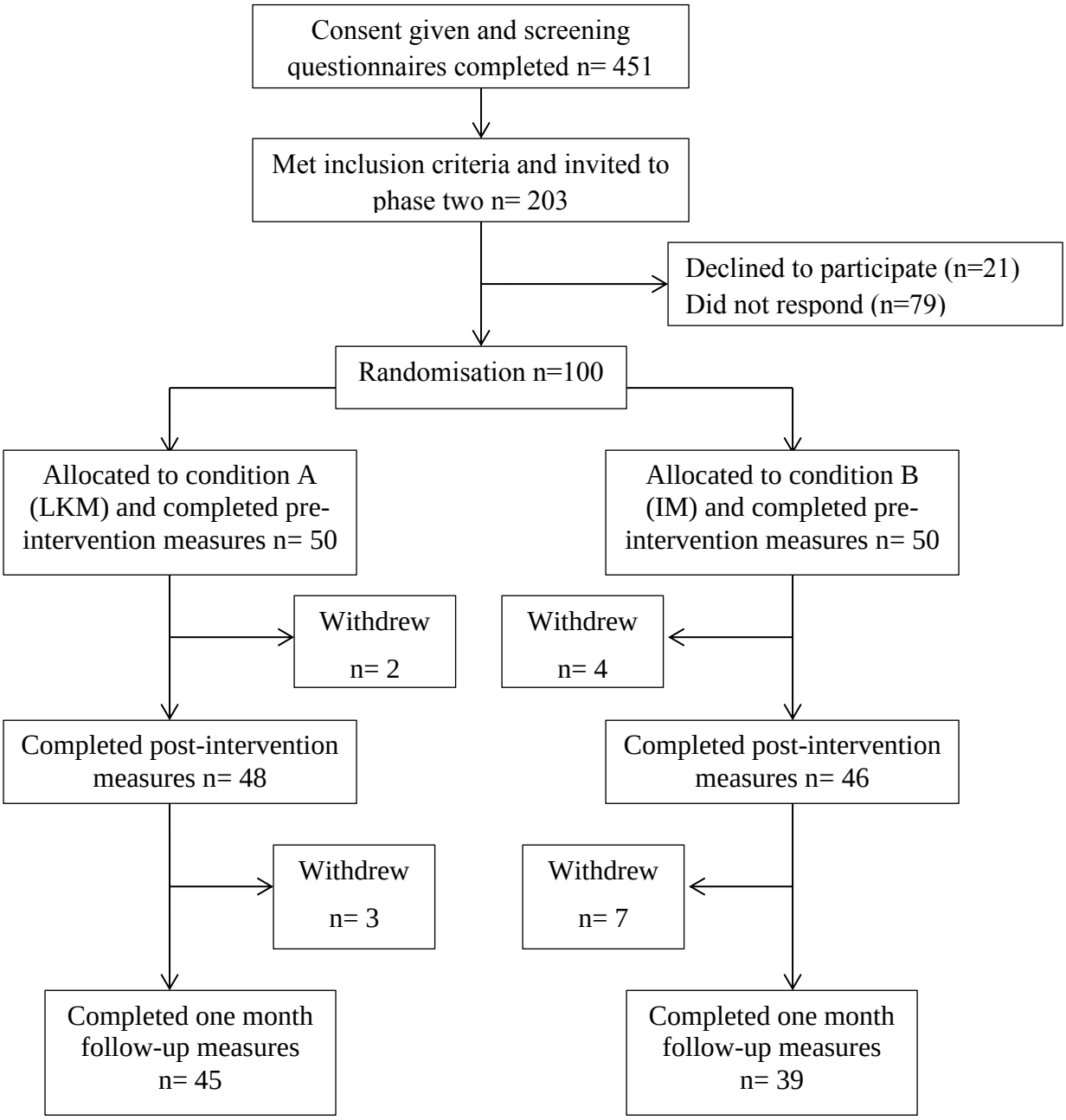


Figure 4: **Consort diagram outlining the participant flow through the study**

3.2.2 Outliers

The data were checked for outliers by examining frequency outputs and generating boxplots for all measures. A data point was considered an outlier if it was more than three standard deviations from the variable mean (Field, 2009). Using these criteria, three data points were classified as outliers: PC distress scale (n = 1), PC

frequency scale (n = 1) and DASS-21 Depression scale (n = 1). In managing outliers, Field (2009) cautions against the removal of scores as this can lead to a loss of power and recommends transformations be applied. Examination of the distribution of the data and any transformations conducted is described next.

3.2.3 Data distribution: normality

All continuous variables were checked for normality using histograms and by calculating skewness and kurtosis *z*-scores using the following formulae:

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

A distribution was considered normal if a z-score for both skewness and kurtosis were less than 2.58 ($p < .01$) (Field, 2009). The FS, UCLA & FFMQ were all found to have acceptable levels of skew and kurtosis at all time-points, with skewness ranging between -1.67-0.49, and kurtosis ranging between -1.06-0.56. The PS was positively skewed ($z = 3.39$, $p < .01$). Application of a square root transformation resulted in the scores being normally distributed ($z = 2.06$, $p < .01$). The two subscales of the PC were positively skewed (PC frequency: $z = 4.02$, $p < .01$; PC distress $z = 3.55$, $p < .01$). These scores were transformed using square root to establish a normal distribution (PC frequency: $z = -0.56$, $p < .01$; PC distress: $z = 0.33$, $p < 0.01$). Two dimensions on the DASS-21 were also positively skewed (anxiety: $z = 3.32$, $p < .01$; depression: $z = 3.77$, $p < .01$). Square root transformations were applied resulting in acceptable levels of skew (DASS-21 anxiety: $z = -0.95$, $p < .01$; DASS-21 depression: $z = -0.54$, $p < 0.01$). Transformations also removed outliers. Following the application of transformations, all measures were considered as meeting the assumptions for

using parametric statistical techniques.

3.3 Socio-demographic characteristics of sample

The socio-demographic characteristics of the sample are set out in Table 1 below. Descriptive statistics are detailed for the overall sample and then separated by condition. For the purpose of analysis, categories were combined due to small participant numbers in particular groups. For all independent t-tests Levene's test for equality of variance was examined and where homogeneity of variance assumptions were not met, separate variance estimates were used. As can be seen in Table 1, statistical comparisons indicated there were no significant differences between the groups on any socio-demographic characteristics.

In order to ensure an investigation of non-clinical paranoia, independent t-tests were conducted to ascertain whether responses to the relevant paranoia measures differed depending on whether participants indicated having had a previous mental health diagnosis or not. No differences were found between these two groups on Paranoia Scale scores ($t(82) = .56$, $p = .57$), or Paranoia Checklist distress scale scores ($t(78) = -.78$, $p = .43$). The number of participants who stated a previous mental health diagnosis was also comparable per condition $x^2(1) = .47$, $p = .49$.

***Table 1*: Descriptive statistics of the socio-demographic characteristics of the sample, detailed for the overall sample and per condition, and statistical comparisons between conditions.**

Variable	**Subcategory**	**Overall sample N= 84**	**LKM condition N= 45**	**IM condition N= 39**	**LKM v IM condition**
Age	Mean (*SD*)	28 (8.30)	28.60 (7.88)	27.74 (8.85)	$t(82) = .46$, $p = .64$
Gender	Female	71 (84.5%)	37 (82.2%)	34 (87.1%)	$x^2(1) = .39$, $p = .53$
	Male	13 (15.5%)	8 (17.7%)	5 (12.8%)	
Ethnicity	British	57 (67.9%)	30 (66.6%)	27 (69.2%)	$x^2(1) = .06$, $p = .80$
	Other	27 (32.1%)	15 (33.3%)	12 (30.7%)	
Employment status	Employed	43 (51.2%)	25 (55.5%)	18 (46.1%)	*(FET)** = .98, $p = .64$
	Student	36 (42.9%)	18 (40%)	18 (46.1%)	
	Other	5 (6%)	2 (4.4%)	3 (7.6%)	
Educational status	Postgraduate	40 (47.6%)	25 (55.5%)	15 (378.4%)	*(FET)* = 3.08, $p = .16$
	Undergraduate	37 (44%)	16 (35.5%)	21 (53.8%)	
	Pre-university	2 (2.4%)	1 (2.2%)	1 (2.5%)	

Mental Health Diagnosis	Yes	27 (32.1%)	13 (28.8%)	14 (35.8%)	$x^2(1) = .47$, $p = .49$
	No	57 (67.9%)	32 (71%)	25 (64.1%)	
Mindfulness knowledge	Yes	51 (60.7%)	30 (66.6%)	21 (53.8%)	$x^2(1) = 1.44$, $p = .23$
	No	33 (39.3%)	15 (33.3%)	18 (46.1%)	
Mindfulness practice	Yes	43 (51.2%)	26 (57.7%)	17 (43.5%)	$x^2(1) = 1.68$, $p = .19$
	No	41 (48.8%)	19 (42.2%)	22 (56.4%)	
Mindfulness competence	Beginner	38 (88.3%)	24 (92.3%)	14 (82.3%)	$x^2(1) = .99$, $p = .31$
level	Intermediate	5 (11.6%)	2 (7.6%)	3 (17.6%)	

**FET = Fischer's Exact Test*

Participants who completed the study (i.e. completed measures at all three time-points) were also compared with those who dropped out on socio-demographic factors and baseline measure scores. In terms of sample characteristics, education level, participant's prior knowledge of and experience of practicing mindfulness differed statistically between groups. Those who completed the study were significantly more likely to have a higher educational status (*FET* = 7.07, p = .02), pre-existing knowledge of mindfulness ($x^2(1) = 6.92$, $p < .01$) and previous experience of practicing mindfulness ($x^2(1) = 3.70$, p = .05). No significant difference was found on the other socio-demographic factors, including age ($t(98) = -.40$, p= .68), gender ($x^2(1) = .86$, p= .35), employment status (*FET* = 1.49, p = .45), competency level of mindfulness (*FET* = .52, p= 1.00) and mental health diagnosis ($x^2(1) = .17$, p =.67). With regards to the baseline scores, no significant differences were found between completers and drop-outs on the four dimensions of paranoia (distress $t(98) = -1.26$, p= .21; conviction $t(98) = .36$, p= .71; impact $t(98) = -1.22$, p= .22; preoccupation $t(98) = -1.02$, p= .30), or on mindfulness ($t(27.78) = 1.82$, p= .07) and loneliness ($t(98) = -.40$, p= .68). Participants who completed the study were however significantly more forgiving at baseline then those who later dropped out ($t(98) = 1.45$, p= .03).

3.4 Participant's adherence to mindfulness practice

Throughout the two-week mindfulness practice, all participants were requested to keep a record of the amount of practice they did. In the sample that completed the study, 75 (89%) diaries were returned to the researchers. The mean number of days practice was 12 (*SD* = 2.05, range 5-14). The mean number of days practice for participants in the loving kindness condition was 11 (*SD* = 2.28, n = 39)

and the mean for the insight mindfulness condition was 12 (*SD* = 1.72, n = 36). No significant difference was found between the number of days of practice completed between conditions (*U* = 588, p = .20).

3.5. Covariate measures

Depression, anxiety and trait paranoia were measured as possible covariates and comparisons conducted between groups. Descriptive and comparative statistics for these variables are set out in Table 2. As can be seen below, no significant differences were found between conditions; therefore these variables did not need to be controlled for in the main analyses.

Table 2: **Descriptive statistics & statistical comparisons for covariate measures, detailed for the overall sample, and per condition.**

Measure	**LKM condition N= 45 Mean (*SD*)**	**IM condition N= 39 Mean (*SD*)**	**LKM v IM condition**
DASS-21 Depression	10.26 (9.73)*	11.48 (8.06)*	*t*(82) = -.97, *p*= .33
Anxiety	9.02 (7.46)*	9.79 (9.03)*	*t*(82) = -.14, *p*= .88
Paranoia Scale	42.04 (14.40)*	39.56 (10.58)*	*t*(81.16)= .77, *p*=.44

*The table presents untransformed mean scores

3.6. Descriptive statistics of study variables

Descriptive statistics for all measures are set out in Table 3 below. The means, standard deviations and ranges for each measure are presented at each of the three time-points (baseline, post intervention and follow-up).

Table 3: Descriptive statistics for all study measures (Paranoia dimensions, Loneliness, Forgiveness and Mindfulness), detailed by condition at baseline, post intervention and follow-up.

	Loving-Kindness Meditation condition (N= 45)			**Insight Mindfulness condition (N= 39)**		
Measure	**Baseline Mean (*SD*, Range)**	**Post intervention Mean (*SD*, Range)**	**Follow-up Mean (*SD*, Range)**	**Baseline Mean (*SD*, Range)**	**Post intervention Mean (*SD*, Range)**	**Follow-up Mean (*SD*, Range)**
Distress	3.71 (1.05, 1-5)	3.20 (1.14, 1-5)	3.06 (1.19, 1-5)	3.25 (1.09, 1-5)	2.51 (1.12, 1-5)	2.76 (1.20, 1-5)
Conviction	3.04 (1.42, 1-5)	2.62 (1.36, 1-5)	2.64 (1.43, 1-5)	2.56 (1.23, 1-5)	2.07 (1.03, 1-4)	2.28 (1.12, 1-5)
Impact	2.28 (1.07, 1-5)	1.80 (.86, 1-4)	1.57 (.81, 1-4)	1.97 (1.03, 1-5)	1.61 (.90, 1-4)	1.66 (.95, 1-4)
Preoccupation	2.02 (1.05, 1-4)	1.57 (.83, 1-4)	1.57 (.78, 1-4)	1.89 (.94, 1-5)	1.38 (.71, 1-4)	1.53 (1.02, 1-5)
UCLA Total score	46.42 (11.7, 28-72)	43.95 (10.98, 25-72)	44.66 (11.53, 24-69)	46.89 (7.80, 34-63)	42.87 (9.75, 25-61)	43.89 (10.26, 24-63)
FS Total score	45.04 (10.28, 20-64)	49.42 (11.34, 22-72)	49.20 (11.20, 21-70)	48.02 (10.39, 20-73)	53.10 (11.59, 22-73)	55.12 (9.69, 33-75)
Absence of Negative	32 (7.83, 14-49)	35.42 (8.44, 17-50)	34.95 (8.37, 16-50)	34.12 (7.19, 15-50)	38.84 (8.08, 16-50)	38.76 (7.85, 20-50)

Presence of Positive	13.04 (4.05, 5-20)	14 (4.53, 5-23)	14.24 (4.81, 5-23)	13.89 (4.41, 5-23)	14.25 (4.37, 5-24)	14.82 (4.84, 5-25)
FFMQ Total score**	93.28 (20.25, 46-130)	96.86 (18.10, 49-132)	96.64 (16.82, 63-133)	92.33 (13.52, 62-120)	98.53 (20.39, 57-146)	96.10 (17.92, 57-134)
Describe facet	26.15 (7.48, 8-40)	27.04 (7.05, 9-40)	27.31 (7.15, 8-40)	27 (5.80, 15-40)	27.10 (6.56, 14-40)	26.58 (6.52, 12-40)
Aware facet	24.48 (7.09, 9-37)	25.20 (6.44, 13-38)	24.83 (6.36, 8-40)	23.87 (5.69, 12-38)	24.71 (6.51, 10-38)	24.48 (6.29, 8-37)
Non-react facet	18.24 (5.21, 10-32)	19.71(4.22, 11-28)	19.26 (5.07, 10-31)	17.02 (3.96, 8-25)	19.87 (4.64, 9-30)	18.53 (4.31, 10-27)
Non-judge facet	24.40 (7.86, 12-38)	24.91 (7.93, 9-40)	25.26 (7.46, 9-39)	24.43 (7.17, 8-39)	26.84(8, 11-40)	26.48 (7.82, 8-40)

**Total for four facet

3.7 Statistical analysis of the hypotheses

3.7.1 Hypothesis 1:

Insight meditation and loving kindness mindfulness will both lead to a reduction in non-clinical paranoia across the four dimensions of conviction, preoccupation, impact and distress post intervention and at one-month follow-up.

A mixed model ANOVA was used to compare the effects of insight and loving kindness meditations on paranoid conviction, preoccupation, impact and distress. The within-subjects factor was time measured at three points (baseline, post intervention and follow-up) and the between-subjects factor was the condition participants were allocated to (insight or loving kindness). A significant main effect of time was found across all four paranoia dimensions (distress: $F(2,164) = 25.96$, $p < .001$; conviction: $F(1.92, 158.12) = 8.69$, $p < .001$; preoccupation: $F(1.68, 138.49) = 16.56$, $p < .001$; impact: $F(2, 164) = 17.64$, $p < .001$). Within-group t-tests indicated that participants showed a significant decrease in paranoia from baseline to post intervention on distress $t(83)= 6.10$, $p< .001$ ($d= .66$); conviction $t(83)= 4$, $p< .001$ ($d= .43$); preoccupation $t(83)= 5.93$, $p< .001$ ($d= .41$); and impact $t(83)= 4.67$, $p< .001$ ($d= .50$), and from baseline to follow-up on all dimensions (distress $t(83)= 5.68$, $p< .001$, $d= .61$; conviction $t(83)= 2.76$, $p= .007$, $d= .30$; preoccupation $t(83)= 3.77$, $p< .001$, $d= .41$; impact $t(83)= 5.34$, $p< .001$, $d= .58$). No significant change was found between post intervention and follow-up on each of the dimensions (distress $t(83)= -.55$, $p= .58$; conviction $t(83)= -1.08$, $p= .28$; preoccupation $t(83)= -.94$, $p= .34$; impact $t(83)= 1.09$, $p= .27$).

A significant between subjects effect was found for distress $F(1,82) = 4.65$, p

= .03. Overall mean scores indicated distress was higher in the loving kindness meditation condition (M= 3.32) than the insight condition (M= 2.84). The lack of a significant interaction between time and condition $F(2, 164) = 2.08$, $p = .12$ suggests however that change in distress over time did not significantly differ between the two meditation conditions. No significant between subjects effect was found for conviction $F(1,82) = 3.43$, $p = .06$; preoccupation $F(1,82) = .50$, $p = .48$ and impact $F(1, 82) = .59$, $p = .44$. Similarly, no significant interactions were found between time and condition for these dimensions (conviction $F(1.92, 158.12) = .33$, $p = .70$; preoccupation $F(1.68, 138.49) = .37$, $p = .65$; impact $F(2, 164) = 2.51$, $p = .08$), indicating that reductions in paranoia across its four dimensions did not differ significantly between insight and loving kindness meditation conditions. These findings indicate that the hypothesis was supported.

3.7.2 Hypothesis 2:

Participants randomised to the insight meditation condition will experience a greater increase in mindfulness post intervention and at one-month follow-up compared to those in the loving kindness meditation condition.

A three (time: baseline, post intervention and follow-up) x two (condition – meditation type: insight or loving kindness) mixed model ANOVA was used to compare mindfulness across time in the insight meditation condition compared to the loving kindness meditation condition. The dependent variable was participant's scores on the FFMQ. A significant main effect on mindfulness across time was found $F(2, 164) = 8.65$, $p < .001$. Within-group t-tests indicated that participants showed a significant increase in mindfulness from baseline to post intervention $t(83) = -3.86$, $p =$

001 (*d*= -.42) and from baseline to follow-up *t*(83)= -2.82, *p*= .006 (*d*= -.30) but not between post intervention and follow-up *t*(83)= 1.10, *p*= .27. There was no significant between subjects effect of condition on the total mindfulness score *F*(1,82) = .00 *p* = .98, and no significant time x condition interaction *F*(2, 164) = .67, *p*= .51. These results suggest that mindfulness did not differ significantly between the loving kindness and insight mindfulness conditions, nor were changes in mindfulness over time dependent on which meditation participants practiced. These findings therefore indicate that the effects of the two practices on mindfulness were comparable not supporting Hypothesis 2.

3.7.3 Hypothesis 3:

Participants randomised to the loving kindness mediation condition will show greater reductions in loneliness and increases in forgiveness post intervention and at one-month follow-up compared to those in the insight meditation condition.

To address the final hypothesis, again a three (time: baseline, post intervention and follow-up) x two (condition – meditation type: insight or loving kindness) mixed model ANOVA was used to compare loneliness and forgiveness in the loving kindness meditation condition compared to the insight meditation condition. The dependent variables of forgiveness and loneliness were assessed using the FS and UCLA. With regards to loneliness, a significant main effect across time was found *F*(2, 164) = 13.16, *p* <.001. Within-group comparisons indicated that participants showed a significant decrease in loneliness from baseline to post intervention *t*(83)= 5.45, *p*< .001 (*d*= .59), and from baseline to follow-up *t*(83)= 3.29, *p*= .001 (*d*= .35). No significant change was found from post intervention to follow-up *t*(83)= -1.30, *p*= .19. There was no significant between subjects effect of condition *F*(1,82) = .04 *p* =

.83), and the interaction between time and condition was also not significant $F(2, 164) = .79$, $p = .45$. This indicates that loneliness scores were comparable between conditions and insight and loving kindness practices did not have differential effects on changes in loneliness over time.

For the forgiveness data, a significant main effect of time was found $F(2, 164) = 28.43$, $p < .001$. Within-group t-tests indicated that participants showed a significant increase in forgiveness from baseline to post intervention $t(83) = -6.76$, $p < .001$ ($d = -.73$), and from baseline to follow-up $t(83) = -6.39$, $p < .001$ ($d = -.68$). Scores on the two subscales of the FS, Presence of Positive (PP) and Absence of Negative (AN) each showed significant change across time ($F(2, 164) = 6.23$ $p = .002$; $F(2, 164) = 30.74$ $p < .001$). Within group comparisons of the PP subscale showed participants experienced a significant increase in positive reactions towards an offender from baseline to post intervention $t(83) = -2.51$, $p = .01$ ($d = -.27$), and from baseline to follow-up $t(83) = -3.23$, $p = .002$ ($d = -.35$) but not from post intervention to follow-up $t(83) = -1.30$, $p = .19$. Comparisons of the AN subscale indicated participants showed a significant decrease in negative reactions from baseline to post intervention $t(83) = -7.19$, $p < .001$ ($d = -.78$), and from baseline to follow-up $t(80) = -6.09$, $p < .001$ ($d = -.66$), but not from post intervention to follow-up $t(83) = .50$, $p = .61$.

There was no significant between subjects effect of condition found on the total Forgiveness Scale score $F(1,82) = 3.73$ $p = .06$, indicating that forgiveness levels were not statistically different between meditation groups. The interaction between time and condition was also not significant $F(2, 164) = 1.84$, $p = .16$, suggesting that insight and loving kindness practices did not differentially effect changes in forgiveness over time. On the individual subscales, scores showed no significant

between condition (PP $F(1,82) = .37$ $p = .54$; AN $F(1,82) = 3.63$ $p = .06$) or interaction effects (PP $F(2, 164) = .48$ $p = .61$; AN $F(2, 164) = 1.15$ $p = .31$). This meant the third hypothesis was not supported.

Chapter 4: Discussion

4.1 Overview of the chapter

This chapter will begin with an overview of the main findings of the present study, broadly covering the three key areas of the research: the effect of meditation type on (1) non-clinical paranoia, (2) mindfulness and (3) forgiveness and loneliness. The findings will be discussed with reference to existing relevant research and theory, followed by an exploration of the subsequent clinical implications. The chapter will then go on to consider the strengths and limitations of the study, present potential avenues for future research and will end with concluding remarks.

4.2 Main findings in the context of research and theory

The current study has made unique investigations into the comparative effectiveness of insight and loving kindness meditations on non-clinical paranoia. The study took an idiographic approach to the research question by investigating the effects of mindfulness on individual experiences of paranoia, and assessing change along four dimensions known to be important in both clinical and non-clinical groups (Ellett et al., 2003; Green et al., 2008; Peters, et al., 1999). The research set out to expand on previous evidence of the utility of insight mindfulness practices for non-clinical paranoia, as well as study the novel application of loving kindness mindfulness for this experience. In addition, the study investigated the comparative effects of insight and loving kindness meditative practices on mindfulness and the interpersonal constructs of loneliness and forgiveness.

4.2.1 The paranoia continuum

In line with previous empirical research, the present study's findings are firstly

consistent with a substantial body of evidence that paranoia is present in the general population and associated with some degree of distress. Of the 451 individuals screened for the current study, 45% met the inclusion criteria. These numbers closely match that found by Ellett et al (2003), with 47% of a college student sample reporting a clear experience of paranoia, defined as a perception that others acted to intentionally harm them psychologically and/or physically. The endorsement of items on the Paranoia Scale varied widely across participants (total scores ranged from 20-100; mean was 40.8), supporting the suggestion that paranoia exists along a continuum of experience. These results are similar to those reported by Fenigstein and Vanable (1992) in their original validation study of the Paranoia Scale (e.g. range of 20-100; mean score of 42.7). Consistent with previous multidimensional assessments of non-clinical samples (Ellett et al., 2003; Freeman et al., 2005), participants also varied in the extent to which they rated themselves as preoccupied, convinced, distressed and affected by their paranoid beliefs. Comparisons between study samples provide further demonstration of the idiosyncratic nature and variability of paranoia in the general population. For example, rated along the same 1-5 Likert scale, mean impact scores pre-intervention in the current research (M= 2.1; n= 84) showed as fairly similar to those reported by Ellett et al (2003) (M= 2.9; n= 153), while the preoccupation levels of participants between studies were less alike (current study: M= 1.9, Ellett et al., (2003): M= 3.7). Distress and conviction were measured differently between studies so not allowing for direct comparison on these dimensions.

Significantly, the current findings add support to the idea that paranoia should be understood as a trait that is dimensional, and occurs in both the general population

and in populations of people with common mental health problems, as well as being part of a number of more severe and chronic mental health diagnoses. A possible explanation for the commonality of paranoia in the non-clinical population is that a wariness of the intentions of others may have an adaptive function (Bebbington et al., 2013). Ellett et al (2003) were among the first to consider paranoia as an evolutionary adaptive trait; suggesting that it allows detection of threat to self from others and so can be viewed as an effective strategy to ensure personal safety. The present findings of the existence of paranoia in the non-clinical sample recruited provide inherent support for this idea. Furthermore, the present study highlights the assertion made by numerous authors for the continued need for literature on paranoid thinking in the general population (e.g. Combs et al., 2007; Ellett et al., 2003; Freeman & Garety, 2006). This is especially relevant given evidence from a number of studies that non-clinical paranoia is associated with distress, poorer well-being and impairments in work, family and social functioning (e.g. Combs et al., 2013; Freeman et al, 2011 Olfson et al., 2002). The sample selected for the current research expressed either higher than average paranoia scores (as assessed by Fenigstein and Vanable's PS (1992)), or were experiencing distress associated with paranoid-type thoughts, making them a subset of the general population for whom an intervention may be warranted.

4.2.2 Mindfulness and non-clinical paranoia

In confirmation of the study's first hypothesis, both insight and loving kindness meditation practices effectively led to significant reductions in non-clinical paranoia post-intervention and at one-month follow-up, measured across the individual dimensions of preoccupation, conviction, impact on wellbeing and distress. Despite increased recognition of the idiosyncratic and multifaceted nature of paranoia,

and the inherent value in using methodologies that capture this, research using such approaches is limited (Campbell & Morrison, 2007). In this regard, the current study adds to the existing literature by providing new findings, suggesting that both insight and loving kindness practices exert comparably beneficial effects along all four of the dimensions that make up non-clinical paranoia.

The findings add weight to a growing evidence base for the effectiveness of insight meditation practices on non-clinical paranoia (e.g. Shore et al., 2015; Collip et al., 2013; Gardner, 2013). The present study replicates the results found by Shore et al (2015) in the first randomised control trial of an online mindfulness-based intervention with student participants. In line with the current findings, Shore et al (2015) found that, following two weeks of insight mindfulness practice, participants showed significantly greater reductions in paranoia (as measured by the PS Fenigstein & Vanable, 1992) compared to those in a waitlist control condition. Comparing the size of effects observed between the studies, the effects of intervention were however not as large in the current study as that previously reported by Shore et al (2015). Across the individual paranoia dimensions the magnitude of within-subject effects ranged from small to moderate in size (pre to post-intervention d=.41- .66; pre to follow-up d=.30- .61), while Shore et al's (2015) effect sizes were moderate post-intervention (d=.67) and large at follow-up (d=.83) (Cohen, 1992). Possible reasons for these differences could be because each study used different measurement methods; the current study used a longer follow-up period potentially accounting for the difference at that time-point; and the present effect sizes represent the combined effects of insight and loving kindness practices. A limitation of Shore et al's (2015) study was the absence of an active control condition, which meant it was not possible

for the authors to rule out the contribution of non-specific factors to the improvements observed. The current study addressed this limitation by comparing the effectiveness of two types of mindfulness meditation. The replication of the positive effects of mindfulness on paranoia here, regardless of meditation type, helps to establish that the beneficial effects of mindfulness practice cannot solely be attributed to non-specific factors.

The findings also replicate results found in clinical investigations, providing further support to the potential use of non-clinical samples as analogue to the clinical phenomena, and adding weight to the argument for the use of mindfulness-based interventions for paranoia. In a two-person case series, Ellett (2013) demonstrated the positive effects of mindfulness for those experiencing persecutory delusions in the absence of voices. She found that participants showed progressive reductions in self-ratings across the same key dimensions studied here (conviction, preoccupation, impact and distress) over a six-week insight mindfulness intervention. Notably, the reductions observed in participant's paranoia in the present study were maintained for a month following the end of the intervention. This provides novel evidence of the longer lasting effects of mindfulness on non-clinical paranoia, which until this point had only been studied one-week post intervention (e.g. Shore et al., 2015). Similar findings were reported in Ellett's (2013) work, where gains following insight meditation training were maintained for at least one month after.

A unique contribution of the present study is that it is the first demonstration of the utility of loving kindness meditation for paranoia. Akin to insight mindfulness, two-weeks of loving kindness meditation practice resulted in significant reductions in participant's paranoia across all four dimensions post-intervention and at one-month

follow-up. These findings are consistent with suggestions within the literature that loving kindness meditation interventions may be of particular benefit for difficulties that are interpersonal in nature (e.g. Hofmann et al., 2011; Lamster at al., 2017). It also provides support to Johnson et al's (2011) pilot, which was the first to indicate the potential utility of this emotion-based meditative practice for individuals with psychotic symptoms. As the effects of loving kindness practices had yet to be studied in non-clinical paranoia specifically, no a priori predictions were made as to whether insight and loving kindness mindfulness would have differential effects on the individual dimensions of paranoia. Interestingly, between-group comparisons revealed no significant differences in participant's levels of conviction, preoccupation and impact on wellbeing. A significant difference was found between conditions on distress; mean scores indicated that overall participants in the loving kindness group were significantly more distressed than those in the insight meditation condition. However, without a significant interaction, it was not possible to meaningfully explore where this difference lay. The lack of any significant interactions in the data suggested that insight and loving kindness practices actually had comparable effects, and changes in paranoia (across all dimensions) over time were not dependent on which meditation participants practiced.

While this study demonstrates the effectiveness of insight and loving kindness meditation practices for non-clinical paranoia, the data does not allow any conclusions to be drawn as to the mechanisms responsible for these effects, or whether the same or different mechanisms are at play for each of the meditation types. Previous qualitative studies give some insight into the possible psychological processes at work in insight-based mindfulness (Abba et al., 2008; Ashcroft, Barrow, Lee, & MacKinnon, 2012). For example, learning to relate differently to difficult

psychotic experiences (Abba et al., 2008), letting go of habitual reactions, and of mindfulness bringing an increased sense of control (Ashcroft et al., 2012). These mechanisms are consistent with Chadwick et al's (2005) hypothesised model of mindfulness for psychosis, which suggests that mindfulness prompts a change in how individuals relate to their distressing experiences, providing an alternative to the self-defeating habitual reactions that foster distress. Only one known study to date has quantitatively looked at mechanisms of action on psychotic-type symptoms. Using a mediation analysis, Shore and his colleagues (2015) showed increases in mindfulness skills (i.e. the ability to observe the present, act with awareness, describe one's internal experiences, withhold judgments about oneself and not react) mediated the relationship between intervention type and reductions in levels of non-clinical paranoia, suggesting this may be one mechanism by which insight based meditative practices work. An important direction for future research will be further study of the possible mechanisms of change for both insight and loving kindness meditation practices.

In summary, the findings of the present study support the potential therapeutic value of both insight and loving kindness mindfulness practices for non-clinical paranoia. The low drop out rate observed in the current study by the post-intervention time-point (6%) is suggestive of the accessibility and perceived utility of these interventions for the sample studied. Across previous studies, reports of treatment completion have varied; for example, low numbers of drop-outs were reported in Johnson et al's (2011) loving kindness pilot, with 91% of participants completing treatment (i.e. attended >50% of sessions). Whereas Shore et al (2014) reported a higher dropout rate of 28%. A possible reason for these higher numbers compared to the current study could be because Shore et al's (2014) research was conducted

entirely online. In interpreting the current study's findings it is important to note that those who completed measures at all three time-points were statistically different to those who dropped out; for example completers were more likely to have a higher educational status, were more forgiving and had prior knowledge and experience of practicing mindfulness. These findings have implications for the generalisability of the study's results and may also account for the low drop out rate observed. Importantly for the outcomes however, no differences were found between conditions on any of these variables. Future qualitative research could usefully provide important additional information as to participants' subjective experience of mindfulness interventions and how this compares between those experienced and new to meditation. As well as acceptability, valuable data could be gathered on the length of intervention and whether it is easier or harder to maintain engagement practicing at home in comparison to a face-to-face intervention. This may help guide the development of mindfulness interventions.

As well as having successfully replicated previous findings, the present study also makes several important contributions to the existing literature. Firstly, this is the first time that the effects of mindfulness have been studied along the key dimensions that make up paranoia experiences in a non-clinical sample. Given evidence of the variability with which each dimension can contribute to an individual's paranoia experience, developing a greater understanding of how interventions affect the individual facets of paranoia could have important implications for the treatment of these experiences. For example, it may allow clinicians to better tailor interventions to achieve certain psychological outcomes. Secondly, the study provides novel evidence suggestive of the benefits of loving kindness mindfulness for non-clinical paranoia. Although this finding of course requires replication, it may be viewed as an initial

indication of the beneficial effects of loving kindness practices for non-clinical paranoia.

4.2.3 The effects of meditation type on mindfulness

To the author's knowledge, the present study is the first to have compared the effects of insight and loving kindness meditation practices on mindfulness as measured by Baer et al's (2006) FFMQ. It was hypothesised that insight meditation would be more effective in increasing mindfulness skills than a loving kindness practice. This prediction was theoretically driven and informed by the distinct goals of the mindfulness practices used; for example, insight meditation fundamentally encourages the cultivation of skills central to mindfulness, such as non-judgmental awareness; whilst loving kindness practices guide the listener in the development of positive emotions. The observed results did not support this hypothesis as no statistical difference was found between meditation groups. Interestingly, both insight and loving kindness practices were found to be equally effective in increasing mindfulness scores (as measured by the four-factor version of the FFMQ) post-intervention and at one-month follow-up. The lack of a significant interaction between meditation type and time indicated that each practice exerted similar effects on mindfulness over the course of the study.

These findings add to a growing body of empirical evidence suggesting that insight mindfulness practices do increase mindfulness skills (e.g. Carmody & Baer, 2007; Khoury et al., 2013a). In a meta-analysis of mindfulness intervention studies specifically for psychosis, Khoury et al (2013b) found participants were more mindful at the end of treatment and that a strong positive correlation between mindfulness levels and clinical outcomes was evident. The current findings also replicate what was

reported in Shore et al's (2015) randomised control trial; insight meditation practice similarly resulted in significant increases in mindfulness pre to post-intervention. However, when comparing the magnitude of effects found, the size of meditation effects on mindfulness post-intervention in the current study, was again smaller (*d*= .42) than that found by Shore et al (*d*= .86). As hypothesised earlier, this difference may be attributable to the fact that the present outcomes are the effects of two meditative practices as opposed to just insight meditation.

The effect of loving kindness meditation on mindfulness has been less well researched. The findings of this study suggest its effects on mindfulness are comparable with those seen with more traditional insight meditations. This finding is supported by the results of other empirical studies of loving kindness. For example, in Fredrickson et al's (2008) investigation on its effects on the development of positive emotions, loving kindness was found to significantly increase participant's ability to mindfully attend to the present moment, which in turn was predictive of increases in life satisfaction and reductions in depressive symptoms.

Only one study known to the author has similarly contrasted insight and loving kindness practices on some of the facets of mindfulness (i.e. presence and acceptance). This was conducted by May et al (2014), who compared loving kindness with an insight-like practice (i.e. concentration meditation) using the short form of the Freiburg Mindfulness Inventory (FMI; Walach et al., 2006). In line with the findings of the current study, May et al (2014) found both practices led to progressive increases in mindfulness during the meditation intervention. However, in contrast, mindfulness levels significantly decreased after completion of the five-week intervention in the concentration meditation group, but not for the loving kindness group. In the present study, no difference was found between meditative practices in

terms of the longevity of their effects over the month studied. There was however a number of potentially confounding factors to May et al's (2014) study, which need to be taken into consideration when comparing the findings to the current research. Most significantly, there appeared considerable overlap between the practices in each condition, for example a concentration-based body scan was taught as part of both meditative techniques, and the loving kindness meditation also included visualisation tasks that are similarly heavily reliant on meditative concentration. This makes it more difficult to confidently conclude that the effects observed were truly due to distinct practices as was the case in the present research. Furthermore, due to its small sample size, the study was also only sufficiently powered to detect large effect sizes (Cohen, 1988). Bearing this in mind, further research is needed comparing the effects of loving kindness and insight practices on mindfulness, in order to bolster the validity of the current findings that each meditative technique exerts comparable short and longer-term effects on this variable.

4.2.4 The effects of meditation on forgiveness and loneliness

The third aim of the present research was to study the comparative effectiveness of insight mindfulness and loving kindness meditation practices on loneliness and forgiveness. Theoretically, these two constructs are particularly pertinent to paranoia due to their interpersonal nature. For example, if one is experiencing high levels of suspiciousness and mistrust of others (paranoia), they are also likely to have the subjective experience of deficient social relationships (loneliness), and also be less willing to abandon feelings of resentment towards others (forgiveness). These conceptual links have been supported by empirical evidence in both clinical and non-clinical paranoid populations (e.g. Sündermann et al., 2013;

Raine, 2016; Honeybourne, 2016). In light of the explicit focus of loving kindness meditation practices on the development of compassion and affection for self and others, and given empirical evidence of its contributory role in increasing feelings of social connectedness (Hutcherson et al., 2008), it was hypothesised that those in the loving kindness condition would experience greater reductions in loneliness and increases in forgiveness compared with those who engaged in the insight meditation practice, which does not explicitly focus on interpersonal processes.

The findings of the current study did not confirm this hypothesis; no significant differences were found between conditions. In fact, both meditative practices proved equally effective in reducing loneliness and increasing participant's levels of forgiveness pre to post-intervention and at one-month follow-up. The size of effects on loneliness were moderate in size pre to post-intervention (d= .59) and small at follow-up (d=.35). For forgiveness scores, effect sizes were moderate at both post-intervention and at follow-up (d= .73; d= .68). In the context of previous loneliness and mindfulness research, these findings support the results reported by Creswell et al (2012), who demonstrated the beneficial effects of a mindfulness-based stress reduction interventions on loneliness in older adults. Replication of these findings in a more generalisable sample, particularly in terms of age, adds to the literature suggesting that the beneficial effectiveness of insight meditation practices on loneliness can be more confidently generalised to the general population. A second limitation of Creswell et al's (2012) was the inclusion of a waitlist control for comparison, making it difficult to determine to what extent improvements were due to the mindfulness as opposed to other factors, such as social support from other group members and contact with an instructor. In the current study, the mindfulness

meditation was practiced individually in the participant's natural settings without an instructor. This therefore strengthens the interpretation that the improvements observed on loneliness were due to something unique to mindfulness rather than other non-specific factors.

With regards to forgiveness, previous research on the effects of insight-based practices have been inconsistent (e.g. Oman et al., 2008; Shapiro et al., 2008), limiting the conclusions that can be drawn; or correlational in design meaning causation cannot be inferred (Klevnick, 2008). In explanation of the inconsistent findings between studies, Shapiro et al (2008) attributed the lack of significant results to the measures used rather than a lack of effect, suggesting measures capturing attitudinal as well as attentional dimensions of mindfulness are needed. The current findings add weight to this argument; using four facets of the well validated FFMQ (Baer et al., 2006), the present research provides further evidence of the potential salutary effects of mindfulness on feelings of forgiveness towards others.

In comparison, the effects of loving kindness meditation on the processes of forgiveness and loneliness have received very little attention in the literature. This is surprising considering it is an emotion based meditation designed to cultivate feelings of warmth and caring for self and others (Salzberg, 2002), and therefore intuitively seems of potential relevance to these constructs. With regards to loneliness, this study is the first demonstration of the effects of loving kindness on this construct. The findings indicate that two-weeks of practicing loving kindness can promote significant reductions in subjective feelings of loneliness, which are maintained up to a month later. These findings are supported by previous research by Hutcherson et al (2008), who studied the effects of loving kindness meditation on feelings of social

connectedness, a construct defined as being the opposite of loneliness (O'Rourke & Sidani, 2017). The authors found seven-minutes of loving kindness practice led to positive changes of small to moderate effect size in feelings of social connectedness towards a stranger and the self. Future comparative research of insight and loving kindness practices on loneliness could incorporate measures of social connectedness as an outcome to see if these positive effects can be replicated.

The current study also showed similarly positive effects of loving kindness mindfulness for forgiveness; participant's experienced significant increases in levels of forgiveness as measured by Rye et al's (2001) Forgiveness Scale over the two-week intervention. This measure contains two subscales assessing both the absence of negative reactions as well as the presence of positive reactions to a person who has wronged or mistreated the responder. Effect sizes indicated that mindfulness (regardless of meditation type) had a greater effect on the absence of negative thoughts, feelings and behaviours. Again, the effects of loving kindness meditation on forgiveness were maintained to the follow up point one-month later. These findings are supported by a prior exploratory study by Alba (2013), which found positive effects from engaging in a four-day loving kindness mindfulness retreat on individual's feelings of revenge and avoidance of an offender. The study found that participants experienced significant reductions in both features after the retreat and at two-weeks follow-up; however, in a larger replication, only change in avoidance was observed, limiting the validity of these findings. Given the uncontrolled nature of the methodology used no conclusions could be drawn about causality. Demonstration of the positive effects of loving kindness meditation on forgiveness here, using a controlled randomised design, adds support to the use of loving kindness as a

technique for increasing forgiveness of others. Further replication with other samples would next be needed to confirm the validity of these findings.

4.2.5 Comparative effects – Insight vs. Loving kindness meditation

This study set out to compare the effects of insight and loving kindness meditations, hypothesising that these two theoretically quite different meditative practices would have differential effects on mindfulness, forgiveness and loneliness. In contrast to the author's predictions, no significant interactions were found in the data. This suggests that the changes seen over time on all the variables studied did not differ depending on whether participants engaged in the insight or the loving kindness meditation practice. While a significant between-subjects effect was shown on the paranoia dimension of distress, this was similarly in the absence of a significant interaction, indicating that over time, both meditative practices had comparable effects on participant's levels of distress.

In comparing these findings to the existing literature, only four other studies known to the author have similarly contrasted the effects of insight and loving kindness practices. These have used a mixture of methodologies and outcome measures restricting the conclusions that can be drawn as to the differential effects of insight meditation and loving kindness mindfulness practices. Placing the current findings within the context of these studies, research undertaken by Sears and Kraus (2009) similarly found insight and loving kindness practices to have complimentary effects. The authors reported no significant differences between meditation groups on a range of outcome measures assessing psychosocial functioning. The validity of these findings were however limited by a number of methodological issues; crucially there were differences between conditions pertaining to the number and duration of

mindfulness sessions making it difficult to make reliable inferences about the relative efficacy of the different practices. These limitations were addressed in the current study by closely matching the meditations in terms of delivery and duration.

The remaining three comparative studies have reported a combination of differential and equivalent effects between insight and loving kindness meditations. For example, in the case of Feldman et al's (2010) study, insight meditation led to significantly greater increases in decentering on both direct and indirect measures than a loving kindness mindfulness practice. However, both interventions were noted as reducing emotional arousal to a comparable degree, as assessed by measures of change in negative affect. Logie and Frewen (2015) found insight and loving kindness had differential effects on participant's self-positivity biases. While on measures of decentering and positive emotions towards the self and others, no differences were found. Lastly, using a repeated measure design, May et al (2014) reported no significant differences between meditations on measures of mindfulness and negative and positive affect during intervention, however differences were found with regards to the longevity of the meditation effects post-intervention, with loving kindness appearing to have longer lasting benefits.

A common finding across these studies is that insight and loving kindness mindfulness practices appear to be of equal benefit on various measures of affect. The current study compliments and expands on this literature by suggesting that insight and loving kindness practices are also of comparable effectiveness for variables that are more interpersonal in nature. As this is the first demonstration of these findings, replication is of course needed before confident conclusions can be made as to their validity. Interestingly the current study did not replicate May et al's (2014) findings that loving kindness meditation promotes longer lasting changes. In the present

research, scores across all variables studied were found to be equivalent between meditation conditions by the one-month follow-up point. Differences in the methodologies between studies may account for why this result was not replicated. For example, May et al (2014) employed a longer intervention with less frequent practicing (15-minutes, three times a week for five weeks) and a shorter follow-up phase (two weeks), therefore the full length of the study exceeded the six-weeks utilised in the current research. Participant samples also differed, as May at al (2014) recruited a purely student sample.

In the absence of any measures of possible mechanisms of change, it is beyond the scope of the current study to be able to draw reliable conclusions as to why no differences were found between the two meditative practices. In considering the existing literature, one possibility is that, in spite of the differing focuses of the two practices, they may actually share fundamental components that contribute to their beneficial effects, such as focusing attention in a particular way, and adopting a nonjudgmental rather than analytic thought process (Kristeller & Johnson, 2005). Another possibility is that both result in increases in mindfulness skills, which is also consistent with previous research (Fredrickson et al., 2008; Shore et al., 2015).

As with all comparative studies, the current findings also raise questions as to whether the positive effects of different meditative practices are the consequence of the same or different mechanisms of action. While the current study cannot directly comment on the possible mechanisms at play between insight and loving kindness mediations, previous research has identified a number of possible processes. For example, for insight mindfulness, proposed mechanisms include attention (e.g. Brown & Ryan, 2003; Kristeller & Johnson, 2005, Shapiro et al 2006), decentering (e.g. Feldman et al., 2010; Gecht et al 2014; Shapiro et al., 2006) and changes in cognitive

distortions (Sears & Kaus, 2009). With regards to loving kindness, suggested mechanisms include increased positive affect (Fredrickson et al., 2008), changes in self-perception (Hölzel et al., 2011) and compassion (Hutcherson et al., 2008). Shonin et al (2015) suggested that loving kindness practice helps people become less self-obsessed and more other-centered, and that these positive thinking patterns begin to lessen a person's tendency to ruminate, which is a known determinant of psychopathology (Davey, 2008). To the author's knowledge, Feldman et al's (2010) comparative investigation is the only empirical study to date to report evidence supportive of the suggestion that insight and loving kindness meditation practices do operate through different mechanisms, namely decentering. However, this finding has not been replicated by subsequent researchers (Logie & Frewen, 2015). With this literature in mind, an important advancement of the current findings would be future comparative studies that incorporate measures of key theorised mechanisms of change, such as decentering and compassion.

In summary, despite the subjective and theoretical differences between insight and loving kindness meditation practices, the present findings suggest both are of comparable effectiveness for non-clinical paranoia, mindfulness, loneliness and forgiveness. These findings are a novel contribution to the existing literature while also being consistent with what has previously been found with more affective-type variables. As principally a study of efficacy, no conclusions can be drawn as to the mechanisms responsible for the effects observed, or whether these differed between practices. Following a review of the mindfulness mediation research, Hölzel et al (2011) concluded that mindfulness comprises distinct but interrelated components and that the various types of meditative practice may work by placing a different emphasis on each of these. This may provide an explanation as to why no differences were

found in the current study. Future exploration of how different mindfulness practices work for experiences such as non-clinical paranoia would be an interesting and valuable avenue for further research.

4.3 Conceptual issues

For the present study, and consistent with the wider literature in the field, non-clinical paranoia was defined according to Freeman and Garety's (2000) definition. This defines paranoia as when there is a perception of intended harm from another. A limitation to have been noted with this definition is that it does not include explicit reference to the legitimacy of the perception i.e. if the threat is real or unfounded, which is a key determinant of persecutory delusions. In line with the continuum perspective, non-clinical paranoia is viewed not as identical to the clinical phenomena but as sharing key common characteristics such as suspiciousness, which persecutory delusions build on, as suggested by Freeman and colleague's (2005, 2011) hierarchical model. Therefore, the degree to which a person's perceptions are unfounded is a characteristic of greater prevalence towards the more severe end of the continuum. Determining the falsity of someone's belief can also be difficult to do; for example, the experience of genuine threat and trauma is associated with the development of clinical paranoia (Freeman & Fowler, 2009). Furthermore, assessing the accuracy of the belief is perhaps of less importance given research evidence that non-clinical paranoid-like thinking can be a risk factor for later psychotic experiences (Dominguez, Wichers, Lieb, Wittchen, & van Os, 2011; van Os et al., 2000).

In addition to paranoia, the present study also explored the associated concepts of loneliness and forgiveness. These constructs were considered of relevance and

importance to paranoia based on both theoretical reasoning and empirical findings. Firstly, all three constructs share similar characteristics, in that they relate to interpersonal processes and concern an individual's subjective perceptions of others. In terms of loneliness, similar to paranoia, perceived isolation involves a sense of threat, for example it has been found that lonely individuals are more likely to perceive their social world as dangerous (Cacioppo & Hawkley, 2009). Empirically, researchers have found paranoia to be closely related with loneliness in student, online samples (Riggio & Kwong, 2009; Jaya et al., 2015) and clinical populations (Sündermann et al., 2013). Furthermore, loneliness has been demonstrated as playing a causal role in the formation of paranoia. Lamster et al (2017) found experimentally reducing loneliness led to significant reductions in paranoid thinking in a non-clinical sample. In addition, participants with a high or medium levels of proneness to psychosis, as measured by the Community Assessment of Psychic Experiences (CAPE; Stefanis et al., 2002) showed larger decreases in paranoid thoughts than those at low proneness. This indicates that reducing loneliness could be a protective factor for high-risk individuals. These findings are consistent with other data suggesting that loneliness is also associated with less pronounced recovery cross-sectionally (Roe, Mashiach-Eizenberg, & Lysaker, 2011) and over-time (Angell & Test, 2002), supporting the importance of targeting loneliness in the context of paranoia.

With regards to forgiveness and paranoia, both concepts involve past transgressions resulting in present-day distress. At a conceptual level, if one feels suspicious and mistrusting of others (paranoid), it seems logical that they would also be less willing to abandon feelings of resentment towards another (forgiveness). These conceptual links have been supported in the literature, for example

Honeybourne (2016) found trait and state forgiveness were inversely correlated with trait paranoia in non-clinical participants. Furthermore, Honeybourne, Chadwick, Wildschut and Ellett (in preparation) have shown that participants low in trait forgiveness were more likely to experience state paranoia following an interpersonal transgression in the Prisoners Dilemma Game, suggesting a causal relationship.

4.4 Clinical Implications

As the current study was undertaken with a non-clinical sample, any application of these findings to the clinical population needs to be done tentatively. Despite this, growing acceptance of the continuum model suggests the current sample may be viewed as an analogue to those in the clinical paranoia population. The clinical implications of the present study's findings will be discussed next.

Firstly, the present study's findings add to the already substantial evidence base for the continuum theory of paranoia. It further supports the notion that paranoid thinking is an everyday psychological experience, rather than solely a feature of diagnosable mental health problems. People who experience psychotic symptoms remain some of the most stigmatised within society (Wood et al., 2015). The present study is one of many that can help with the movement towards normalising, and so de-stigmatising, paranoia. This is of importance given the evidence that beliefs and appraisals about psychotic symptoms are a defining feature of psychosis (Kingdon & Turkington, 1994), and can influence a person's subjective distress and subsequent behaviours like seeking help (Chadwick & Birchwood, 1994; Thornicroft, Rose, & Kassam, 2007). Normalising paranoia may have a positive impact on the way in which individuals perceive and relate to their symptoms, potentially reducing distress by enabling them to develop less stigmatised explanations (Kingdon & Turkington,

1994). It has also been demonstrated that the inclusion of a 'normalising' component in treatments for psychotic symptoms helps to reduce self-stigma and in turn improve outcomes (Sensky et al., 2000; Johns & van Os, 2001). Mindfulness arguably takes a de-stigmatising stance by encouraging a non-judgmental awareness of our experiences. The current findings therefore provide further weight to the clinical importance of viewing paranoia on a continuum and incorporating normalising aspects into treatment approaches for psychotic symptoms.

In terms of treatment implications for non-clinical paranoia, this study provides further support for the use of traditional insight meditation practices, but also introduces loving kindness as another meditative practice of potential value. Of course as a novel finding, these results will need replicating. Nonetheless, the current study suggests that two-weeks of insight and loving kindness meditation practice can decrease non-clinical paranoia and loneliness and increase feelings of forgiveness towards others. Within the general population paranoia has been associated with poorer psychological health and impairment in work, family and social functioning (e.g. Combs et al., 2013; Freeman et al, 2011 Olfson et al., 2002), yet the majority of this group is not receiving support (Freeman, 2006). The continued investigation of effective interventions for non-clinical paranoia is also important in light of the literature suggesting that it is associated with an increased likelihood of developing clinical symptoms (Dominguez Wichers, Lieb, Wittchen, & van Os 2011; van Os et al., 2000).

Secondly, these findings have implications in helping people manage feelings of loneliness and forgiveness, experiences that can have considerable consequences for one's level of distress and mental health, including paranoia. It is widely recognised that social relationships and connectedness have powerful effects on both

physical and psychological wellbeing (Bono et al., 2008), and there is evidence to suggest that loneliness and forgiveness are experiences closely linked to the quality and quantity of our social interactions (Jones, 1981; Worthington Jr & Scherer, 2004). When considering new paradigms for the prevention and treatment of disease and disability, Berkman (1995) highlights the importance of interventions which incorporate ways of promoting social connectedness. Hutcherson et al (2008) previously demonstrated the positive effects of loving kindness meditation on positive social emotions. The findings of the current research add to the literature suggesting that both insight and loving kindness meditation practices may be ways of eliciting positive changes in feelings of loneliness and levels of forgiveness.

The importance of interpersonal processes in the development and maintenance of paranoia is well recognised. In Freeman et al's (2002) model of persecutory delusions, the authors propose that social withdrawal reduces an individual's opportunity to revise their thoughts through supportive interactions with others, meaning that ideas of threat are more likely to grow. There is empirical evidence to suggest that loneliness may even play a causal role in the development of state paranoia (Lamster et al., 2017). Given the promising findings of this study on forgiveness and loneliness, mindfulness may be of particular help as an early intervention strategy, by preventing individuals from becoming increasingly socially isolated and subsequently developing additional symptoms such as paranoia.

4.5 Strengths of the current study

4.5.1 Design

The study employed a randomised comparative design. The experimental design involved control of the variables researched, allowing for cause and effect to be established with greater certainty, facilitating replication of the methodology and increasing the internal validity of the study. Although a recognised consequence of these strengths is a limiting of external validity, the natural setting in which the mindfulness intervention was conducted may have assisted the study's ecological validity. Building on previous research, the current study also employed a lengthier follow up period of a month, providing novel findings on the longer-term effects of mindfulness on non-clinical paranoia.

The randomisation of participants and use of two treatment conditions reduced the influence of bias and effects of extraneous factors, allowing it to be more confidently concluded that the benefits observed in the current research were the consequence of factors unique to mindfulness. Furthermore, in comparing two active treatment conditions, the study addressed a common critique of existing mindfulness intervention literature; that the effects of mindfulness training have typically only been compared with non-active control conditions (Chiesa & Serretti, 2010). Another strength of the design was that trait paranoia, depression and anxiety were measured as potential covariates, allowing for greater control of any confounding influences they may have had on the effects of the intervention. This was important as negative mood states have been shown to be positively associated with paranoia in both clinical and non-clinical samples (e.g. Freeman, 2007; Lincoln, Peter, Schäfer, & Moritz, 2009). It meant it could be more confidently concluded that the difference

observed in individual paranoia experiences occurred in the absence of any difference in trait paranoia and negative mood, supporting the study's internal validity.

4.5.2 Sample

The study employed inclusion criteria designed to select a non-clinical sample of individuals higher along the paranoia continuum than average, in terms of the prevalence of paranoid experiences and distress associated with persecutory thoughts. These criteria were selected to produce a sample of individuals for whom an intervention may be warranted, as it is important that intervention research is able to offer possible treatment implications for those populations in need of them. A potential consequence of these inclusion criteria was that the study's sample included a fairly high number of individuals who reported a previous mental health diagnosis (33% of the sample). This is perhaps not unexpected given the high prevalence of comorbidities identified even in non-clinical paranoia (Freeman et al., 2012). While this may limit the generalisability of the findings to the general population, it has the potential advantage of strengthening the utility of the sample as an analogue to clinical presentations (Combs et al., 2007). Furthermore randomisation successfully meant there was no systematic bias between conditions in terms of the numbers of those with and without a previous mental health diagnosis. Regardless of the analogue nature of the sample, replication within a clinical sample of paranoid participants is needed before any clinical implications can be drawn with certainty.

Social media was used as a recruitment method, and the sample was drawn from both student and non-student populations. While self-selecting online samples may not be as generalisable as those acquired through random offline recruitment, there is evidence to suggest that samples recruited via social media are more

representative than traditional samples with respect to gender, socio-economic status, geographic location and age (Gosling, Vazire, Srivastava, & John, 2004). In the current study, the sample represented a wide age range. Although the number of participants who completed the full study fell just below that suggested by the a priori power calculation, post-hoc analyses based on the average between-subjects effect sizes across the four paranoia dimensions indicated the study was still sufficiently powered (.86), therefore reducing the likelihood that a Type II error occurred.

4.5.3 Measures

A range of self-report measures was used. These were carefully chosen for their psychometric properties; all measures were validated within non-clinical populations and have well evidenced reliability and validity. Self-report measures have practical advantages in terms of enabling large amounts of anonymous information to be collected in a cost effective way, they reduce the possibility of experimenter bias and produce results that can be quickly quantified and analysed objectively. A key strength of the current study was the measurement of paranoia using an idiosyncratic, multidimensional measure. It reflected the personalised nature of participant's paranoid experiences rather than relying on pre-defined broader definitions of the construct as other paranoia measures typically do. It also uniquely allowed exploration of the effects of mindfulness across the individual dimensions of paranoia. Furthermore, this approach mirrors how intervention outcomes are measured in clinical practice in psychosis (Chadwick, Birchwood, & Trower, 1996).

4.6 Limitations of the current study

4.6.1 Design

A limitation of the current study's design was the lack of an active non-meditation control. While the present design allowed the study to address the research's hypotheses, the absence of a matched control restricts the conclusions that can be drawn as to whether the positive effects observed were a consequence of factors unique to mindfulness or because of other non-specific factors such as resting for 10-minutes on a daily basis, listening to a calming audio or because of the natural passage of time. However, this study builds on the work of Shore et al (2015) who successfully demonstrated the effectiveness of insight mindfulness on non-clinical paranoia in comparison to a wait-list control. Inclusion of a control condition in future research, particularly for that exploring loving kindness meditation, would help advance the current study's findings by demonstrating that the changes seen in paranoia were the consequence of factors unique to mindfulness.

A second limitation was that the meditation practices were recorded by the study's researcher, who did not have formal training in delivering mindfulness. This may have affected the administration of the interventions as it has been found that less experienced practitioners may not convey the subtler aspects of mindfulness meditations (Shonin, 2015). Nonetheless, recordings were made using scripts of established practices used in previous studies (e.g. Chadwick, 2006; Shore et al., 2015). Furthermore, re-recording of the practices by the researcher importantly ensured greater consistency between conditions.

4.6.2 Sample

The sample was predominately female (83%), white British (66%) and highly

educated, further reducing the generalisability of the findings. This may have been a consequence of using online recruitment, as there is evidence to suggest online users are more likely to be younger, wealthier and more highly educated (Dutton, Blank & Groselj, 2013). A sample representing a broader mix of ethnicities, gender and education level should be sought in any research aiming to replicate or advance these findings. A fairly large proportion of the sample (47%) also had some previous experience of practicing mindfulness, which may have influenced the results, as past studies with non-clinical samples have shown that meditation experience may impact responses to meditation exercises (Thompson & Waltz, 2007). This may also have accounted for the study's low drop out rates. Importantly however, the two conditions were equivalent in terms of participants' levels of prior mindfulness experience. Replication of the current study in a sample of novice meditators would be a valuable addition to the literature.

The inclusion criteria used were also novel to the current study and resulted in a sample with a Paranoia Score comparable to the established mean of the measure (current study M= 40.89, n= 84; PS M= 42.7, n= 581; Fenigstein & Vanable, 1992). The use of stricter inclusion criteria such as those used previously by Combs et al (2007) (i.e. a PS score ≥ 1 standard deviation from the mean) would aide a better understanding of the effects of mindfulness across the continuum of non-clinical paranoia. The authors note that persons scoring at or above this level on the PS show cognitive, social, and behavioural biases similar to those seen in individuals with persecutory delusions.

4.6.3 Measures

The use of self-report measures in research always has its limitations,

including social-desirability bias, exaggeration or response biases (e.g. acquiescence or 'mid-point' responding; Furnham & Henderson, 1982). With respect to mindfulness, there are particular concerns within the literature on the ability to measure this construct via self-report methods (Johns, Allen, & Gordon, 2015). For example, Grossman (2008) notes that individuals with meditation experience may have a greater meta-cognitive awareness of their 'true' levels of mindfulness and so answer a self-report questionnaire differently to someone with no meditation experience. Informed by recommendations in the literature (e.g. Gu et al., 2016; Williams et al., 2014), mindfulness was measured using only four of the FFMQ facets, with the 'observe' factor being excluded. As the sample for this study comprised of an adult population consisting of a mixture of meditators and non-meditators, use of the 31-item, four-facet version ensured the FFMQ was structurally acceptable. It has been suggested that mindfulness self-report measures be complimented with the use of standardised tasks of attention and awareness to provide a more thorough assessment of the construct (Bishop, 2002). Similarly, within the paranoia literature researchers such as Ellett, Allen-Crooks, Stevens, Wildschut and Chadwick (2013) have innovatively used behavioural indicators, such as those developed in the Prisoner's Dilemma Game, to accompany self-report measures of paranoia.

Another limitation was that the primary measure of non-clinical paranoia was based on only four scaled items, potentially limiting its construct validity. Nevertheless, this assessment measure was consistent with published mindfulness for psychosis research, allowing for closer comparisons of findings across studies (Ellett, 2013). Secondly, it allowed the study to take an idiographic approach to the research

question and for the novel exploration of the effects of insight and loving kindness meditation practices on the individual dimensions that make up idiosyncratic paranoia experiences. While multi-item dimensional measures do exist, such as Freeman et al's (2005) Paranoia Checklist, this measure only includes levels of frequency, conviction and distress. Nonetheless, this could be used by future idiographic studies as an additional measure to help improve construct validity.

4.7 Future directions

The current study highlights a range of possible avenues future research could take to replicate and expand on these findings. Firstly, the significant effect of a two-week loving kindness intervention on non-clinical paranoia, loneliness and forgiveness is an entirely novel one. As is the finding of the beneficial effect of insight mindfulness on forgiveness and loneliness using a comparative randomised design. These findings therefore need to be replicated in a sample of greater generalisability with a more representative mix of ethnicity, gender and education level. Once this finding has been successfully duplicated in other non-clinical samples, the use of loving kindness meditation as an intervention strategy could be investigated in a clinical sample of participants, including those currently experiencing persecutory delusions according to Freeman and Garety's (2000) definition. This would bolster the validity of this novel finding and further add to the argument that loving kindness mindfulness, in addition to more traditional meditative practice, may be suitable as a clinical intervention for interpersonal difficulties such as paranoia. The continuation of comparative mindfulness studies for paranoia with a range of clinical populations would also be a valuable avenue for future research. This has important clinical implications as the exploration of the relative efficacies of

different meditative practices may enable more informed, proscriptive advice about the practice of meditation to achieve particular psychological outcomes.

An interesting addition to the current study, which future research could address, would have been the inclusion of a combined meditation group. In the study by Sears and Kraus (2009), the combined practice of loving kindness with insight mindfulness meditation had greater effects than standalone loving kindness mindfulness practice (based on outcomes of anxiety, negative affect and hope). This finding appears to support the Buddhist operationalisation of loving kindness, which is traditionally practiced as part of a comprehensive and multi-faceted approach to meditation (Shonin et al., 2015). Within Buddhism, the more passive and open attention practiced during insight mindfulness builds the foundation for subsequently cultivating the more active or person-focused attitude needed in loving kindness meditation (Shonin et al., 2015). Greater understanding of the combined effects of these practices as well as their individual contributions may help to guide future treatment protocols for people experiencing distressing paranoia.

The follow up measures used in this study showed that, across all variables measured, change was maintained for up to a month following the end of the intervention. Although these findings are novel in themselves, it would also be useful to explore whether such changes can be maintained for longer periods of time, such as six months or a year. Investigations could assess whether people continue to practice mindfulness after the formal two-week intervention period. Additionally, further research could explore whether on-going practice has a cumulative effect on reductions in non-clinical paranoia. For example, it could be useful to determine

whether paranoia levels continue to reduce, level out or return to baseline levels when people either continue to engage in mindfulness practice or stop.

This study set out to address the primary question of the effectiveness of two types of meditation on non-clinical paranoia, forgiveness and loneliness. While this line of research is fundamental to validating mindfulness as an efficacious psychological intervention, and thereby deserves replication, an equally important direction for future research will be to address the second order question of how mindfulness interventions actually work. One way in which future research may answer this question is by including measures that assess hypothesised mechanisms of action using statistical models of mediation. Mediation attempts to establish the mechanisms by which one variable may be affecting another (Hayes, 2013). To advance the findings found here, future comparative studies could assess measures of theorised mechanisms of mindfulness such as attention, decentering and compassion. This could help researchers to determine whether the variables critical for the process of change are the same or different for distinct mindfulness practices, such as insight and loving kindness meditations. To do this accurately, it would be important to measure the potential meditator ahead of the outcome. It has also been suggested that a better measure of potential mechanisms could be gained by utilising methodologies such as gradient, componential control, and individual difference designs (van der Velden et al., 2015). The use of alternative measurement techniques such as experience sampling methods (ESM) could also provide valuable insight into the pathways of causality between practice and outcomes across time. Compared to retrospective self-report questionnaires, ESM offers several advantages: it enhances ecological validity, it minimises retrospective bias and can enhance reliability of the

data, because participants' experiences are assessed repeatedly (Collip et al., 2013).

Lastly, the current study was also limited by its reliance on self-report measures for all the constructs assessed. It would be interesting to see whether the mindfulness practices would elicit the same benefits when measured using more objective measures. Future studies of non-clinical paranoia could incorporate behavioural measures using methods such as the Prisoner's Dilemma Game (Wu & Axelrod, 1995). This game has been described as capturing the key characteristics of paranoia: (1) it is interpersonal, (2) it concerns threat, and (3) it concerns the perception of others' intentions towards the self. It has been validated for use with non-clinical paranoia (e.g. Ellett et al., 2013) and has shown to be sensitive to changes in non-clinical paranoia following interventions (e.g. Gardner 2013). Similarly, further research examining intervention effects on loneliness could use implicit evaluative response tasks, such as those employed by Hutcherson et al (2008), to objectively assess individuals' feelings of social connectedness to others. Replication of the current findings using more objective measurement techniques such as these would help establish the validity of this study's findings of the value of insight and loving kindness meditation practices for distressing interpersonal experiences.

4.8 Conclusions

While these findings, like all research, need to be considered within their limitations, the current study addresses a number of gaps in the mindfulness intervention literature. It provides novel evidence of the use of loving kindness as an intervention strategy for non-clinical paranoia, loneliness and forgiveness, and replicates and expands on previous literature demonstrating the effectiveness of insight meditation practices on these three interpersonal processes. The study also

provides the first evidence of the comparable effectiveness of insight and loving kindness meditative practices, specifically in relation to non-clinical paranoid experiences. Collectively, these finding provide a foundation for further research examining the comparative effects of different mindfulness practices, which could have potentially valuable implications for the treatment of distressing interpersonal experiences like paranoia, forgiveness and loneliness, in both clinical and non-clinical populations.

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Appendix 1: Poster

Appendix 2: Socio-demographic questionnaire

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

Your research participation ID number: _____

Please provide the following information:
1. Age: _____

2. Gender (please circle chosen option): Male / Female / Transgender
Other, please specify_____

3. Ethnicity (please circle chosen option): White British / White Other / Black British / Black Other / Asian British / Asian Other
Other, please specify_____

4. Education status (please circle chosen option): O Levels/GCSEs / A-levels / Undergraduate degree / Postgraduate study

5. Employment status (please circle chosen option): Employed, full-time / Employed, part-time / Not employed, looking for work / Not employed, NOT looking for work / Retired / Disabled, not able to work / Student / Other
If Other, please specify_____

If student please specify Course/degree title and year of study_____
_____

6. Have you ever been diagnosed with a mental health problem? (please circle chosen option): Yes / No

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

7. Have you ever learnt/been taught about mindfulness? (please circle chosen option): Yes / No

8. Have you ever practiced any form of mindfulness-based technique (e.g. mindful meditation)? (please circle chosen option): Yes / No

If you answered 'YES' to question 7 above, please continue to questions 8-10

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

_____

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

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

Thank you for filling this questionnaire in

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

Appendix 4: Paranoia Checklist- Frequency and Distress Subscales (PC; Freeman et al., 2005)

Many people have thoughts, worries, or suspicions that others may be trying to upset them. It is a common experience, just as people can sometimes feel anxious or low in

mood. Below are listed some of the thoughts that people report. For each one please indicate how frequently you have the thought and how distressing the experience is for you.

1. I need to be on my guard against others

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

2. There might be negative comments being circulated about me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

3. People deliberately try to irritate me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

4. I might be being observed or followed

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

5. People are trying to make me upset

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

6. People communicate about me in subtle ways

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

7. Strangers and friends look at me critically

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

8. Strangers and friends look at me critically

Rarely	Once a month	Once a week	Several times a	At least once a

			week	day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

9. People might be hostile towards me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

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

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

11. Someone I know has bad intentions towards me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

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

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

13. People would harm me if given an opportunity

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

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

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

15. There is a possibility of a conspiracy against me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

16. People are laughing at me

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

17. I am under threat from others

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

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

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

19. My actions and thoughts might be controlled by others

Rarely	Once a month	Once a week	Several times a week	At least once a day
Not distressing	A little distressing	Somewhat distressing	Moderately distressing	Very distressing

Appendix 5: Idiosyncratic paranoia experience measure

Research has shown it is normal to believe 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 describe an example of a situation where you felt someone was deliberately trying to harm/upset you.

In the above situation that you have described…

1. How convinced were you at the time that the other people involved actively intended to harm you?	1 (not at all)	2	3	4	5 (severe)
2. How convinced are you now that the other people involved actively intended to harm you?	1 (not at all)	2	3	4	5 (severe)
3. How much impact did this belief have on your wellbeing?	1 (none at all)	2	3	4	5 (severe)
4. How much impact does this belief currently have on your wellbeing?	1 (none at all)	2	3	4	5 (severe)
5. How preoccupied were you at the time with this belief?	1 (none at all)	2	3	4	5 (severely)
6. How preoccupied are you now with this belief?	1 (none at all)	2	3	4	5 (severely)
7. How much distress has it caused you?	1 (none at all)	2	3	4	5 (severe)

Appendix 6: 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 criticise 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 to 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 in 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 'm thinking					
When 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 to just to notice them without reacting					
I thing 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					

Appendix 7: UCLA Loneliness Scale (Version 3; Russell 1996)

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

How often do you feel happy?

If you never felt happy, you would respond "never", if you always feel happy, you would respond "always."

NEVER	RARELY	SOMETIMES	ALWAYS
1	2	3	4

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

Appendix 8: The Forgiveness Scale (Rye et al., 2001)

Think of how you have responded to the person who has wronged or mistreated you. Indicate the degree to which you agree or disagree with the following statements.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	I can't stop thinking about how I was wronged by this person.					
2.	I wish for good things to happen to the person who wronged me.					
3.	I spend time thinking about ways to get back at the person who wronged me.					
4.	I feel resentful toward the person who wronged me.					
5.	I avoid certain people and/or places because they remind me of the person who wronged me.					
6.	I pray for the person who wronged me.					
7.	If I encountered the person who wronged me I would feel at peace.					
8.	This person's wrongful actions have kept me from enjoying life.					
9.	I have been able to let go of my anger toward the person who wronged me.					
10.	I become depressed when I think of how I was mistreated by this person.					
11.	I think that many of the emotional wounds related to this person's wrongful actions have healed.					
12.	I feel hatred whenever I think about the person who wronged me.					
13.	I have compassion for the person who wronged me.					
14.	I think my life is ruined because of this person's wrongful actions.					

15.	I hope the person who wronged me is treated fairly by others in the future.					

Appendix 9: Depression Anxiety Stress Scales 21 (DASS-21; Henry & Crawford, 2005)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

Appendix 10: Mindfulness Practice Diary

Please indicate in the table below if you listened to your mindfulness audio file for each day of your participation in the study.

Days	**Did you listen to the mindfulness audio? (Yes or No) Please provide date**	**If yes, at what time?**
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		
Day 8		
Day 9		
Day 10		
Day 11		
Day 12		
Day 13		
Day 14		

If you have any comments about your experience of practising mindfulness or about your participation in the study, please write them in the box below.

Appendix 11: Insight Mindfulness Audio Script

When we practice mindfulness it can be helpful to adopt a comfortable but upright sitting position. So before we start the practice, finding a place to sit…And if it feels comfortable to do so sitting with an upright posture, with our spine erect but not stiff…Sitting with our feet flat on the floor…and our arms…by our side…And we can choose now whether to close our eyes…or to sit with our eyes open…and rest our gaze on a spot on the floor or wall…And because it's easy to get caught up with what's going on in our minds…we always begin mindfulness by bringing our attention to our bodies…And to do this it can be helpful to bring attention to a point of contact…So bringing attention now…to the soles of our feet…Noticing any sensations at all in this part of our body…..Perhaps noticing sensations of pressure… temperature…maybe noticing tingling sensations that move around and come and go…….. (10secs) Continuing this focus on our bodies bringing attention up very deliberately…through our body, up through our legs…through our pelvic area…into our tummy and back….up into our shoulders…Just noticing whatever sensations….are in our body...right now…..Not trying to make ourselves relaxed…just being aware of what we're experiencing right now in our bodies… We might find there are some parts of our body where we don't notice any sensations at all…..That's fine….Bring our attention now up into our neck….just checking our neck is aligned with our spine, supporting our head…And bring awareness up into our head and jaw…face and scalp…again perhaps not being able to notice sensations in this part of our body…which is fine…And now bringing our attention to the sensations in our body as we sit here breathing….It can help to do this by finding a place…where we can most easily or most pleasurably notice the sensations of breathing in…and breathing out……Resting our attention wherever we notice the sensations of the breath in the body…most comfortably, most vividly…..This may be the rise and the fall of our tummy or chest…it may be the sensation of air moving in and out of our nostrils….Not trying to change your control of breathing in any way…not trying to make it slower or deeper…mindfulness is about experiencing things just as they are…One breath…just as it is…….And we'll find that our attention moves naturally to other things…the sounds, thoughts, feelings…..As best we can for these few minutes practice…we allow these experiences to come fully into our

awareness…knowing that they're there….And if we can we allow them to fade and pass…without getting caught up with them, thinking about them, struggling against them…And as best we can…patiently allowing it into our awareness…noticing it….Allowing it to fade and pass into the background…without getting caught up…..in the spaces between thoughts and feelings…allowing our attention to come back to rest…in the sensations as we breath in…and breath out…..We are not trying to get rid of thoughts or feelings (5sec)…..In mindfulness we're seeing if we can develop the capacity to be with experiences….even difficult or painful experiences…without having to get caught up in them or having to react and struggle….So if we are able to allow a thought, a feeling…even a difficult thought or feeling, to come into awareness…to notice it…to watch it fade and pass…without getting caught up…..Often in mindfulness practice we realise that we've lost our full awareness, maybe we've been caught up with struggling with thoughts and feelings…worrying about the future…perhaps dwelling on something from the past…If that happens…bring your awareness to…judgements that make it into our mind…and as best we can, allowing judgements to fade and pass without getting caught up with them….Seeing if we can notice it… and let it go….and come back to the breath…….(8 secs) And when we lose our focus bring our attention back to the sensations of the breath…the movements of the breath in the body….the sensations of breathing in….and breathing out….If we find ourselves judging…..maybe judging our experiences, or maybe judging mindfulness…Are we doing it right?.....If we become aware of that…as best we can, notice our minds judging…seeing if we can…let that go…and once again bring our awareness back to the sensations in our body…as we breath in…and breath out…(5 secs) In this last minute as best we can…embodying openness and acceptance…being open to whatever we experience, whether it's pleasant…painful…..Allowing experiences to come into our mind…notice them…watch them fade and pass like clouds in the sky…(4secs) And doing this if we can for the last minute...(14 secs)

And now as we come to the end of our practice…bring awareness back to the body…..the sensations, a point of contact between our body and the chair…or where we're sitting…awareness of the room around…..bringing the attention…as best we can…to bring our more open, spacious awareness to the next moments of our

day…..And when we feel ready to…open the eyes if they've been closed…and come back into the room….

Appendix 12: Loving kindness meditation script

To begin this practice… (4 secs) let yourself be in a relaxed and comfortable position…(3 secs) we are going to do the practice of cultivating positive emotion, in this case loving kindness which is… the desire for someone to be happy or yourself to be happy, its not dependent on something, its not conditional… its just a natural opening of the heart to someone else, or to yourself… so you can check into your body and notice how you are feeling right now, letting whatever is here be here…(6 secs)

Now let yourself bring to mind someone whom the moment you think of them you feel happy, see if you can bring to mind, it could be a relative, a close friend, someone with not too complicated a relationship but just a general sense that when you think of them you feel happy, you can pick a child or you can always choose a pet, a dog or cat…a creature its fairly easy to feel love for……..So let them come to mind, have a sense of them being in front of you… you can feel them, sense them, see them and as you imagine them notice how you are feeling inside maybe you feel some warmth, or there is some heat to your face, a smile, a sense of expansiveness… this is a loving-kindness, this is this natural feeling that is accessible to all of us… at any moment… (6 secs)

So now having this loved one in front of you begin to wish them well…maybe safe and protected from danger… (3 secs) maybe happy and peaceful… (3 secs) maybe healthy and strong… (3 secs) may you have ease and wellbeing…and as I say these words, you can use my words or your own words but have a sense of letting this loving-kindness come from you and begin to touch this loved one… reaching out… you might think in images, you might have a sense of colour or light… you might just have a feeling… the words may continue to bring on more of this feeling and I encourage you to say whatever feels meaningful to you… may you be free from stress and anxiety… may you be free from all fear… and so as you are sending out these words and feelings of loving-kindness also check into yourself and see how you are feeling inside (5 secs) and now imagine this loved one turns around and begins to send it back to you… and see if you can receive the loving-kindness, take it in… and their wising you well, may you be happy, meaning you, may you be peaceful and at

ease (3 secs) may you be safe and protected from all danger… (3 sec) may you have joy… (2 sec) wellbeing… (3 sec) and letting yourself take it in… now if you are not feeling anything at this point or before in the meditation, its not a problem… this is a practice that plants seeds and if you are feeling something else other than loving-kindness, just check into that, what is it I'm feeling, there may be something to learn here… (4 secs) now if its possible and its not always easy to do this but see if you can send loving-kindness to yourself… you can imagine it coming down your body from your heart… or you can just have a sense of it… (3 secs) may I be safe and protected from danger… may I be healthy and strong… may I be happy and peaceful… may I accept myself just as I am… and as you ask yourself the question what do I need to be to be happy… see what arises and offer that to yourself… (4 secs) may I have meaningful work, a joyful life, close friends and family… (4and now checking into yourself and noticing what it is you feel as you do this…(7 secs) and now let yourself bring to mind one person or group of people you wish to send the loving-kindness to, imagine them in front of you… sense them, feel them… may you be happy and peaceful… may you be free from all stress and anxiety, fear and worry… grief …may you have joy and happiness, wellbeing… (6 secs) and now let this loving-kindness expand out… (4 secs) spreading… (4secs) touching anyone you want to touch right now… in all directions… (6 secs) people you know, people you don't know… people you have difficulties with, people you love… just imagine expanding and touching and each person or animal whoever is touched by this loving-kindness… (3 secs) each person is changed… (3 secs) you can imagine that…so may everyone everywhere be happy and peaceful and at ease… may we all experience great joy…

Appendix 13: Information Sheet

Department of Psychology

Royal Holloway, University of London, Egham, Surrey TW20 0EX, UK

Information Sheet
The impact of two mindfulness meditations on mental wellbeing

Our names are Anna Pinto and Charlotte Snape and we are trainee clinical psychologists at Royal Holloway, University of London. We are carrying out a study comparing the impact of two types of mindfulness meditations on mental wellbeing. The study is supervised by Dr Lyn Ellett (Senior Lecturer of Clinical Psychology) and Dr Jane Vosper (Lecturer of Clinical Psychology).

What Is The Purpose Of The Study?

There is growing evidence that mindfulness is an effective psychological intervention for many psychological problems. Mindfulness means paying attention in a particular way; on purpose, in the present moment and non-judgementally. Mindfulness meditation is the practice of turning your attention to a single point of reference such as breathing. We want to find out if two different types of mindfulness meditations are equally effective in terms of improving mental wellbeing.

Why Have I Been Asked To Take Part?

We are looking for adults (aged above 18) who live in the UK. We wish to study around 100 participants in total.

What Will The Study Involve?

The study involves two phases:

Phase one

If you would like to take part, we will ask you to complete one online questionnaire lasting approximately 10 minutes. The questions are about your feelings and thoughts.

Depending on your answers on the online questionnaire you may or may not be eligible to take part in the second phase of the study. If you are eligible, we will contact you to ask if you are interested in participating in phase two.

Phase two

If you would like to take part in phase two, you will be invited to meet one of us either over Skype or at the RHUL Clinical Psychology Department (Bowyer Building, Egham, TW20 0EX, UK) for approximately 1 hour. You will be asked to complete a new set of questionnaires which also include questions about your feelings and thoughts.

Following the completion of the questionnaires, you will be allocated to practice either meditation 1 or meditation 2. The allocation is on the basis of chance, so you have a 50/50 percent chance of practising meditation 1, and a 50/50 percent chance of practising meditation 2.

What will happen if you are allocated to practise meditation 1?

You will be given an audio file including meditation 1. Meditation 1 lasts 10 minutes. You will be required to listen to and practice meditation 1 once per day for two weeks. You will also be required to keep a daily diary of whether you practiced meditation 1.

After the end of the two weeks you will be invited to meet one of us either over Skype or, if you prefer, at the RHUL Clinical Psychology Department (Bowyer Building, Egham, TW20 0EX, UK) for approximately 1 hour. You will be asked to complete the same set of questionnaires that you completed before your allocation to meditation 1.

You will be invited for a final meeting over Skype or at the RHUL Clinical Psychology Department (Bowyer Building, Egham, TW20 0EX, UK) one month after the end of the two weeks of practising meditation 1. You will be asked to complete the same set of questionnaires that you completed before your allocation to meditation 1. Following completion of the questionnaires we will answer any outstanding questions you may have.

What will happen if you are allocated to practise meditation 2?

You will be given an audio file including meditation 2. Meditation 2 also lasts 10 minutes. The rest of the steps are the same as with meditation 1.

Will I receive any compensation?

Compensation for phase 1

Once you have completed phase one of the study, you will be entered into a prize draw for a £50 Amazon voucher as compensation for your participation in this study.

Compensation for phase 2

If you are eligible for phase 2 of the study and once you have completed it, you will be entered into a second prize draw for a £50 Amazon voucher.

Who Will See My Information?

Your responses will be seen only by the researchers, Anna Pinto and Charlotte Snape. Other members of the study team (such as supervisors) will only know you by a number. Everything you report is confidential unless you tell us something that indicates that you or someone else is at risk of harm. We would discuss this with you before telling anyone else.

You can decide not to answer some questions if you wish. The study will be written up as part of Anna Pinto's and Charlotte Snape's doctoral theses. It will also be written up and published in a scientific journal, and may be presented in scientific conferences. Your information will not be identifiable when written up, published or presented. Data from this study will be retained for 10 years and subsequently disposed of securely.

Do I Have To Take Part?

You do not have to take part in this study if you don't want to. If you decide to take part you may withdraw at any time without having to give a reason. Taking part, or choosing not to take part in this study, will not affect you in any way now or in the future.

What Should I Do If I Would Like To Find Out More?

If you would like to find out more about any aspect of this study, please contact the researchers who will do their best to answer your questions. Please email anna.pinto.2014@live.rhul.ac.uk or charlotte.snape.2014@live.rhul.ac.uk.

Will the study impact on my wellbeing?

We do not anticipate any negative impact of the study on your wellbeing. However, if at any stage of your participation in this study, you have any concerns about your wellbeing, please stop the study and contact the Samaritans (08457 90 90 90), mental health charity MIND (0300 123 3393), and/or your GP.

Please keep this information sheet for your own reference. Please feel free to ask any questions before you complete the consent form that follows.

The study has been reviewed and approved by the Research Ethics Committee at Royal Holloway, University of London.

Appendix 14: Invitation Email to Phase Two

Dear Participant

Thank you for taking part in the first phase of our research into mindfulness and mental wellbeing. I am emailing to invite you to the second phase of the project. Please find attached the study's information sheet for your reference.

What Phase 2 involves
If you would like to take part in phase two, you will be asked to complete a new set of questionnaires which also include questions about your feelings and thoughts. This will take approximately an hour and will done over Skype with myself at a time of your convenience. At the end of this I will send you an audio file containing a meditation recording and a practice diary.

The meditation lasts 10 minutes and you will be required to listen and practice the meditation once per day for two weeks. At the end of the two weeks and in one month's time you will be invited to answer the same set of questionnaires again. Your name will also be entered into a prize draw to win another possible £50 worth of Amazon vouchers.

If you are happy to continue with phase two, please find below a list of available time-slots over the next xx weeks:

<date, time>
<date, time>
<date, time>

Please let me know what date and time you would like.
If none of the above are convenient, please let me know so something else can be arranged.

If you have any further questions, please do not hesitate to ask. I look forward to hearing from you.

Best wishes
Xx

Appendix 15: Email After Time-point One

Dear xx

Congratulations you have done part 1. Thank you for completing the questionnaires.

Please find attached your 10-minute meditation audio and a practice diary. The audio file can be downloaded onto your computer but is not downloadable on a phone. If you wish to listen to the meditation with your phone you will need to access the meditation through your emails.

You are required to listen and practice the meditation **once per day for the next two weeks**. The practice can be done at any time of your choosing. We also ask that you fill out the practice diary detailing what practice you have done.

At the end of the two weeks, which will be the xx you will be required to answer the same set of questionnaires you kindly completed today.

On the xx I will send you another email containing the link to these questionnaires. You may answer these whenever you wish that day. If you foresee being unable to fill out the questionnaires on the xx please let me know.

Thank you again and I hope you enjoy the experience of mindfulness.

Best wishes
xx

Appendix 16: Practice Reminder Email

Dear x,

Just a quick email to check everything is going ok as we approach the end of the first week! Hopefully you're enjoying your mindfulness practice and have found it interesting so far.

There is one week left to go, so please don't forget to complete the questionnaires on xx and email me your practice diary.

If you can't do the xx or have any other questions please let me know.

Best wishes,
xx

Appendix 17: Debrief Email

Dear xx

Thank you for answering the final set of questionnaires and for completing our study!

As promised, I have attached a debrief form which gives you more information about the study including the specific types of wellbeing that our study is interested in. We hope the information provided is clear. If, however, you have any questions or you would like to find out more about the study, please do not hesitate to let me know.

I have also now entered your name into the prize draw to win another possible £50 worth of Amazon vouchers. If you are successful, we will email you to let you know.

Xx and I would like to thank you warmly for your participation in the study and for helping us with our doctoral research!

Best wishes,
xx

Appendix 18: Debrief Form

Department of Psychology +44 (0) 1784 443526
Royal Holloway, University of London Psy-enquries@rhul.ac.uk
Egham, Surrey TW20 0EX
www.royalholloway.ac.uk/psychology

The impact of two mindfulness meditations on mental wellbeing

Thank you for your participation in this study.

Please find below a summary of the background and aims of the study. To ensure that the following information did not alter your behaviour whilst participating in the study, the aims of the study were not made explicit to you prior to data collection.

Background of the study
In this study we were interested in comparing the effectiveness of two different types of mindfulness meditations on suspicious and 'paranoia-like' thoughts. We were also interested in its effects on other factors associated with mental wellbeing such as worry and rumination, forgiveness, loneliness and knowledge about one's self. Previous research suggests that mindfulness is an intervention that is effective in reducing the frequency and impact of suspicious and 'paranoia-like' thoughts on wellbeing. However, there is a lack of research on the comparative impact of different types of mindfulness meditations on suspicious and 'paranoia-like' thoughts and wellbeing.

Aims of the study
The main aim of the study was to find out if two different mindfulness meditations (i.e. insight meditation and loving kindness meditation) are equally effective in reducing the frequency and impact of suspicious and 'paranoia-like' thoughts on mental wellbeing. "Insight meditation" involves observation and acceptance of one's thoughts and feelings while maintaining a focus on breathing, whereas "Loving Kindness Meditation" involves increasing one's kindness toward the self and others.
Because it is very important that participants do not know the above information before participation, we please ask that you do not share this information with any other participants.

Your participation
If you were invited to take part in phase 2 of the study that means that you met a certain threshold on questionnaire measures of suspicious and 'paranoia-like' thoughts that you completed in phase 1. Research suggests that such thoughts are common in the general population and occur in everyday life. The threshold used was low and not suggestive of the presence of any mental health difficulties. Reference to suspicious and 'paranoia-like' beliefs does not imply these beliefs to be incorrect.

The potential impact of participation

We do not anticipate any adverse effects from taking part in this study, as research suggests that mindfulness is beneficial for mental wellbeing. However, some people may find that focusing on internal experiences may affect their mood. If this study had had a lasting effect on your mood or if you have any concerns about your wellbeing having taken part, please contact mental health charity MIND (0300 123 3393), 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 us at charlotte.snape.2014@rhul.ac.uk, anna.pinto.2014@rhul.live.ac.uk or jane.vosper@rhul.ac.uk. We'd like to remind you that your participation in this study was voluntary and you have the right to withdraw permission for data to be used.

Thank you again for your participation in our study.

Appendix 19: RHUL Ethics Committee Approval Notification

From: "**Ethics Application System**" <ethics@rhul.ac.uk>
Date: Fri, May 20, 2016 at 3:26 AM -0700
Subject: result of your application to the Research Ethics Committee
To: "Snape, Charlotte (2014)" <Charlotte.Snape.2014@live.rhul.ac.uk>, "Vosper, Jane" <Jane.Vosper@rhul.ac.uk>, "ethics@rhul.ac.uk" <ethics@rhul.ac.uk>

PI: Jane Vosper
Project title: A randomised comparative study of Insight and Loving-kindness meditation on non-clinical paranoia

REC ProjectID: 99

Your application has been approved by the Research Ethics Committee. Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk