

**Self-Structure and Delusions.**

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## Abstract

Previous research has highlighted the influence of an individual's self- and other-evaluative beliefs on the development and maintenance of delusions in psychosis. However, there is a growing evidence base indicating that self-structure, that is how we organise information about our-selves, may be a fundamental component in the accessibility of those beliefs. One element of self-structure is 'evaluative self-organisation', which states that self-structure exists on a continuum from integrated to compartmentalized based on how positive and negative self-beliefs are distributed. Self-structure can also be either positively or negatively valenced. While there has been research into the role of evaluative self-organisation on some clinical presentations including depression, social anxiety and bipolar disorder, there has been no research to date on its relationship to delusions. The current project firstly aims to explore the relationship between individuals' self-structure and delusional beliefs, particularly paranoia and grandiosity, within a non-clinical population. The second aim was to investigate any associations between the overall positivity/negativity of an individual's self-structure and paranoid and grandiose beliefs. The final aim was to determine if self-content or self-structure was a greater predictor of the presence of both paranoid and grandiose beliefs. Participants (n = 86) firstly completed a range of self-report measures assessing delusional beliefs and self-content. They then completed a self-descriptive card sort task to measure self-structure. While the results did not demonstrate a significant relationship between paranoia and self-structure alone, a significant relationship between paranoia and negatively-compartmentalised self-structures was observed. There was no significant relationship between grandiosity and self-structure, regardless of overall positivity/negativity. The results also demonstrated

that self-content was a greater predictor of both paranoia and grandiosity compared to self-structure. The findings of the current thesis provide a platform for further research examining the role of self-structure in non-clinical delusions.

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## **1. Introduction**

### **1.1 Overview**

It is becoming widely accepted that delusional beliefs are a common phenomenon in the general population. They are now viewed as occurring at the milder end of a continuum of normal human experiences, with psychotic delusions being at the more severe extreme (van Os & Verdoux, 2003). By accepting the continuum hypothesis, it is possible to study delusional beliefs in non-clinical samples to help further our understanding of clinical delusions. With non-clinical delusions being so widespread in the general population, associated with distress, and linked to poorer well-being, they have also become a phenomenon of interest in their own right.

Various factors have been associated with both non-clinical and clinical delusions. One which has received considerable attention in the literature is evaluative beliefs. There is an ever-growing evidence base supporting the relationship between these beliefs and delusions, with negative evaluative beliefs being associated with paranoid delusions and positive evaluative beliefs being associated with grandiose delusions (Fowler, et al., 2006b, Smith et al., 2006).

As well as understanding the impact of the content of beliefs about self and others, it's also important to understand the role of self-structure (i.e. how an individual organises information about themselves) as this can influence the accessibility of self-beliefs. One aspect of self-structure which has received attention is known as 'evaluative self-organisation'. Evaluative self-organisation has not been examined in relation to delusional beliefs before. Therefore, the current study aims to explore the novel relationship between these variables.

This chapter begins by introducing the concepts of clinical and non-clinical delusions, and the continuum theory and then goes on to appraise the research providing supportive evidence of the presence of delusional beliefs, particularly paranoia and grandiosity, in the general population. This is followed by an overview of the research examining the association between paranoia, grandiosity, and evaluative beliefs. Evaluative self-structure is then introduced as a novel factor that has not yet been examined in relation to delusional beliefs. A model of evaluative self-structure is outlined and its conceptual relationship with delusional beliefs is presented. It is suggested that evaluative self-organisation may be an important factor in explaining the relationship between delusions and self-beliefs. Finally, the chapter will outline the aims of the current research and state the research hypotheses.

## **1.2. Defining Delusions**

### *1.2.1 Delusions and the Diagnostic and Statistical Manual of Mental Disorders*

*(DSM; American Psychiatric Association. 2013)*

Delusions have historically been considered to be discreet and discontinuous and therefore were not deemed to be a part of normal healthy psychological functioning (van Os, Hanssen, Bijl & Ravelli, 2000; Tai & Turkington, 2009). This clinical perspective has greatly influenced the conceptualisation of psychiatric disorders, with traditional classification systems determining the presence (or absence) of mental disorders such as psychosis based on whether individuals do (or do not) present with symptoms (John & van Os, 2001). Delusions have been associated with various diagnostic categories such as schizophrenia, delusional disorder, bipolar disorder and certain personality disorders (American Psychological Association (APA), 1994).

In the most recent version of the DSM (DSM-V, Schizophrenia Spectrum and Other Psychotic Disorders; APA 2013), delusions are defined as:

*“fixed beliefs that are not amenable to change in light of conflicting evidence. Their content may include a variety of themes (e.g. persecutory, referential, somatic, religious, grandiose)[...] Delusions are deemed bizarre if they are clearly implausible and not understandable to same-culture peers and do not derive from ordinary life experiences [...] The distinction between a delusion and a strongly held idea is sometimes difficult to make and depends in part on the degree of conviction with which the belief is held despite clear or reasonable contradictory evidence regarding its veracity”* (5th ed.; DSM-5; APA, 2013).

The DSM-V has developed the definition of delusions in four main ways. Firstly, delusions are no longer required to be deemed false, which has previously been highlighted as an important factor in the literature (Coltheart, 2007). Also, there is less of focus on the need to have irrefutable proof against the belief, which may not always be obtainable, and instead they simply need to be deemed as “clearly implausible”. There has also been a shift to allow delusions to be about one’s own experiences, requiring little or no inference, instead of needing to be about external realities or based on incorrect inference. Finally, the DSM-V definition allows for greater overlap between delusions, other irrational beliefs, and many characteristics of our everyday beliefs. This definition appears to narrow the gap between delusions and everyday beliefs in terms of content, and focuses on a more multidimensional view of these beliefs, with greater consideration of the level of preoccupation, conviction and distress as well as impact on social functioning in an individual’s experiences (Freeman, 2008). As indicated within the DSM-V definition of delusions, there are various types of

delusional beliefs. For the purpose of this thesis, there will be a focus on two specific forms; paranoid delusions and grandiose delusions.

### *1.2.2. Defining Paranoid Delusions*

While paranoia is now used in everyday language to describe suspicion, the more severe clinical term of paranoia, characterised by persecutory delusions, is a defining criterion for various psychiatric disorders such as schizophrenia (Freeman, 2007), bipolar affective disorder (Goodwin & Jamison, 1990) and major depression (Haltenhof, Ulrich, & Blauenburg, 1999). Historically, it has been difficult to get a clear definition of paranoia (e.g., Garety, 1985; Harper, 1992; Heise, 1988; Jones, 1999; Strauss, 1969), leading to early concerns regarding the consistency in empirical research (e.g., Freeman, 2007). As a result, Freeman & Garety (2000) provided robust criteria for paranoia in relation to persecutory delusions in which they defined paranoia as an individual's belief that a persecutor is intentionally causing or planning to cause harm, now or in the future (see Table 1.1 for full criteria).

Table 1.1: Freeman & Garety's (2000) criteria for paranoid delusions (p.412).

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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

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 beliefs

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The criteria outlined by Freeman and Garety (2000) highlight the vital nature of the persecutor's intent on determining if a delusion can be classified as persecutory. This has allowed for greater confidence amongst researchers that the same phenomenon is being examined and in turn has created greater validity in research output (Freeman, 2007). It is of importance to recognise, that this criterion does not signify the presence of a psychotic disorder. Instead, their definition is consistent with theoretical and empirical viewpoints that delusions are dimensional in nature and occur in the general population. These criteria have been used to define paranoia both in the clinical (e.g.,

Green et al., 2006) and non-clinical (e.g., Ellett, Lopes & Chadwick, 2003) populations, and will therefore be used in the current research.

### *1.2.3. Defining Grandiose Delusions*

Grandiose delusions have been identified as occurring across a range of psychiatric conditions, such as bipolar disorder, schizophrenia, substance misuse disorders and depression (Appelbaum, Robbins, & Roth, 1999). There is also some evidence which suggests that grandiose delusions are held with the highest level of conviction in comparison to other delusions (Appelbaum, et al., 1999). Despite this, grandiose delusions have received less theoretical and empirical attention in comparison to other symptoms linked to psychosis, such as paranoid delusions (Smith, Freeman, & Kuipers, 2005). Therefore, there has been less of a focus to create a robust criterion for grandiose delusions to use within empirical research. The APA (2013) defined grandiose delusions in the DSM as “fixed beliefs related to a sense of inflated worth, power, knowledge or special identity, or a special relationship to a deity or famous person, which are not amenable to logic and remain despite undeniable contradictory evidence” (Knowles, McCarthy-Jones, & Rowse, 2011). Similar to other delusional beliefs, grandiose delusions are multidimensional (Garety & Hemsley, 1994), varying with regard to the degree of conviction and preoccupation, and the levels of distress and dysfunction caused. There is also no indication of the presence of a psychiatric condition within this definition. For the purpose of this thesis, the APA (2013) definition of grandiose delusions is adopted.

The most recent definitions of delusions within the DSM-V highlight the links between these beliefs and normal everyday beliefs. They narrow the gap between content of beliefs and place a greater emphasis on differences in conviction and incorrigibility. It



is therefore believed that delusional beliefs exist on a continuum of normality. This theory and the evidence to support it will be outlined in the following section.

### **1.3. The Continuum Theory of Delusions**

#### *1.3.1. Outline of the Model*

The theory that delusions are dimensional in nature was first put forward by Strauss (1969). This led to the view that there was more to say about delusions than simply whether they are present or absent (Spitzer, Williams, Gibbon & First, 1992). The dimensional approach proposed by Strauss (1969) suggests that delusions might in fact exist as a less severe quantitative trait in the general population (Bentall, Corcoran, Howard, Blackwood, & Kinderman, 2001). There were four main factors identified that could determine the position of delusions on the continuum between non-clinical and clinical delusional beliefs; delusional conviction, preoccupation, cultural acceptability, and improbability (Strauss, 1969). These four factors have been shown to vary accordingly in both clinical delusional beliefs, such as those seen in individuals with a diagnosis of schizophrenia (Chadwick & Lowe, 1990) and in non-clinical delusions (Freeman, et al., 2005b). This led to the view that delusions are on a “belief continuum” (Chapman & Chapman, 1980; Claridge, 1997; Strauss, 1969), with delusions in psychosis being at the severe end of the continuum and similar experiences at a lesser degree in the general population, at the milder end of the continuum (Freeman, 2006).

Two key dimensional versions of the continuum hypothesis have since been proposed by Costello (1994): the phenomenological view and the vulnerability view. The phenomenological view indicates that symptoms of psychopathology, such as delusions, that occur in the general population are less intense, invasive and debilitating

than those seen in the clinical population, but are not necessarily qualitatively different (Costello, 1994). The vulnerability view however, does suggest qualitative differences between the presentations of delusions within these two groups. It suggests that the degree to which an individual possesses 'paranoid symptoms' can be indicative of their vulnerability to develop a psychotic disorder. This has been referred to as 'psychosis proneness' in the literature (Claridge, 1994). This thesis will adopt the phenomenological model when considering delusions within the non-clinical population.

If we were to accept the continuum model, paranoid delusions would be conceptualised on the severe end of the continuum of normality (Freeman, 2007). Other, less severe variations of the experience, which have been found to have common correlates with paranoid delusions, include mistrust, suspicion and persecutory ideation (Combs, Michael, & Penn, 2006; Freeman, Pugh, Vorontsova, Antley & Slater, 2010; Vermissen, et al., 2008). Using Freeman & Garety's (2000) definition of paranoia, the main distinctive feature of paranoia across the entire continuum is the unsupported belief regarding others' intention to cause one harm. This would also apply to grandiosity, with the continuum ranging from grandiose delusions, which can cause significant social and occupational impairment, to more fleeting grandiose thoughts about being particularly special, at the less severe end of the spectrum (Knowles, et al., 2011).

By accepting the continuum model, it is justified to study delusions in non-clinical population to better inform our understanding of these beliefs at a clinically significant level (e.g. David, 2010). There are many benefits of using non-clinical samples as an analogue to clinical samples to develop our understanding of delusional beliefs.

Freeman (2007) highlighted that adopting a dimensional approach allowed for gathering information that is not influenced by the various complications associated with research with clinical groups (e.g. medication, stigma, hospitalisation, unemployment and subsequent effects on depression and self-esteem). The study of non-clinical populations has also been beneficial in the development of assessment and intervention methods for clinical populations (Freeman, 2007).

Whilst investigating non-clinical delusions can be a helpful means of better understanding clinical populations, given that non-clinical delusions are so widespread within the general population, they have begun to receive attention as a phenomenon in their own right. This research has highlighted that individuals with non-clinical delusions experience various difficulties, such as low mood and self-esteem, increased anxiety, interpersonal sensitivity, and reduced physical health, emotional well-being, and social functioning (Freeman et al., 2008; Freeman et al., 2011; Martin & Penn, 2001). Given the amount of negative associated outcomes with non-clinical delusions, it is important to further our understanding of the phenomenon in order to improve individual well-being.

As aforementioned, an implication of the continuum model is the presence of non-clinical delusional beliefs in the general population. The following sections will review the evidence for this in relation to both paranoid and grandiose beliefs.

### *1.3.2. Evidence of paranoid beliefs in the general population*

#### Prevalence Studies of Paranoia

There is clear evidence for the prevalence of delusional beliefs in the general population. Prevalence studies of delusions in non-clinical populations appeared to be triggered by small scale studies using surveys to explore similarities in beliefs between

individuals in the general population and psychotic inpatients (Cox & Cowling, 1989; Peters, Joseph & Garety, 1999). Since then various, more large scale studies, examining the presence of delusions in the general population have been conducted.

One such study was conducted by van Os et al. (2000) in which they used a random sample of over 7000 individuals from the general population in the Netherlands. The researchers initially assessed all participants using the Composite International Diagnostic Interview (CIDI; World Health Organisation, 1990). Those with evidence of psychosis (17.5%) were invited for a further interview with a psychiatrist, allowing for further assessment of symptom severity. The results indicated that that only 2.1% of individuals with a positive psychosis rating met the criteria for a diagnosis of psychosis. Furthermore, they found that 1% of their sample had a 'true' clinical delusion, and a further 5.8% had delusional beliefs that did not result in distress or the need for support. Delusional experiences in both non-clinical and clinical participants, did not qualitatively differ and were found to overlap and share continuity in terms of psychopathology, risk factors and functional measures. The authors stated that these findings provided evidence that the psychosis phenotype may be nearly fifty times more prevalent than its purely clinical manifestation. This study was seen to be a breakthrough in the exploration of paranoia in the non-clinical population, in that it was one of the first robust studies to convincingly demonstrate the presence of delusional experiences in the non-clinical population and that they share a qualitative continuity with clinical delusional experience (Freeman, 2006). This study also added to previous similar findings from smaller survey studies of the general population in US samples (e.g., Eaton, Romanoski, Anthony, & Nestadt, 1991; Tien & Anthony, 1990).

Despite the high prevalence of delusions in the non-clinical population, there is some debate as to whether the delusions captured by van Os et al. (2000) were truly persecutory as they did not all include the critical element of harm (Freeman & Garety, 2000). Later studies conducted using British general populations have identified comparable prevalence rates of delusional beliefs to the European and US population based surveys. These studies have also ensured that the delusions reported are persecutory in nature, in line with Freeman & Garety's (2000) criteria.

In a large epidemiological study by Johns et al. (2004), over 8000 British individuals aged 16-74 years of age completed Psychosis Screening Questionnaire (PSQ; Bebbington & Nayani, 1995). Respondents with definite or probable psychosis (n = 60) were removed after second-phase interviews using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organisation, 1992) to ensure a purely non-clinical population. The authors used the Psychosis Screening Questionnaire (PSQ) to assess paranoid thoughts. Results indicated that 20% of the sample had thought at times that people were against them. However, only 10% of the sample had felt that people had deliberately acted to harm them. A much smaller percentage, 1.5% of the sample, endorsed the delusional belief that a group of people were plotting to cause them serious harm or injury. The authors found similar risk factors associated with psychotic symptoms (e.g. neurotic symptoms, victimisation, alcohol dependence, recent stressful life events, average IQ and male gender) in their non-clinical population compared to that of van Os et al. (2000). The authors noted the consistency of their findings with relevant cognitive theories regarding the development and maintenance of psychotic symptoms and paranoia (e.g., Freeman, Garety, Kuipers, Fowler, & Bebbington 2002; Garety, Kuipers, Fowler, Freeman, & Bebbington, 2001).

A more recent large-scale survey, which supports the reliability of the results presented by Johns et al.'s (2004) by reporting similar prevalence and concomitant data, was conducted by Freeman et al., (2011). Using the PSQ to identify delusional beliefs in a sample from the Adult Psychiatric Morbidity Survey in England (APMS 2007; N = 7281), the authors reported that; 18.6% of the sample felt that people were against them; 8.2% reported that people were intentionally acting to harm them; and 1.8% reported that they believed that there were potential plots against them. Despite the more recent replication of results and the greater focus on the persecutory nature of delusions, the Johns et al. (2004) study has still received methodological criticisms, particularly in relation to the unidimensional measure of delusions (the PSQ) (Freeman, 2006; 2007) and the use of lay interviewers (Wiles et al., 2006).

To target these limitations, Bebbington et al (2013) completed a secondary analysis on the 2000 British National Psychiatric Morbidity Survey data in an attempt to build on the findings presented by Johns, et al. (2004). The authors included data from the Structured Clinical Interview for DSM-IV Axis II disorders (SCID-II; First, Spitzer, Williams & Benjamin, 1997) alongside the data from the PSQ. A confirmatory factor analysis identified four main factors that define paranoia within the non-clinical population: mistrust, ideas of reference, interpersonal sensitivity and ideas of persecution. The authors found that ideas of persecution were the most severe and least common form of paranoia, which also occurred with high endorsement of the other more common experiences of paranoia (e.g., mistrust, ideas of reference and interpersonal sensitivity). Therefore, the rarer and odder thoughts which are characteristic of clinical presentations, occurred alongside the more common and plausible experiences. This non-reflexive relationship between paranoia items, which

indicates that the less frequent, more severe items were relatively more predictive of other paranoid items, is consistent with previous empirical research (e.g., Johns et al., 2004; van Os et al., 2000). It also further supports the existence of the continuum theory, with clinical persecutory delusions being placed at the extreme end of a range of symptoms.

These large-scale studies have provided robust evidence for the prevalence of paranoid beliefs in the general population. However, it could be argued that the methodology used fails to capture the multi-dimensional nature of delusional beliefs which is increasingly recognised both clinically and in the literature (Freeman, 2008). The next section will review the relevant literature which examines the multi-dimensional nature of paranoia in non-clinical populations.

#### Multi-dimensional Studies of Paranoia

In a study aimed at developing a multi-dimensional measure of delusions, Peter's et al., (1999) found that nearly 10% of the healthy sample scored above the mean of the deluded group. Clinical participants also had significantly higher levels of distress, preoccupation, and conviction. These results are consistent with the continuum model while also emphasizing the multidimensional nature of delusional beliefs.

Similar results were seen in a study by Lincoln (2007) who also used the Peters et al. Delusions Inventory (PDI; Peters et al. 1999) to assess and compare delusional ideation between a sample of individuals with a diagnosis of schizophrenia and the general population. The results showed that - when solely taking into account the number of delusional beliefs - 37% of the clinical sample would go undiagnosed, whilst 24% of the non-clinical sample would fall into the diagnostic category of psychosis. The

authors found that it was the level of distress associated with the delusions to be the most important distinguishing factor between the two groups. Both of these studies support the phenomenological view, in that the type of delusional beliefs experienced across the continuum may not differ qualitatively, but instead are considered more intense, invasive and debilitating at the more severe end.

Survey studies have also focused on specific populations to further understand the multi-dimensional nature of non-clinical paranoia, which has not been captured in the larger scale surveys (Freeman 2006; 2007). One of the earlier studies which looked more specifically at individual experiences of non-clinical paranoia in a student sample was conducted by Ellett et al. (2003). In this study, 324 college students aged 18-49 completed the Paranoia Scale (PS: Fenigstein & Vanable, 1992), which is specifically designed to measure paranoia in the general population, the Personal Experience of Paranoia Scale (PEPS) and the Rosenberg Self-Esteem Scale. The aim was to examine individual experiences of paranoia as well as various cognitive, behavioural and affective components associated with clinical paranoia. The results showed that 47% of participants reported experiences of paranoia as defined by Freeman and Garety (2000). An additional 23% reported experiencing paranoia without a clear indication of planned intention to harm. However, it was noted that the scores on the PS for those 23% were significantly higher than those respondents not reporting any paranoia. The authors argued that the true figure of participants reporting an experience of paranoia was between 47% and 70% of the sample. These findings supported the idea that paranoia is in fact a common human experience which lies along a continuum of normal and abnormal experiences.



Another study, examining non-clinical paranoia within a UK student population (N = 1202) was conducted by Freeman et al., (2005a). In this study, the authors used another measure specifically for examining paranoia in non-clinical populations, the Paranoia Checklist (Freeman, et al., 2005b). They found that approximately a third of the sample experienced regular paranoid thoughts. For example, 42% of the sample reported experiencing the feeling that others were speaking negatively about them on a weekly basis. Paranoid delusions were found to occur at similar levels to previous studies, with 8% of the sample holding the belief at least weekly, that someone has it in for them and wanted to cause them harm. In line with previous literature, less frequent and more implausible paranoid items had the highest levels of conviction and caused greater distress (Freeman, et al., 2005a).

In summary, there is an overwhelming amount of evidence indicating the prevalence of paranoia in the general population and in turn supporting the continuum theory. This evidence has also highlighted similarities in the multidimensional factors associated with paranoia, in both clinical and non-clinical samples. This supports the argument that paranoid beliefs between these two populations are not qualitatively different.

### *1.3.3. Evidence of grandiose beliefs in the general population.*

As an individual phenomenon, grandiose beliefs have received less individual attention compared to paranoid beliefs, particularly in the non-clinical population. However, there have been some studies, predominantly those examining the psychometric properties of measures of delusional beliefs, which have captured the prevalence of non-clinical levels of grandiose delusions in the general population. In a study examining the psychometric properties of a measure of delusion ideation in both

clinical and non-clinical populations (PDI), Peters et al. (1999) found that of a sample of 272 individuals from the general population, 43% believed they were very special or unusual people, and 37% felt there was a special purpose or mission to their life. In this study, grandiose beliefs had one of the highest levels of endorsement compared to other delusional beliefs.

Another study by Verdoux et al., (1998a) aimed to test the predictive validity of the PDI (Peters et al., 1999) in a primary care setting. The author's objectives were to assess the prevalence of delusional ideas and the acceptability of the self-report questionnaire. In the study, GPs asked a sample of 790 consecutive attenders, 11 of which had a diagnosis of a psychotic disorder, to complete the PDI-21. Of the remaining non-clinical participants, 20.1% were found to endorse one of the two components examining grandiose beliefs on the PDI; 1) Do you ever feel as if you are or are destined to be someone very important? and 2) Do you ever feel that you are a very special or unusual person?. In a more recent study which aimed to determine the reliability of factorial structure of the PDI-21, Jones and Fernyhough (2007) found that, in a sample of 493 university students, up to 80% of the sample endorsed at least one of the PDI items (44% endorsing item 1 and 36% endorsing item 2).

More recently, Scott, Chant, Andrews, & McGrath (2006) conducted a larger scale survey study to characterise the demographic correlates of individuals who endorse psychosis screening items. The study included data from the National Survey of Mental Health and Wellbeing, in which 10,641 individuals were questioned. Participants were interviewed by trained non-clinical staff using a modified version of the CIDI (WHO, 1993), which included screening items designed to identify individuals who may be psychotic. The results showed that 3.4% of participants stated that they believed they

had special powers that most other people lacked, which was the screening probe designed to assess grandiosity.

Similarly to paranoia, student samples have been used to examine grandiosity and its associated factors. Armando et al., (2010) examined psychotic-like experiences, including paranoia and grandiose delusions in a non-clinical sample consisting of 1882 students. The authors aimed to examine whether particular psychotic-like experiences were more likely to be associated with psychosocial difficulties than others. Participants completed various subscales of the Community Assessment of Psychic Experiences (CAPE), and the General Health Questionnaire-12. The authors found that paranoia had the highest prevalence, with 92.3% of the sample endorsing at least 1 item of CAPE scale. This was followed by grandiose beliefs, with 74.8% endorsing at least one item of the scale. Both paranoia and grandiosity were found to be associated with poor functioning and distress. These findings demonstrate that grandiose beliefs occur nearly as frequently as paranoid beliefs and can be as equally debilitating. Despite this, grandiose delusions continue to receive less attention in the literature.

#### *1.3.4. Critical Appraisal of Survey Studies*

Overall, cross-sectional survey studies provide supporting evidence that there is a high prevalence of paranoid and grandiose beliefs in the general non-clinical population, and in turn, that the experience of delusions can be viewed as occurring on a continuum of normal experiences. However, despite providing replicated findings, there are some limitations to these studies. Due to the cross-sectional design of these studies, they do not allow inferences about causality to be made. While the presence of an association can be indicated, the direction of that effect cannot be determined (Freeman et al.,

2011). To infer causality, it would be necessary to use more sophisticated methodologies such as a longitudinal design, to explain the sequential relationship of variables, or an experimental design, to examine mediating variables and the impact of introducing a novel stimulus. Another limitation of survey studies is that many studies apply clinical measures to non-clinical populations which may call into question the reliability of reported symptomatology. While many of the reviewed studies have attempted to implement measures specifically used to assess non-clinical delusions (e.g., the PS, PC and PEPS), these measures are still dependent on self-reports, which may produce inaccurate and biased information (Barker, Pistrang & Elliott, 2003).

Having deemed that both paranoid and grandiose delusions are prevalent in the general population, research has focused on examining the factors associated with delusional beliefs. In the literature, there are several different factors that have been associated with delusions in both clinical and non-clinical populations (e.g. Freeman, 2007; Knowles, et al., 2011). One of these factors is evaluative beliefs about the self and others. This thesis will primarily focus on the relationship between evaluative beliefs and delusions, as these processes are of key interest in the current investigation. The relevant research will be reviewed in the following section.

#### **1.4. Factors associated with Delusions**

##### *1.4.1. Defining evaluative beliefs*

Evaluative beliefs are essentially the views and judgements that we have of ourselves and others. They are a natural human response to social stresses and threats which may form the basis of our adaptation to the social world (Fowler et al., 2006b). Evaluative beliefs can be about the self (e.g. ‘I am a failure’) or about others (e.g. ‘others are untrustworthy’). Similar to other attributes and beliefs, both self- and other-evaluative

beliefs can either be positive or negative in nature. They are essentially ‘good-bad’ judgements or preferences, distinct from an inference (Chadwick, Trower & Dagnan, 1999). Cognitive therapists have long held the stance that negative evaluative beliefs are essential in the experience of negative emotional states (Beck, 1987). Negative self-evaluative beliefs related to people have also been argued to be the most powerful beliefs linked to developing dysfunctional emotions and behaviour (Ellis, 1973).

There is a large amount of empirical research highlighting the association between evaluative beliefs and both paranoid and grandiose delusions. The following section will review the relevant literature.

#### *1.4.2. Evidence of relationship between evaluative beliefs and paranoia*

The association between evaluative beliefs and paranoid delusions has received a lot of attention in the literature over the past twenty years. One of the first to examine this association was Chadwick and Trower (1997) in a study which aimed to test the hypothesis that paranoia developed as defence mechanism against internalising negative self-evaluative beliefs. The authors used the Evaluative Beliefs Scale, which is a self-report scale developed by Chadwick, to measure negative other-self evaluations (e.g. ‘People see me as a total failure’), self-self evaluations (e.g. ‘I am a bad person’) and self-other evaluations (e.g. ‘Other people are worthless’). The results indicated that the paranoid sample showed higher levels of negative other-self (i.e., threat), self-self and self-other evaluations compared to healthy controls. The results highlighted a clear association between paranoia and negative evaluative beliefs.

Fowler et al., (2006b), used both non-clinical and clinical samples, to evaluate the psychometric properties of a new measure of self and other evaluations in psychosis (Brief Core Schema Scales, BCSS). The measure looked at four dimensions of

evaluations; negative self-evaluations, negative other-evaluations, positive self-evaluations, and positive other-evaluations. The authors found that negative other- and negative self-evaluations were strongly associated with paranoia in the clinical and non-clinical samples. They also noted that similar levels of positive self- and other-evaluations were seen in both clinical and non-clinical samples, which may be indicative of the prominent role of negative evaluative beliefs within paranoia. Fowler et al. (2006a) postulated that, as a result of evaluating oneself negatively while evaluating others as bad, individuals are left feeling weak and under threat and in turn, have an increased sense of vulnerability. It is suggested that this vulnerability is then related to the development of paranoid beliefs.

Further replicating and reinforcing the findings presented by Fowler et al. (2006b), Smith et al. (2006) utilised the BCSS to test specific predictions made by Garety et al (2001) regarding the role of emotion and negative evaluative beliefs in psychosis. Specifically, the authors wanted to examine if negative evaluative beliefs about self and others would be independently associated with paranoid delusions, irrespective of mood. This would provide supporting evidence for theoretical proposals (e.g. Fowler, 1995; Garety et al, 2001) and empirical evidence (e.g. Barrowclough et al, 2003) demonstrating a role for schematic beliefs in psychotic symptoms. In this study, the sample consisted of 100 participants with a current diagnosis of non-affective psychosis (schizophrenia, schizoaffective disorder, delusional disorder). The authors found, using self-report measures of evaluative beliefs, that negative self- and other-evaluative beliefs were both independently associated with paranoid delusions, once the confounding effects of depression and low self-esteem were controlled for. It was also demonstrated that individuals with higher levels of negative evaluations about

themselves and others had more severe paranoid delusions and were more pre-occupied and distressed by them. These findings have since been more recently replicated in the literature (e.g. Valiente, Cantero, Sánchez, Provencio, & Wickham, 2014).

Lincoln et al. (2010) more recently conducted a study which focused on positive evaluative beliefs in relation to paranoia. The aim of the study was to further explore the impact of the more inter-personal aspects of an individual's self-concept on paranoia. In this study, self-report measures and a structured clinical interview were used to assess evaluative and 'dysfunctional' beliefs in a clinical sample of adults with a diagnosis of psychosis. The results indicated that individuals who perceived that they were being positively evaluated by others, had lower levels of paranoia regardless of their level of 'dysfunctional' beliefs. Those who believed they were not respected or accepted by relevant others showed higher levels of paranoia. Therefore, increasing levels of negative self-other beliefs increased the impact of dysfunctional beliefs on paranoia. This study highlighted that, while negative self-evaluative beliefs may be associated with paranoia, their impact may be moderated by an inter-personal component.

Garety et al., (2013) examined the differences in cognitive and emotional processes between paranoid and grandiose delusion in a sample of 301 individuals with psychosis. In the sample, 192 participants presented with paranoid delusions. The results indicated that there were obvious significant differences in the processes associated with these two subtypes of delusions. Using the Brief Core Schema Scales (BCSS; Fowler et al., 2006b) to measure evaluative beliefs, the authors found that paranoid delusions were more likely to occur with higher levels of negative emotions, and negative self and other-evaluations.

In a systematic literature review of self-schemas in paranoid delusions, Kesting and Lincoln (2013) summarized the findings of fourteen studies looking directly at the association between negative self-evaluations and paranoia in both clinical and non-clinical samples. Eight of these studies clearly indicated the presence of negative self-evaluations in individuals with clinical paranoid delusions. Four of these studies, in which a group comparison design was used, found negative self-evaluations to be greater in clinical samples compared to healthy individuals (Bentall et al., 2008; Kinderman, 1994; MacKinnon, Newman-Taylor & Stopa, 2011 & Vázquez, Díez-Alegría, Hernández-Lloreda & Moreno, 2008). The other four studies used a correlational design and found that negative self-evaluations correlate with paranoid delusions in psychosis (Bentall et al., 2009; Palmier-Claus, Dunn, Drake & Lewis, 2011 & Smith et al., 2006). The authors also reviewed six studies in which non-clinical samples were used which demonstrated an association between negative self-evaluation and higher paranoid ideation (Addington & Tran, 2009; Fowler et al., 2006b; Freeman et al., 2008; Gracie et al., 2007; Pickering, Simpson & Bentall, 2008 & Udachina et al., 2009). All of these studies, clearly highlight the association between negative self-evaluative beliefs and paranoia in both clinical and non-clinical populations. In this review, the authors reported that studies that compared clinical samples to non-clinical groups demonstrated large effect sizes ( $d = .84-1.15$ ) while correlational studies using solely clinical samples demonstrated medium effect sizes ( $r = .36$ ).

A more recent systematic literature review conducted by Tiernan, Tracey and Shannon (2014) reviewed the relationship between 'self-concepts', including self-esteem, self-worth, specific self-evaluations and implicit self-esteem, and paranoia. The results of eighteen clinical studies demonstrated a strong association between negative explicit



and implicit self-concepts and paranoia. Again, this adds to the support of a relationship between negative evaluative-beliefs and paranoia.

#### *1.4.3. Evidence of relationship between evaluative beliefs and grandiosity*

As stated previously, grandiose delusions have received significantly less attention in the literature compared to paranoia. This is also evident in the research examining the association between evaluative self-beliefs and grandiose delusions. Despite this, research to date has provided support for the association between grandiose beliefs and positive-self-evaluative beliefs. Models of grandiose delusions postulate that grandiosity is associated with exaggerated positive beliefs about the self, which are then accepted due to various cognitive and information processing biases and mood-congruent mental imagery (Smith et al., 2005).

In the aforementioned study by Smith et al., (2006), it was found that individuals with grandiose delusions of greater severity had less negative evaluations about themselves compared to individuals with paranoid delusions and auditory hallucinations. They also found that negative evaluative beliefs about others were independently associated with grandiose beliefs. The authors suggested that grandiosity is linked to the accessibility of positive self-beliefs (and possibly negative other-beliefs) and the resultant, and reinforcing, absence or lack of negative mood state (Freeman & Garety 2003; Smith et al., 2005). They further postulated that the combination of elevated mood and positive self-beliefs occurring in conjunction with negative evaluations of others can lead to the endorsement of a higher social position that sustains the positive self-beliefs and rejects contradictory social cues. This in turn could lead to the maintenance of grandiose delusions.

Similarly, in the previously discussed study by Fowler et al., (2006b), the authors found grandiose beliefs in a non-clinical sample were strongly, and exclusively predicted by positive self-evaluative beliefs, with neither negative-self nor negative-other scores contributing to grandiosity. They also found that there were similar levels of positive self-evaluative beliefs in both clinical and non-clinical samples presenting with grandiose beliefs. However, in line with the paranoid sample, clinical samples were more likely to have greater negative evaluative beliefs about others compared to the non-clinical samples. This finding supports the findings and ideas proposed by Smith et al., (2006).

As stated previously, the study by Garety et al., (2013) also examined the cognitive and emotional processes associated with grandiose delusions and found that there were significant differences compared to the processes associated with paranoid delusions. In the clinical sample, 97 participants presented with grandiose delusions. The results indicated that the likelihood of grandiose delusions occurring increased with higher positive evaluations of self and others and lower depression and anxiety.

Overall, there is an increasing amount of supporting evidence that there is a relationship between evaluative beliefs and delusions. Specifically, that paranoia is associated with more negative self- and other-evaluative beliefs, and grandiosity is associated with more positive- self-, and potentially negative other-, evaluative beliefs.

#### *1.4.4. Critical appraisal of the evidence for an association between delusions and evaluative beliefs*

Given the evidence in the literature, it is clear that evaluative beliefs have an important association with both paranoid and grandiose delusions. These factors have been incorporated into various models of delusions (Bentall, et al., 2001; Bentall, Kinderman

& Kaney, 1994; Chadwick, Birchwood & Trower, 1996; Freeman, et al., 2002; & Kinderman & Bentall, 1996), and are widely acknowledged as being pivotal in our understanding of the development and maintenance of delusions. However, as these studies implemented correlational designs it is not possible to establish a causal direction between delusions and evaluative beliefs. We do not fully understand if the presence of negative evaluations increases the likelihood of developing paranoia or if experiencing paranoia causes individuals to have more negative evaluative beliefs. Similarly, we cannot be clear if grandiose delusions lead to increases in positive self-evaluations or visa-versa. Many studies with clinical samples have also included individuals with general psychotic symptoms. This increases the likelihood of the interference of confounding factors which may be overlooked.

Another limitation is that research to date has predominantly focused on the content of an individual's evaluative-beliefs and its relationship with delusional beliefs. There is a lack of investigation however, into how individuals might access these beliefs. It may be that such internal structural factors play a role in the development, maintenance, or protection from delusional beliefs.

The study of how we organise information about our-selves, otherwise known as our self-structure, has received increasing amounts of attention in the field of social psychology over the past thirty years, along with a clinical focus on its impact on our accessibility of our self-concept (Linville, 1985,1987; Oyserman and Markus, 1990; Showers, 1992, 2000; Stopa, Brown, Luke & Hirsch, 2010; Thoits, 1991; Wurf & Markus, 1990). Research indicates that the way we organise self-knowledge plays a crucial role in how accessible specific aspects of self-content are (Higgins, Van Hook, & Dorfman, 1988; Segal, Hood, Shaw, & Higgins, 1988; Showers, 1992). Therefore,

two individuals with identical content may have varying experiences of self-evaluations depending on how this information is organized. One element of self-structure that has received attention is ‘evaluative self-organisation’.

## **1.5. Self-Structure**

### *1.5.1. Model of evaluative self-organisation*

Self-structure refers to the way in which an individual organises their self-knowledge. i.e. information about themselves. Models of the ‘self’ propose a multidimensional view, in which the ‘self’ consists of various self-aspects or self-defined roles (e.g. parent, friend, employee) that are activated when an individual thinks about themselves in terms of different traits, roles, mood states and domains (Linville, 1985; Markus & Wurf, 1987). The multifaceted nature of the self implies that we differentiate among our various self-aspects and can create multiple selves for multiple contexts (Cantor, Markus, Niedenthal, & Nurius, 1986; Kihlstrom & Cantor, 1984). There are various proposed elements to self-structure, one of which is evaluative self-organisation (Showers, 1992, 2000).

Evaluative self-organisation focuses on how individuals arrange positive and negative attributes about themselves across their various self-aspects (e.g. parent, sibling, friend, professional role). Each self-aspect has an associated set of attributes, which can either be positive (e.g. caring, funny and smart) or negative (e.g. greedy and dull). The Showers’ (1992, 2000) model of evaluative self-organisation proposes that there are two ways in which self-attributes can be organised: compartmentalised or integrated. Individuals with compartmentalised self-structures have either primarily positive or negative attributes in each of their self-aspects. On the other hand, individuals with integrated self-structures have a more balanced amount of both positive and negative

attributes in each self-aspect. For example, a compartmentalised individual may have a 'student' self-aspect category that contains only negative beliefs about the self (e.g., lazy, disorganised, worthless) while also having another self-aspect category, such as 'friend', that contains only positive beliefs about the self (e.g. outgoing, trustworthy, fun). However, if that individual had a more integrated self-structure they would have a combination of both positive and negative attributes in their 'student' self-aspect (e.g. lazy, disorganised, intelligent,) and 'friend' self-aspect (e.g. trustworthy, self-conscious, fun). In the literature, compartmentalisation is measured using a phi ( $\phi$ ) coefficient (or Cramer's V; Cramer, 1974; Everitt, 1977). Phi is a normalised chi-square statistic in which the expected frequencies represent chance values for the number of positive and negative attributes to appear in different self-aspects. Phi can range from 0 (perfectly random self-structure which indicates that positive and negative attributes are evenly distributed across self-aspects) to 1 (perfectly compartmentalized sort which indicates self-aspects containing solely positive or negative attributes).

As well as how an individual arranges or structures their attributes, evaluative self-organisation considers the impact of the overall positivity or negativity of a person's self-concept. This can be measured in two ways. Firstly, through differential importance (DI) which is the relative importance given to positive and negative self-aspects (Ditzfeld & Showers, 2014). Differential importance is calculated by looking at the correlation between the valence of an individual's self-aspects (how positively or negatively they rate a self-aspect) and the importance they give to that self-aspect. Differential importance scores can range from -1 (negative self-aspects are given more importance than positive ones) to +1 (positive self-aspects are given more importance than negative ones). Secondly, it can be measured by the proportion of negative self-

beliefs (Neg) within the self-concept. Both of these variables can be used to determine the overall valance of an individual's self-organisation. If an individual gives more importance to their positive attributes compared to their negative attributes (high DI) or has a greater number of positive attributes, they are said to have a positively-compartmentalised or positively-integrated self-organisation. On the other hand, if an individual gives more importance to their negative attributes compared to their positive ones (low DI) or has a greater number of negative attributes, they are said to have a negatively compartmentalised or negatively-integrated self-organisation.

As well as examining the individual indices of evaluative self-structure, it is also recommended to examine interactions between them (i.e. Phi x DI and Phi x Neg) (Ditzfeld & Showers, 2013). The interactions between the indices highlight one of the fundamental differences in the model of evaluative self-organisation compared to other models of self-structure (e.g., self-complexity), in that it recognises the need to consider the underlying affective qualities of people's responses to self-aspects in various contexts, and the relationship they have with self-structure. The model of evaluative self-organisation does not solely focus on the fact that individuals have negative attributes, but also on what they do with those negative attributes. It has been postulated that compartmentalised individuals may in fact be trying to avoid those negative attributes, while integrated individuals may have been able to accept them (Thomas, Ditzfeld, & Showers, 2013). Examining the interactions between these variables is also important as, in the literature differential importance and the proportion of negative attributes have been shown to be greater moderators of compartmentalisation in different contexts (e.g., Showers & Zeiger-Hill, 2004; Thomas, et al., 2013).

Depending on whether positively valenced or negatively valenced self-aspects are salient, individuals will primarily access positive or negative self-attributes. Compartmentalisation can therefore lead to an overly positive self-concept (e.g., high self-esteem, positive self-evaluations, and positive mood) or negative self-concept (e.g., low self-esteem, negative self-evaluations and negative mood) and can leave individuals emotionally vulnerable (Zeigler-Hill & Showers, 2007). Individuals with a compartmentalised self-organisation may have little positive information to buffer negative self-aspects that are activated when faced with a stressor, resulting in the individual being flooded with negative information. Integrated individuals have a greater combination of both positive and negative self-attributes within each self-aspect. Therefore, when negative content is activated within a particular self-aspect, there is also positive content available which can buffer the impact of any negative thoughts or feelings. This buffering also applies when positive self-beliefs are activated, meaning that integrated individuals do not typically experience as extreme self-evaluations and moods as compartmentalised individuals (Ditzfeld, & Showers, 2014).

#### *1.5.2. Evidence supporting the model of Evaluative Self-Structure*

There have been a number of empirical studies which support the link between evaluative self-structure and mood and self-evaluations (Ditzfeld & Showers, 2014; Rhodewalt, Madrian, & Cheney, 1998; Showers, 1992; Showers, Abramson, & Hogan, 1998; Showers & Kling, 1996; Showers, Limke, & Zeigler-Hill, 2005). Showers (1992) was one of the first to explore this association, in a study which aimed to examine if categorical organization of self-knowledge had a greater influence on self-esteem and depression than the amount of positive or negative content. Showers (1992) used a self-descriptive card-sorting task, originally developed by Zajonc (1960) and adapted by

Linville (1985, 1987) to investigate self-complexity, to measure self-organisation in a sample of undergraduate students. In the task individuals were asked to identify different self-aspects of themselves and their lives and to sort cards containing either positive or negative attributes into groups which best described each of these different aspects. The results demonstrated the participants who were more depressed had more compartmentalised self-structures, used a greater proportion of negative attributes and evaluated their negative self-aspects as more important compared to those who were less depressed. The authors also reported a significant interaction effect between compartmentalisation and differential importance ( $\Phi \times DI$ ), indicating that compartmentalised self-structures were associated with higher self-esteem and lower levels of depression in individuals with high differential importance, and lower self-esteem and higher levels of depression in those with low differential importance. However, when an individual gave more importance to their negative self-aspects and had a more integrated self-structure, they reported more positive self-esteem and mood. These early findings supported the association between evaluative self-structure and self-evaluations and affect and are suggestive that structure plays an important role in accessibility and impact of self-content.

Showers & Kling, (1996) replicated the findings presented by Showers (1992) by demonstrating a significant interaction effect between compartmentalisation and differential importance. The authors found that compartmentalised participants with high differential importance reported having more positive mood and those with low differential importance reported having lower mood. The authors also found that positive-compartmentalisation was linked with quicker recovery from low mood if the individual was able to reflect solely on positive self-aspects. However, they recovered



slower if negative self-aspects remained activated. This study highlights that, although positively-compartmentalised individuals generally report high self-esteem and positive mood, the vulnerability for extreme negative states still remains if negative self-aspects are activated.

These findings were built upon in a study by Zeigler-Hill and Showers (2007) which demonstrated that individuals with more compartmentalised self-organisation were more reactive to both positive and negative events in their life, as recorded by daily diary entries. The authors also included an experimental component in which participants completed a computerised social rejection task which indicated that compartmentalization was also associated with greater sensitivity to experiences of rejection compared to integrated self-structures. These findings supported the view that integrated self-structure can result in greater stability of self-evaluations.

More recently, Showers, Ditzfeld & Zeigler-Hill (2015) conducted three studies, in which college students completed the same self-descriptive card sort task as the Showers (1992) study to measure self-structure, and a measure of either self-worth, perceived authenticity of self-aspects, or self-esteem accessibility. The authors found that individuals with positively compartmentalised self-structures only reported high self-esteem when positively structured self-concepts were activated. This supported the idea that positively compartmentalized individuals have a vulnerability to fragile self-esteem. They also found that individuals with positively integrative self-structures did not have as many contingencies on their self-esteem and in turn were more resilient to self-threat. Finally, they reported that individuals with important negative self-aspects, both compartmentalized and integrated, had greater fluctuations in their self-esteem. The authors suggested that these findings are indicative that compartmentalised

individuals, both positively and negatively, are more likely to have poorer 'self-clarity' and in turn, difficulties in how they know the self. Integrated individuals however, are more likely to have resolved their mix of positive and negative self-attributes, leading to more authentic multiple selves and more stable, accessible, and resilient feelings of self-worth.

While self-organisation was previously believed to be stable, in more recent years a more dynamic view has been adopted (Showers, 2002). This has led to the consideration of the role of self-structure in psychological interventions. Showers, Limke, & Zeigler-Hill (2005) argued that psychological interventions may inadvertently restructure an individual's self-organisation, helping them move from a compartmentalised self-structure to a more integrated one. This allows the individual to develop a more realistic view of the self and mitigate the impact of negative self-aspects activated by external stressors, and in turn reduced extreme reactions. This argument ties in with Brewin's (2006) retrieval competition hypothesis, in which he states that cognitive therapy does not necessarily intend on changing negative self-beliefs but on making positive self-beliefs more accessible to the individual. Due to the potential implications for treatment, it is important to continue to develop our understanding of the impact of self-structure on emotional vulnerability, and in turn the potential development of psychological distress. In spite of the possible intervention implications, there has been no research to date that has examined the direct impact of evidence based interventions on compartmentalisation.

As well as examining evaluative self-organisation in relation to depression and self-esteem, there have been recent studies which examine the relationship between compartmentalisation and social anxiety (Stopa, et al., 2010) and bipolar disorder

(Power, de Jong & Lloyd, 2002, Taylor, Morley, & Barton, 2007). Taylor et al., (2007) demonstrated that remitted bipolar disorder and recovered depressed groups both had more compartmentalised self-organisations compared to healthy controls. The results also indicated that the proportion of self-aspects, which included either purely positive or negative attributes, was also found to be greater in the remitted bipolar group than either the recovered depressed or healthy controls, indicating that affective valence may be an important feature of bipolar disorder. The authors concluded that increased compartmentalisation may be a general feature of mood disorders. In the Stopa et al (2010) study, social anxiety was found to be associated with increased compartmentalisation, a higher proportion of negative attributes and the interaction between the two variables. This would suggest that individuals with more compartmentalised self-structures and higher proportion of negative attributes were more socially anxious. It was also reported that that social anxiety was negatively associated with differential importance, indicating that the more socially anxious an individual was, the less importance they gave to their positive self-aspects.

These studies have provided promising evidence to support the evaluative self-organisation model. However, many of the studies reported are cross-sectional in nature which do not allow for causality to be inferred. There is a need to further explore whether evaluative organisation has a causal impact on self-esteem and mood. This could be achieved by conducting longitudinal and experimental design studies. Also, the research to date has predominantly focussed on self-esteem and mood, with limited research into the impact of evaluative self-organisation on other clinical constructs. There is reason to believe that evaluative self-organisation would be relevant to other

clinical areas, one of which is the presence of delusional beliefs. The rationale will be outlined in the following section, with reference to gaps in the current literature

## **1.6. The Current Study**

### *1.6.1. Identifying current gaps in the literature and related hypothesis*

The literature review has highlighted a number of gaps in the literature that the current study aims to fill. Firstly, the relationship between self-structure and delusions is yet to be explored. There is increasing support for the theory that it is not necessarily the content of one's self-evaluations but how accessible they are to an individual through their self-structure, that makes them more emotionally vulnerable, leading to extreme emotional responses and more positive or negative evaluations (Ditzfeld & Showers, 2014; Showers, 1992, 2000, 2002; Showers and Kling, 1996, Thomas, et al., 2013). This has been found to be of relevance in various clinical presentations such as depression, social anxiety and bipolar disorder (e.g. Taylor, et al., 2007; Showers, 1992, 2002; Stopa et al, 2010). There is also a plethora of literature that highlights the association between evaluative beliefs and the development and maintenance of delusions (e.g. Chadwick and Trower,1997; Fowler et al., 2006b; Garety et al., 2011; Smith et al., 2006; MacKinnon, Newman-Taylor & Stopa, 2011). Therefore, it is of interest to determine if there is a relationship between these factors, more specifically, if a compartmentalised self-structure is associated with delusional beliefs. This is important in order to help further our understanding of factors that impact on non-clinical delusional beliefs. The rationale for this is that individuals with a more compartmentalised self-structure will generally have more polarized views of the self in different settings (Ditzfeld and Showers, 2014). Therefore, when they are faced with

a life stressor, negative self-aspects may be activated with little positive information to buffer them. This vulnerability can lead to negative views about the self and others.

Secondly, while there is a well-established relationship between delusions and evaluative beliefs in the literature, there is still uncertainty about what makes people more likely to endorse different types of beliefs. Examining self-structure could help us understand more about the relationship between self-content and delusions.

As well as examining self-structure overall (i.e. compartmentalisation vs integration) it is also important to examine the emotional valence that individuals attach to their self-aspects, which can be classified as being either positive or negative. Individuals with negative-compartmentalisation have a greater differential importance towards negative self-aspects and/or a greater proportion of negative attributes, which in-turn leads to negative evaluations being more salient (Ditzfeld & Showers, 2013). Negative evaluative beliefs have also been identified as a key component in the development and maintenance of paranoia (Fowler, 2006a). It is therefore hypothesised negatively-compartmentalised self-structured will be positively correlated with paranoid delusions. On the contrary, those who are positively-compartmentalised have a greater differential importance toward positive self-aspects and/or a lower proportion of negative attributes, which in turns gives them an overly positive self-view. As overly positive self-evaluations have been identified as a key element in the development of grandiose beliefs (Fowler, Garety, & Kuipers, 1995), it is hypothesised that positively-compartmentalised self-structures will be positively correlated with grandiose delusions.

Finally, there is no literature on whether self-content or self-structure more strongly predicts the presence of delusional beliefs. The evidence already suggests that there is

strong association between self-content and delusions, with coefficients ranging from .36 - .84 (e.g. Fowler, et al, 2006b; Kesting and Lincoln, 2013; Smith et al, 2006). However, if a significant relationship between self-structure and delusions is also found, it is possible that self-structure may be just as important, if not more so, in the endorsement of delusional beliefs. This could have important implications for psychological interventions for delusions, particularly as self-beliefs may be more difficult to change due to the level of conviction associated with them (Showers, Limke, Zeigler-Hill, 2005). Therefore, better outcomes may be seen by implicitly changing compartmentalised self-structures to a more integrated one. However, we first need to explore the relationship between self-structure and delusions to understand the impact of this change.

#### *1.6.2. Aim of the current study*

The current study will examine paranoid and grandiose beliefs, evaluative beliefs and self-structure in a non-clinical sample using both self-report measures and a self-descriptive card-sort task. The study will test the following hypotheses and research question:

1. Compartmentalisation (regardless of positive or negative valence of self-aspects) will be associated with both paranoid and grandiose delusional beliefs.
2. Negative-compartmentalisation will be positively correlated with paranoid beliefs and positive-compartmentalisation will be positively correlated with grandiose beliefs.
3. To what extent do self-content and self-structure predict paranoia and grandiosity?

## **2. Method**

### **2.1 Overview**

The method section will consist of an outline of the study design and power analysis, characteristics of the participant sample, justification for the sample size and the recruitment process. An overview of the questionnaires used and the Card Sort Task will then be provided. A detailed account of the procedure will follow this. The chapter will conclude with a discussion of ethical issues.

### **2.2 Design**

A cross-sectional, correlational design was used to explore the relationships between self-structure, self-content and delusional beliefs – both paranoid and grandiose – in a non-clinical population.

### **2.3 Power Analysis**

A Power analysis was conducted to determine the number of participants required for the current study. The study was powered for the primary hypothesis (compartmentalisation will be correlated with delusional beliefs). Data from the Showers (1992) study was used to determine the predicted effect size. This paper was selected as it used a similar methodology to explore the relationship between self-structure and self-content, with a focus on low mood in a non-clinical student sample. Correlations between non-clinical depression and compartmentalisation were reported as  $r = 0.23$ , indicating a small to medium effect size (Cohen, 1992). Therefore, for the current study an effect size between small (.10) and medium (.30) at .20 was chosen to minimize the chance of a Type II error occurring (i.e. missing an effect that exists). Therefore, with power set to 0.8 and  $\alpha$  at 0.05 (Cohen, 1992), with a small to medium effect size, a sample size of 85 participants was required for a correlational analysis.

## **2.4 Participants**

A non-clinical sample (N = 86) between the ages of 18 and 65 was recruited from the Royal Holloway student population. There were no cases with incomplete data. The sample consisted of 71 females (84.5%) and 13 males (15.5%) between the ages of 18 and 47 (Mean age 19.49; standard deviation (SD) = 3.42). Their ethnicity was made up of; 41.7% white British, 16.7% other white background, 28.6% Asian, 3.6% African, 3.6% mixed white British/Other, 2.4% mixed white non-British and other, 3.6% any other mixed background.

## **2.5 Recruitment**

The study used convenience sampling methods (Barker et al., 2003). Undergraduate students from Royal Holloway, University of London were recruited using an online experiment portal designed to allow undergraduates to participate in a range of research projects in return for course credits, if eligible, or entry into a prize draw for the chance to win one of two £50 Amazon vouchers. The study was also advertised using the Royal Holloway Intranet 'notice board' and through posters and flyers distributed on campus, opening up recruitment to postgraduate students. Participants who were recruited through the notice board and posters were also entered into the prize draw. There were no participation restrictions.

After taking part in the study, those recruited from the psychology participant pool were automatically granted two course credits. Those recruited from the general participant pool and through advertising on campus provided their email addresses and were entered into the prize draw. The draw was conducted and the winner contacted once data collection was completed.



## 2.6 Measures

### 2.6.1 Sociodemographic Information

Basic socio-demographic information was collected for each participant. This included age, gender, ethnicity, religious orientation. To ensure the group was non-clinical, participants were also asked if they had previously had contact with mental health services. A copy of the sociodemographic information requested can be found in Appendix 1.

### 2.6.2 Paranoia Scale (Fenigstein & Vabable, 1992)

The Paranoia Scale (PS; Feninstein & Vabable, 1992) was developed to measure self-reported paranoia in non-clinical samples. The PS is one of the most widely used dimensional measure of paranoia (Freeman, et al., 2005b). It consists of 20 items, each rated on a five-point scale (1 = not at all applicable, 5 = extremely applicable). Scores can range from 20-100, with the higher scores signifying greater paranoid ideation. The scale has demonstrated good reliability and validity. The authors reported an overall alpha of .84 implying good internal consistency and a test-retest correlation of .70. They also found it to have good convergent and discriminate validity as the measure was negatively correlated with both interpersonal trust ( $r = -.30$ ) and trust in close relationships ( $r = -.32$ ) and positively correlated with anger ( $r = .45$ ), a belief in the control of powerful others ( $r = .34$ ) and a need for personal control ( $r = .29$ ). Its construct validity has been further demonstrated by responses subsequently predicting the characteristically paranoid sense of being observed through experimental manipulation. There are also good norms reported for student samples, with a mean score of 42.7 (SD = 10.2) within a range of 20-100 (Fenigstein & Vabable, 1992). A copy of the PS can be found in Appendix 2.

### *2.6.3 The Depression Anxiety Stress Scales 21 (Lovibond & Lovibond's, 1995)*

The depression sub-scale of the Depression Anxiety Stress Scale 21 (DASS-21; Lovibond & Lovibond's, 1995) was used in this study. The depression sub-scale consists of 7 self-report items with a 0–3 scale (0 = did not apply to me at all, 3 = applied to me very much) that examine dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia, and inertia. Scores can range from 0-21, with higher scores on the scale indicative of greater low mood. The DASS-21 depression subscale has been shown to have good internal consistency ( $\alpha = .94$ ) and good concurrent validity when compared with other validated measures of depression such as the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996), ( $r = .79$ ) (Antony, Bieling, Cox, Enns & Swinson, 1998). It has also been shown to have good reliability ( $\alpha = .82$ ) (Henry & Crawford, 2005). The DASS-21 depression subscale has also been shown to have good reliability ( $\alpha = .91$ ) and validity ( $r = .73$ ) in non-clinical samples (Sinclair, 2012). A copy of the DASS-21 depression scale can be found in Appendix 3.

### *2.6.4. The Brief Core Schema Scales (Fowler, Freeman, Smith, Kuipers, Bebbington, et al. 2006)*

The Brief Core Schema Scales (BCSS; Fowler, et al., 2006b) is a self-report measure which aims to examine schemata related to the self and others in psychosis. The BCSS consists of 24 items which are equally divided into four scales; negative beliefs about the self, positive beliefs about the self, negative beliefs about others and positive beliefs about others. Items are assessed on a five-point rating scale (0-4) and scores for each of the scales can range from 0-24, with higher scores indicating a greater level of belief. The BCSS has been shown to have good internal consistency ( $\alpha = .78 - .8$ ) and stability

( $r = .7 - .84$ ), with non-clinical samples across the four scales (Fowler, et al., 2006b). It has also been shown to have good construct and concurrent validity when compared to other validated schema measures such as the Rosenberg Self-Esteem Schedule (Rosenberg, 1965) ( $\alpha = .23-.59$ ) and the Young's Schema Questionnaire subscales (Young & Brown, 1994) ( $\alpha = .20-.53$ ) (Fowler et al., 2006b). A copy of the BCSS can be found in Appendix 4.

#### 2.6.5 *The Peters et al. Delusions Inventory* (Peters et al. 1999)

The Peters et al. Delusions Inventory (PDI; Peters et al. 1999) is a self-report measure consisting of 21 items which aims to measure delusional ideation in the general population. Each item contains a psychotic state as a reference point (e.g. Do you ever feel as if someone is deliberately trying to harm you?"), which is then rated on a five-point Likert-scale (0-4). The PDI has been shown to have good internal consistency ( $\alpha = 0.82$ ) and test-retest reliability ( $r = 0.70 - 0.81$ ) (Peters, et al., 1999). It has also been found to have good convergent validity when compared to other measures of delusion ideation such as the Delusions-Symptoms-State Inventory (DSSI) ( $r = 0.61$ ,  $n = 327$ ,  $p < 0.001$ ) and good criterion validity ( $\alpha = 0.90$ ) in a clinical sample.

In the PDI, there are two items which assess grandiosity: (1) Do you ever feel as if you are or are destined to be someone very important? and (2) Do you ever feel that you are a very special or unusual person? Each item is rated on a scale from 0 (never feel it) to 5 (feel it all the time). A total score from the two items was used to assess grandiosity, as has been done in previous studies (Fowler et al., 2006b). Scores can range from 0-10, with higher scores indicating higher levels of grandiosity. Verdoux et al. (1998a) and Lopez-Ilundain et al. (2006), reported that the two-items assessing grandiosity had a Cronbach's alpha of 0.68. In the current study, the Cronbach's alpha was 0.67. While

this falls just slightly below the 0.7 mark indicating satisfactory internal reliability, this was still deemed as the most appropriate measure to use as other general measures of grandiosity, such as the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988) and the Narcissistic Grandiosity Scale (NGS; Rosenthal, Hooley, & Steshenko, 2011) are confounded with narcissistic personality traits.

#### *2.6.6 Self-concept card sorting task (Linville, 1987; Showers, 1992;)*

##### Overview of task

The Self-concept card sorting task aims to assess evaluative self-organisation, that is how individuals structure positive and negative information about themselves amongst various meaningful self-aspects (Linville, 1985, 1987; Showers, 1992). In the task, participants are given two recording sheets and a randomly ordered deck of index cards, each containing a potentially self-descriptive attribute (e.g. irritable, confident, lovable, etc.) (Appendix 5). The cards contain 20 positive attributes (e.g. successful, giving, happy) and 20 negative attributes (e.g. lazy, tense, unworthy). The attributes used in the task are the same as those used in the Showers (1992) paper as they had been validated with a student population. The instructions used for this task were those described by Showers, et al., (2015). In the task participants were instructed to identify different self-aspects of themselves and their lives and to sort the attribute cards into groups which described each of these different aspects. Participants could form as many self-aspect groups as they wished, placing as many attributes in each as desired. Participants were not required to use all the attributes and could reuse attributes across different self-aspect groups. Participants recorded their responses on the recording sheets by

noting down the relevant attributes underneath the name of the self-aspect. Table 2.1 demonstrates sample card sorts from two participants in this study.

Table 2.1: Example of Compartmentalised and Integrated Card Sort Task from Sample

<i>Panel A: Compartmentalised Card Sort Task</i>						
Sister	Student	Daughter	Friend	Carer	Self-Conscious Side	Citizen
+Giving	+Successful	+Giving	+Giving	+Giving	-Weary	+Successful
+Confident	+Capable	+Comfortable	+Comfortable	+Capable	-Uncomfortable	+Giving
+Communicative	+Independent	+Needed	+Happy	+Needed	-Insecure	+Independent
+Mature	+Organised	+Lovable	+Friendly	+Happy	-Inferior	+Needed
+Lovable	+Intelligent	+Happy			-Irritable	-Weary
+Fun & Entertaining	+Interested	+Friendly			-Indecisive	+Friendly
+Happy	+Hardworking				-Disorganised	+Optimistic
Friendly					-Tense	

*Panel B: Integrated Card Sort Task*

Student	Daughter	Sister	Friend
-Insecure	+Happy	+Intelligent	-Insecure
-Inferior	-Indecisive	+Happy	-Inferior
+Intelligent	+Lovable	-Indecisive	+Happy
+Happy	+Friendly	+Lovable	-Indecisive
-Indecisive		+Friendly	+Lovable
+Friendly			+Friendly
+Interested			+Interested
-Tense			

Note. Negative attributes are identified by a minus sign. Panel A: compartmentalization = .94, differential importance = .87, and proportion of negative attributes = .204. Panel B: compartmentalization = .17, differential importance = .71, and proportion of negative attributes = .34.

After completing the self-concept card sorting task, participants were required to provide 3 supplementary ratings regarding the positivity, negativity, and importance of each self-aspect produced during the task. The three questions were; 1) How important is this aspect of yourself for the way you think about yourself? 2) How positive is this aspect of yourself? 3) How negative is this aspect of yourself?.

### Scoring the task

The self-concept card sorting task and the supplementary ratings are used to calculate three measures of self-structure; evaluative organization, differential importance, and the proportion of negative attributes.

#### *Evaluative Organization:*

Depending on how the cards are sorted during the card sorting task, participants can be found to have a compartmentalised or integrated evaluative organization. The same methodology as the Showers (1992) study was implemented to determine evaluative organization. A *phi* ( $\phi$ ) coefficient (or Cramer's V; [Cramer, 1974](#); [Everitt, 1977](#)) based on a chi-square statistic is used to measure evaluative organization. Phi is an indication of the propensity for positive and negative attributes to appear in different self-aspects. A chi-square statistic, which is a measure of deviation from a random sort, is calculated for each participant using the expected frequencies, which represent chance values for the number of positive and negative attributes in each self-aspect, and the observed frequencies, which are ascertained from the actual proportions in the card sort. The Phi ( $\Phi$ ) coefficient is then normalised by dividing it by the total number of attributes included in the card sort ( $N$ ):



$$\phi = \sqrt{\frac{\chi^2}{N}}$$

Phi can range from 0 (perfectly random sort which indicates that positive and negative attributes are evenly distributed across self-aspects) to 1 (perfectly compartmentalized sort which indicates self-aspects containing solely positive or negative attributes). Phi scores can only be calculated for participants who have at least two or more negative attributes in their card sort (Showers & Kevlyn, 1999).

*Differential Importance (DI):*

As part of the task, differential importance (DI) is also measured. Differential importance is the relative importance given to each of the positive and negative self-aspects. Following the method used by Showers et al (2015), the three aforementioned questions were used to measure differential importance; one related to importance, one related to positivity and one related to negativity. For each question, scores are recorded on a Likert scale ranging from 0-7, with higher scores relatively indicating higher levels of importance, positivity and negativity. Differential importance is calculated using a within-subject correlation between participant's valence rating of their self-aspects (i.e., positivity ratings minus negativity ratings) and their importance ratings of their self-aspects. Differential importance scores can range from -1 (negative self-aspects are given more importance than positive ones, i.e. a more negatively compartmentalised/integrated self-structure) to +1 (positive self-aspects are given more importance than negative ones, i.e. a more positively compartmentalised/integrated self-structure) (Showers, 1992).

*The proportion of negative attributes:*

The proportion of negative attributes is calculated by dividing the number of negative attributes by the total number of attributes given by a participant in the card sort task. This produces scores that range from 0 to 1, with 0 indicating that there are no negative attributes within a card sort and 1 indicating that the card sort consists of only negative attributes.

## **2.7. Pilot**

An initial pilot session was conducted to ensure the test materials and procedure were clear prior to commencing data collection. The pilot group sample consisted of six female RHUL undergraduate students between the ages of 18 and 47 (Mean age=23; SD = 11.46). Participants completed the study as outlined below (see procedure). Upon completion, they were asked to provide feedback on the process. Specifically, participants were asked 1) Was anything unclear about the process, 2) Was there anything they would recommend be done differently in the study, 3) Was there anything they enjoyed about the study, 4) Was there anything they did not enjoy about the study. The overall feedback was that the instructions and materials were clear and straightforward. Some participants stated that the initial written instructions for the card sort task were not fully clear but that the verbal instructions which followed clarified any confusion. The pilot participants also stated that they would not change any aspect of the study. Due to the feedback from the pilot, no changes were made to the procedure of the study for subsequent testing. This also allowed for the six pilot participants to be included in the data set.

## **2.8 Procedure**

All participants took part in the study within the psychology department at Royal Holloway. Participants were tested in both group (n= 64) and individual (n= 22) settings. In both instances, there was no interaction between participants. Participants were welcomed upon arrival and invited into the study room in which they were asked to take a seat in front of an allocated questionnaire pack.

Firstly, participants were required to read an information sheet on the study (See Appendix 6) and asked to sign a consent form for participation (Appendix 7) which were located at the top of the pack. Participants initialled and signed the consent form if they agreed to the following four statements; 1) I confirm that I have read the information sheet for the above study and had the opportunity to consider the information and ask questions, 2) I understand that my participation is voluntary and that I am free to withdraw at any time, 3) I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers, 4) I agree to take part in the above study. If they did not agree with all aspects, they were unable to proceed with the study. No participants chose to withdraw at this point in time. Participants were then asked to complete the remaining questionnaires in the pack consisting of the sociodemographic information sheet and the four self-report measures in the following order; the PS, the PDI, the DASS-21 depression sub-scale, and the BCSS. Participants were asked to inform the researcher when they had completed the measures so that they could proceed on to the second part of the study.

Following the self-report measures, participants were given a detailed instruction sheet on the self-concept card sort task (Appendix 8). The researcher also verbally explained

the instructions and went through the task materials to show participants how the task was to be completed. Both in individual and group testing, participants were asked to clarify their understanding of a self-aspect and provide an example to ensure they had understood the task correctly. Once all participants indicated that they had a clear understanding of a self-aspect and the procedure, they were then given the materials to complete the card-sort task (i.e. the trait cards and the recording sheet). Participants were also given a sheet of paper containing the three differential importance questions (Appendix 9). They were asked to answer all three questions in relation to each self-aspect that they had recorded and to document their responses on the record form below each self-aspect column. Following the procedure used by Showers (1992), participants were given 25 minutes to complete the card sort task and were encouraged to use all the allocated time. However, if they could no longer think of any self-aspects that were meaningful to them they could end the task earlier. All questionnaires were reviewed prior to the participant leaving to ensure they had been fully completed. Participants were then given the opportunity to ask any further questions related to the study and were thanked for taking part. The entire testing process took approximately 40 minutes to complete.

## **2.9 Ethical Considerations**

Prior to collecting data, the project was submitted and approved through the self-certification process of the Royal Holloway University Ethics Committee on the 4th March 2016 (University Approval Code: Full-Review-102-2016-03-30-17-43-PBVA071). The self-certification approval document can be seen in Appendix 10.

The British Psychological Society (BPS) has a number of published guidelines that outline ethical considerations when conducting research. One such set of guidelines

which was consulted during the study was The BPS's 'Code of Human Research Ethics' (BPS, 2014) which is pertinent to all research including humans. It was important to do so as there was a possibility that participants could have experienced increased distress as a result of the study due to the sensitive nature of some of the variables being measured (e.g. negative self-aspects, low mood, delusions). Issues of informed consent, debrief and withdrawal were adhered to in this study. More specifically, participants were truly as 'informed' as possible when obtaining consent by asking them to provide confirmation through signature that they had read the information sheet prior to taking part in the study. Participants were also asked to acknowledge their right to withdraw from the study at any point. In terms of debriefing, participants were given the opportunity to ask any questions related to the study upon completion, as well as the option to have the study results and findings sent to them. They were also provided with a fully comprehensive debrief page, which included contact details for the Samaritans and advice regarding accessing further psychological support (for RHUL student) if needed. It also contained contact details for both my supervisor and myself should participant have any additional questions or comments. No participants voiced any concerns or feelings of distress following the study.

## **3. Results**

### **3.1 Overview**

This chapter firstly outlines the preliminary data screening process that took place to prepare the data for statistical analysis. Details are provided regarding the examination of the normality of the distribution of the data and any transformations that were undertaken for non-normal distributions, as well as for the steps taken to account for outliers and missing data. The sociodemographic information of the statistical sample and descriptive statistics for the measures are discussed. Finally, the three main hypotheses and research questions are presented along with the main statistical analysis used for each one.

### **3.2 Preliminary Data Screening**

#### *3.2.1. Data inclusion*

The data for the current study were analysed using the Statistical Package for Social Sciences version 21.0 (SPSS; version 21.0). Findings are reported to two decimal places with the exception of percentages that are reported to one decimal place. For data interpretation, exact *p*-values are given, unless otherwise stated. The threshold for significance was set at  $\alpha = 0.05$ . All hypothesis testing was one-tailed given the prediction of a direction of effect for each hypothesis.

Initial screening of the raw data set revealed that there were no missing data on any of the questionnaire measures. On examining the card sort task data however, eight participants had to be removed from the data set as they did not meet the criteria for a valid index of compartmentalisation ( $\Phi$ ) to be calculated (i.e. two or more negative attributes in their card sort; Showers & Kevlyn, 1999), reducing the sample size to seventy-eight.

As part of the socio demographic questionnaire, participants had been asked if they had previously been in contact with mental health services. This was to ensure that non-clinical delusional beliefs were being examined in the current study. Independent t-tests were carried out post-hoc to determine whether responses to the relevant variables (paranoia and grandiosity) differed between those participants who reported previous contact with mental health services (n=21) and those who had not (n=57). The intention was that, if there was a significant difference between the two groups, the group that had reported previous contact with mental health services would be removed from the sample.

A Levene's test was conducted to determine if the assumption of homogeneity of variance was met for both delusional belief variables. For the PS scores, separate variance estimates were used as the assumption of homogeneity was not met ( $F = 4.09$ ,  $p = .05$ ). For the PDI scores, the assumption of homogeneity was met ( $F = .30$ ,  $p = .58$ ). The t-tests demonstrated that there were no differences between these two groups on the relevant delusional beliefs measures; PS ( $t(28) = 1.61$ ,  $p = .12$ ), PDI ( $t(76) = .02$ ,  $p = .99$ ). As there was no significant differences between the two groups on measures of delusional beliefs, participants who had reported previous contact with mental health services were still considered to demonstrate non-clinical levels of delusional beliefs and were included in the final sample.

### *3.2.2. Distribution of variables*

All continuous variable data were checked to determine if all the assumptions for parametric analyses were met. Normality of variance for the PS, PDI, DASS-21, and the four subscales of BCCS was initially assessed by examining their histograms with

normal curves. Following this, each of the variables were formally examined by calculating skewness and kurtosis z-scores using the following formulae:

$$Z_{\text{skewness}} = \frac{S - 0}{SE_{\text{skewness}}} \qquad Z_{\text{kurtosis}} = \frac{\sqrt{K} - 0}{SE_{\text{kurtosis}}}$$

A distribution was considered normal if a z-score for both skewness and kurtosis was less than 3.29 ( $p < .001$ ) (Field, 2013). The PS and positive-self, negative-other and positive-other subs-scales of the BCSS all had acceptable levels of skew and kurtosis in line with this criterion. However, histograms alongside skew and kurtosis z-scores suggested that several of the variables were skewed. The PDI ( $Z = 4.53, p < .001$ ), depression sub-scale of the DASS-21 ( $Z = 3.54, p < .001$ ), and the negative-self sub-scale of the BCSS ( $Z = 6.24 < .001$ ) were all found to be positively skewed. Each of these variables were transformed using a square root transformation. This resulted in all three variables having acceptable levels of skew and kurtosis (see Table 3.1)

Table 3.1: *Skew Data for Transformed Variables where Transformations were Needed*

<b>Variable</b>	<b>Skew</b>	<b>Kurtosis</b>
<b>PDI</b>	.87 ( $p < .001$ )	-.82 ( $p < .001$ )
<b>DASS-21</b>	-.68 ( $p < .001$ )	1.27 ( $p < .001$ )
<b>Negative-self (BCSS)</b>	.90 ( $p < .001$ )	.18 ( $p < .001$ )



### *3.2.3. Outliers*

For the current study, univariate outliers were classified as data points that were three standard deviations or more away from the variable mean (Field, 2013). Outliers were initially identified by examining box-plots and then further examined by exploring the means and standard deviations. The authenticity of each outlier as a genuine extreme value was firstly assessed through checking that they were not the result of measurement errors/data recording errors/data entry errors (Field, 2013). Only two participant's data on the negative-self subscale of the BCSS were found to be outliers. However, these data points were no longer outlying following the transformation of the negative-self variable, and therefore this data were retained within the analyses.

## **3.3 Descriptive Statistics**

### *3.3.1 Socio-demographic Characteristics of the Sample*

Table 3.2 shows a breakdown of the descriptive statistics for socio-demographic characteristics collected for the whole sample.

Table 3.2: Socio-demographic characteristics of the sample

<b>Sociodemographic</b>	Total Sample	N (%)
<b>Variable</b>	(N = 78)	
<b>Gender</b>	Male	13 (16.7%)
	Female	65 (83.3%)
<b>Age</b>	Mean (SD)	19.58 (3.54)
	Range	18-47
<b>Ethnicity</b>	White British	33 (42.3%)
	Other white background	13 (16.7%)
	Asian background	23 (29.5%)
	African background	2 (2.6%)
	Mixed White British/Other	2 (2.6%)
	Mixed White Non-British and Other	2 (2.6%)
	Any Other Mixed Background	3 (3.8%)
<b>Religion</b>	Christian	22 (28.2%)
	Buddisht	1 (1.3%)
	Hindu	3 (3.8%)
	Sikh	3 (3.8%)
	Muslim	4 (5.1%)
	Other	1 (1.3%)
	None	42 (53.8%)
<b>Contact with Mental Health Services</b>	Yes	21 (26.9%)
	No	57 (73.1%)

### 3.3.2 Descriptive Statistics for the Questionnaire Measures

#### Prevalence of delusional beliefs

Table 3.3. shows the descriptive statistics for the two delusional belief measures used in the current study. The current sample produced scores on the PS in line with the norms reported by the authors of the measure (Mean = 42.7, SD = 10.2; Fenigstein & Vanable, 1992). The sample reported relatively low PDI scores, given the range of the measure (Mean = 2.23, SD = 2.62). The results demonstrated that, out of the entire sample (N = 78), 61% endorsed at least one of the two PDI items assessing grandiosity and 26.9% were found to endorse both items. When broken down further, 43.3% of the sample endorsed item 1 (Do you ever feel as if you are, or are destined to be someone very important?) and 54.9% of the sample endorsed item 2 (Do you ever feel that you are a very special or unusual person?).

#### Depression and Self-content variables

Table 3.3 also shows descriptive statistics for the four BCSS indices. Overall, as might be expected in a non-clinical population, the sample appeared to have more positive beliefs, reporting a greater amount of positive self- and other evaluative beliefs. The sample reported relatively low DASS-21 (depression subscale) scores, given the range of the measure.

Table 3.3.: Descriptive statistics for the self-report measures

	<b>PS</b>	<b>PDI</b>	<b>DASS-21</b>	<b>NS (BCSS)</b>	<b>PS (BCSS)</b>	<b>NO (BCSS)</b>	<b>PO (BCSS)</b>
	<b>N = 78</b>	<b>N = 78</b>	<b>N = 78</b>	<b>N = 78</b>	<b>N = 78</b>	<b>N = 78</b>	<b>N = 78</b>
<b>Mean</b>	40.34	2.23	5.9	4.1	9.64	5.10	10.71
<b>(SD)</b>	(11.9)	(2.62)	(4.29)	(4.2)	(4.59)	(4.49)	(4.55)
<b>Actual Range</b>	22-74	0-10	0-18	0-19	1-19	0-17	1-24
<b>Possible Range</b>	20-100	0-10	0-21	0-24	0-24	0-24	0-24

### 3.3.3. Descriptive Statistics of Card-Sort Task

Participants' data from the card-sort task was analysed using a software programme developed by Showers (1992). Tables 3.4 show sample card sorts from an individual with a compartmentalised structure and one with an integrated structure

Table 3.4: Example of Compartmentalised and Integrated Card Sort Task from Sample

<i>Panel A: Compartmentalised Card Sort Task</i>						
<i>Student</i>	<i>Team member</i>	<i>Girlfriend</i>	<i>Friend</i>	<i>Sister</i>	<i>Daughter</i>	<i>Employee</i>
<i>+Organised</i>	<i>-Lazy</i>	<i>+Comfortable</i>	<i>-Incompetent</i>	<i>-Disagreeing</i>	<i>-Hopeless</i>	<i>+Independent</i>
<i>+Comfortable</i>	<i>-Incompetent</i>	<i>+Giving</i>	<i>-Hopeless</i>	<i>-Weary</i>	<i>-Uncomfortable</i>	<i>+Needed</i>
<i>+Interested</i>	<i>-Insecure</i>	<i>+Needed</i>	<i>-Insecure</i>	<i>-Uncomfortable</i>	<i>-Unloved</i>	<i>+Capable</i>
<i>-Tense</i>	<i>-Tense</i>	<i>+Happy</i>	<i>-Like a failure</i>	<i>-Unloved</i>	<i>-Sad &amp; Blue</i>	<i>+Communicative</i>
	<i>-Indecisive</i>	<i>+Lovable</i>	<i>-Disorganised</i>	<i>-Sad &amp; Blue</i>	<i>-Incompetent</i>	<i>+Comfortable</i>
	<i>-Inferior</i>	<i>+Fun &amp; Entertaining</i>		<i>-Incompetent</i>	<i>-Insecure</i>	<i>+Hard Working</i>
		<i>+Interested</i>		<i>-Like a failure</i>	<i>-Like a failure</i>	<i>+Happy</i>
		<i>+Optimistic</i>		<i>-Worthless</i>	<i>-Tense</i>	<i>+Interested</i>
				<i>-Inferior</i>	<i>-Worthless</i>	
				<i>-Tense</i>		

*Panel B: Integrated Card Sort Task*

Daughter	Sister	Friend	Student	Employee	Best Friend
+Comfortable	+Giving	+Giving	+Comfortable	+Confident	+Giving
+Communicative	+Comfortable	+Confident	+Independent	+Independent	+Confident
+Lovable	+Independent	+Comfortable	+Communicative	+Communicative	+Comfortable
+Fun& Entertaining	+Communicative	+Communicative	-Weary	+Mature	-Immature
+Happy	+Lovable	-Weary	+Mature	+Organised	+Communicative
+Friendly	+Fun & Entertaining	+Lovable	+Organised	+Hard working	+Lovable
-Disorganised	+Energetic	+Fun & Entertaining	+Hardworking	+Happy	+Fun & Entertaining
	+Friendly	+Outgoing	+Happy	+Friendly	+Outgoing
	-Disorganised	+Energetic	+Friendly	-Disorganised	+Energetic
		+Happy	-Tense		+Happy
		-Disorganised			+Friendly
					-Disorganised

Note. Negative attributes are identified by a minus sign. Panel A: compartmentalization = .93, differential importance = -.45, and proportion of negative attributes = .60. Panel B: compartmentalization = .16, differential importance = .38, and proportion of negative attributes = .12.

Table 3.5 shows a breakdown of descriptive statistics from the analysis of the card-sort task data. In summary, in the overall sample, participants displayed a slight tendency towards compartmentalisation ( $M = .54$ ,  $SD = 0.18$ ). They also rated their positive self-aspects as more important than their negative self-aspects ( $M = .26$ ,  $SD = .45$ ). Participants in this sample reported a moderate proportion of negative attributes ( $M = 0.26$ ,  $SD = 0.45$ ).

*Table 3.5: Descriptive data for the card-sort task output*

	<b>Phi (<math>\Phi</math>) N=78</b>	<b>No. of Self-aspects N=78</b>	<b>Total No. of attributes N=78</b>	<b>Neg N=78</b>	<b>DI N=78</b>
<b>Mean (SD)</b>	.54 (.18)	7.22 (2.31)	56.64 (22.37)	.26 (.15)	.26 (.45)
<b>Actual Ranges</b>	.12-.94	3-19	28-155	.04-.60	-.81-.96
<b>Possible Ranges</b>	0 - 1	$\geq 2$	$\geq 4$	0 - 1	-1 - +1

### 3.4 Statistical Analysis of Study Hypotheses

*3.4.1. Hypothesis 1: Compartmentalisation (regardless of positive or negative valence of self-aspects) will be associated with both paranoid and grandiose delusional beliefs.*

The first hypothesis of the study was to examine whether individuals with compartmentalised self-structures are more likely to endorse delusional beliefs compared to those with integrated self-structures. To test this hypothesis, Pearson's

Correlations were calculated for paranoid beliefs (PS scores), grandiose beliefs (PDI scores) and compartmentalisation (Phi ( $\Phi$ ) scores on the card-sort task). Table 3.6 displays correlation coefficients for these variables.

The results demonstrated that there was no significant correlation between either grandiose or paranoid delusions and compartmentalisation.

*Table 3.6: Correlations between Delusional Beliefs and Compartmentalisation*

		<b>Paranoia (PS)</b>	<b>Grandiosity (PDI)</b>	<b>Compartmentalisation (Phi)</b>
<b>Paranoia (PS)</b>	Pearson <i>r</i>	-	.12	.11
	<i>p</i> -value	-	.316	.326
<b>Grandiosity (PDI)</b>	Pearson <i>r</i>	-	-	-.05
	<i>p</i> -value	-	-	.657

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

In summary, these results did not support Hypothesis 1, as the expected result was that higher levels of grandiose and paranoid delusional beliefs would be associated with more compartmentalised self-structures.

*3.4.2. Hypothesis 2: Negative-compartmentalisation will be positively correlated with paranoid beliefs and positive-compartmentalisation will be positively correlated with grandiose beliefs*

To test this hypothesis, two factors which are unique to the evaluative self-organisation model, differential importance and proportion of negative attributes,



were examined in relation to delusions. Pearson’s Correlations were conducted between both delusion variables (grandiosity and paranoia) and each of the evaluative self-structure variables (DI and Neg) for the whole sample. Table 3.7 displays correlation coefficients for these variables.

*Table 3.7: Correlations between Delusional Beliefs and Self-Structure variables*

		<b>Paranoia Grandiosity</b>		<b>DI</b>	<b>Neg</b>
		<b>(PS)</b>	<b>(PDI)</b>		
<b>Paranoia (PS)</b>	Pearson <i>r</i>	-	.12	-.17	.30**
	<i>p</i> -value	-	.316	.12	.006
<b>Grandiosity (PDI)</b>	Pearson <i>r</i>	-	-	.01	-.02
	<i>p</i> -value	-	-	.917	.815

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

Results demonstrated that there was no significant correlation between either grandiose or paranoid delusions and differential importance. There was also no significant correlation between grandiose beliefs and proportion of negative attributes. However, a significant positive correlation between paranoid beliefs and the proportion of negative items in the card sort task was found. That is, as paranoia increased, the number of negative attributes an individual used to describe their self-aspects increased and the number of positive attributes decreased.

As well as examining the individual correlations between delusional beliefs and the three self-structure indices, consistent with the self-structure literature, the interactions between the self-structure variables were also examined (i.e. Phi x DI & Phi x Neg),

along with their association with delusions. The rationale for examining the interactions is that in the previous literature, the compartmentalisation variable is often moderated by one of the other evaluative self-organisation variables (Ditzfeld & Showers, 2013). Following the guidance by Tabachnik, & Fidell (2013) the interaction between the self-structure variables was calculated by multiplying two of the original independent variables, creating a new, cross-product independent variable. The variables were not centred prior to creating the cross-product variables, as centring the variables when they have meaningful zero-points<sup>1</sup> can decrease interpretability (Dalal, & Zickar, 2012). For the purpose of this analysis, and consistent with previous research, the two interactions calculated were; Phi x DI and Phi x Neg. Table 3.8 displays correlation coefficients for these variables with both paranoia and grandiosity.

*Table 3.8: Correlations between Delusional Beliefs and Self-Structure Interactions*

		<b>Phi x DI</b>	<b>Phi x Neg</b>
<b>Paranoia (PS)</b>	Pearson <i>r</i>	-.19	.35**
	<i>p</i> -value	.102	.002
<b>Grandiosity (PDI)</b>	Pearson <i>r</i>	.02	-.04
	<i>p</i> -value	.861	.750

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

The results demonstrated that there was no significant correlation between grandiose beliefs and the interaction between compartmentalisation and differential importance

<sup>1</sup> The zero-points for the three self-structure incidences are  
 Phi: 0 = perfectly random sort/integrated self-structure.  
 DI: 0 = mid-point of importance continuum.  
 Neg: 0 = no negative attributes used in card-sort.

(Phi x DI) or the interaction between compartmentalisation and proportion of negative attributes (Phi x Neg). This suggested that compartmentalised self-structures, irrespective of overall positivity or negativity, were not associated with grandiose beliefs. There was also no significant correlation between paranoid beliefs and the interaction between compartmentalisation and differential importance (Phi x DI). However, a significant correlation was found between paranoid beliefs and the interaction between compartmentalisation and proportion of negative items (Phi x Neg). This suggests that paranoia was associated with compartmentalisation, when the number of negative attributes an individual had in their self-aspects was included in the analysis.

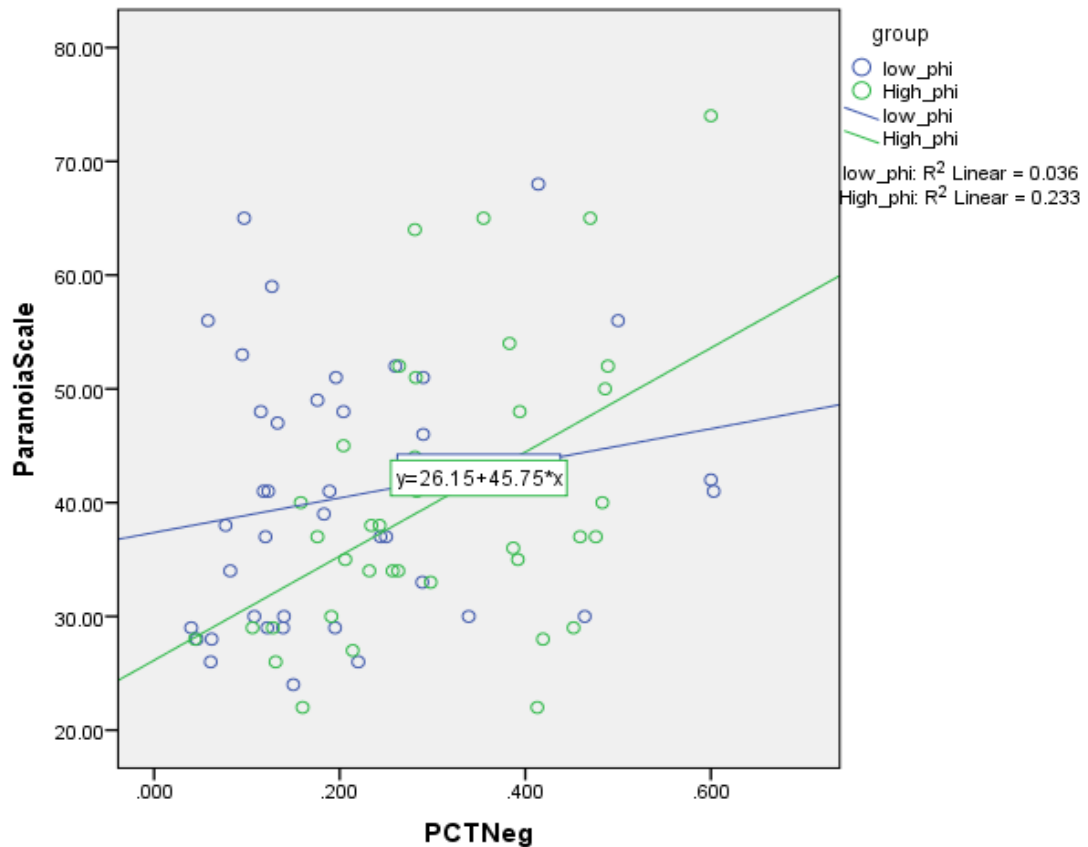
A standard multiple regression was conducted with paranoia as the dependent variable and compartmentalisation (Phi), proportion of negative attributes (Neg), and the interaction between the two (Phi x Neg), as independent variables. The aim was to determine if the interaction variable contributed significantly to the presence of paranoia over and above the presence of compartmentalisation and proportion of negative attributes. These three variables accounted for a significant amount of variance in paranoid beliefs ( $R^2 = .17$ , adjusted  $R^2 = .14$ ;  $F(3,74) = 5.01$ ,  $p = .003$ ). The partial regression coefficients, displayed in Table 3.9., showed that, interestingly, compartmentalisation was found to be independently associated with paranoid beliefs ( $B = -30.22$ ,  $\beta = -.46$ ,  $t(74) = -2.10$ ,  $p = .039$ ) while proportion of negative attributes was not independently associated with paranoia ( $t(74) = -1.52$ ,  $p = .133$ ). The interaction between compartmentalisation and proportion of negative attributes was also found to significantly predict paranoia ( $B = 123.14$ ,  $\beta = 1.09$ ,  $t(74) = 2.561$ ,  $p = .012$ ).

Therefore, the model showed a highly significant relationship to the presence of paranoid beliefs, which appears to be carried by the interaction between proportion of negative attributes and to a lesser extent, compartmentalisation.

*Table 3.9: Coefficients between Self-Structure and Paranoia*

	<b>B</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
<b>Phi</b>	-30.22	-.46	-2.10	.039
<b>Neg</b>	-41.22	-.51	-1.52	.133
<b>Phi x Neg</b>	123.15	1.09	2.56	.012

The nature of the interaction between compartmentalisation and proportion of negative items (Phi x Neg) in relation to paranoia was further explored through the use of scatterplots. The graph indicated that compartmentalisation was more associated with paranoid beliefs when an individual had a higher proportion of negative attributes ( $R = .48$ ) compared to when they had a lower proportion of negative attributes ( $R = .19$ ). This interaction suggests that those who reported more negative items and were more compartmentalised reported greater levels of paranoia.



*Figure 1: Scatterplot examining the relationship between compartmentalisation, proportion of negative attributes and paranoia.*

As there were no significant correlations between any of the self-structure variables and grandiosity, it was not appropriate to conduct a regression analysis.

In summary, these results partially supported hypothesis 2, as the expected result that paranoid beliefs would be positively correlated with negatively compartmentalised self-structures was found. However, there was no evidence to support the expected results that grandiose beliefs would be positively correlated with positively compartmentalised self-structures.

*3.4.3. Research Questions 3: To what extent do self-content and self-organisation predict paranoia and grandiosity?*

The final research question of the study was concerned with examining whether self-content or self-organisation contributed more to the presence of grandiose and paranoid beliefs. Firstly, to test this hypothesis, the relationship between delusional beliefs and self-content (BCSS subscales) was also explored to determine which variables to enter into the regression model. To examine these relationships Pearson's Correlations were conducted between both delusional variables (paranoia and grandiosity) and each of the self-content variables (negative self-, negative other-, positive self- and positive other-evaluative beliefs) for the whole sample. Table 3.10 displays the correlation coefficients for these variables.

The results demonstrated that paranoia was significantly positively correlated with negative self- and other-beliefs and significantly negatively correlated with positive self- and other beliefs. This would indicate that as paranoia scores increased participants had higher levels of negative beliefs about themselves and others and less positive beliefs about themselves and others. Grandiosity was also found to be significantly positively correlated with positive self-beliefs, meaning that participants with higher grandiosity scores were also more likely to report more positive beliefs about themselves.

Table 3.10: Correlations between Delusional Beliefs and Self-Content variables

		BCSS-NS	BCSS-NO	BCSS-PS	BCSS-PO
<b>Paranoia (PS)</b>	Pearson <i>r</i>	.48**	.44**	-.30**	-.31**
	<i>p</i> -value	>.001	>.001	.007	.005
<b>Grandiosity (PDI)</b>	Pearson <i>r</i>	.05	.10	.23	.02
	<i>p</i> -value	.662	.353	.044*	.827

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

Secondly, a hierarchical multiple regression was conducted with paranoia as the dependent variable and self-content and self-structure as predictor variables. The aim was to determine the extent to which self-content and self-structure accounted for variance in paranoia. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. The analysis indicated that there was a strong significant correlation between proportion of negative items and the interaction variable (Phi x Neg) ( $r = .87, p < .001$ ). As the interaction effect is a product of the proportion of negative items, it is expected that there would be a strong association between the two. While this violates the assumption of multicollinearity, the variables were retained in the model as the two variables were previously found to be significantly associated with paranoia and including the interaction variable in the model is in line with previous research (e.g. Ditzfeld & Showers, 2013). The preliminary analysis also indicated that there was one outlier

present in the data. This participant was also retained in the data set as it was felt they were a true representative of the sample being examined (Field, 2013)<sup>2</sup>.

Given the known association between depression and compartmentalisation and depression and paranoia, the DASS-21 depression scores were entered at the first step of the hierarchical regression in order to partial out any contribution of depression to either of these variables. The self-content and self-structure variables were entered at different steps to determine the relative contribution of each variable over and above the other. As all four self-content variables (negative self-, negative other-, positive self- and positive other-evaluative beliefs) were significantly associated with paranoia, they were all included in step two of the analysis. Both proportion of negative items and compartmentalisation were included at step three of the analysis, even though proportion of negative items was the only independent evaluative self-organisation variable found to be significantly associated with paranoia. Clark-Carter (2004) argues that using insignificant correlations as a criterion to exclude variables from a regression analysis is not always appropriate, and given that compartmentalisation was found to be a significant predictor in the previous regression, it was felt necessary for it to be included in the analysis. This is also in line with previous research, in which the variables making up the interaction variables are included in the analysis (Ditzfeld & Showers, 2013). Finally, following the previous literature (Ditzfeld & Showers, 2013) the interaction effect (Phi x Neg) was entered at step four. Table 3.11 shows the regression coefficients for the variables. However, it should be noted that including eight variables in the regression model with a sample size of 78 resulted in the analysis

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<sup>2</sup> The multiple regression was also conducted with the outlier removed from the data set. This did not change the findings.



not fully complying with guidance on the number of participants required per predictor variable (10:1; Field, 2013)<sup>3</sup>.

The results demonstrated that, depression explained a significant amount of variance in paranoia ( $F(1,76) = 42.8, p < .001; R^2 = .36$ , adjusted  $R^2 = .35$ ). More importantly, the self-content predictor variables at step two contributed to a significant increase in variance explained from 36% to 49.9%, adjusted  $R^2 = .45.7$ , a change that was significant ( $F(4,72) = 4.98, p < .001$ ). When the self-structure variables were entered at step three, there was no significant increase in the variance explained ( $F(2,71) = .57, p = .569; R^2 = .52$ , adjusted  $R^2 = .46$ ). The interaction between compartmentalisation and proportion of negative attributes entered into the final step also did not lead to any significant changes in variance of paranoia ( $F(1,69) = 1.71, p = .196; R^2 = .52$ , adjusted  $R^2 = .46$ ). In the final equation, only depression ( $B = 1.26, \beta = .45, t(69) = 4.50, p < .001$ ) and negative other-evaluative beliefs ( $B = .73, \beta = .27, t(70) = 2.80, p = .007$ ) made a significant unique contribution to explaining the presence of paranoia. These results would suggest that, when depression is accounted for, higher levels of negative other-evaluative beliefs were the greatest predictor of paranoia.

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<sup>3</sup> The multiple regression was also conducted without including the compartmentalisation variable in step 3. This would mean that the analysis complied with 10:1 participants to variables criteria for the analysis (Field, 2013). The results indicated that the overall model was still significant,  $F(7, 70) = 9.98, p < .001, R^2 = .50$ . Similarly to the previous analysis, the self-structure variables did not significant contribute to the an increase in variance in paranoia. In the final equation, depression ( $B = 1.27, \beta = .46, t(70) = 6.14, = < .001$ ), negative other-evaluative beliefs ( $B = .74, \beta = .27, t(70) = 2.78, p = .007$ ) and positive other evaluative-beliefs ( $B = -.49, \beta = -.19, t(70) = -2.01, p = .048$ ) made significant unique contributions to paranoid beliefs.

Table 3.11: Coefficients between Self-Content, Self-Structure and Paranoia

	$\beta$	Beta	t	Sig.
<b>DASS-21</b>	1.26	.45	4.50	< .001
<b>BCSS-NS</b>	1.19	.11	.88	.381
<b>BCSS-PS</b>	.04	.02	.13	.896
<b>BCSS-NO</b>	.73	.27	2.80	.007
<b>BCSS-PO</b>	-.47	-.18	-1.94	.057
<b>Neg</b>	-29.00	-.32	-1.19	.237
<b>Phi</b>	-19.48	-.29	-1.67	.10
<b>Phi x Neg</b>	52.19	.46	-1.31	.196

Previous analysis reported in this chapter has indicated that none of the self-structure variables were significantly associated with grandiosity and that only one of the self-content variables (positive self-evaluative beliefs) was significantly associated. Therefore, it was not necessary to conduct a multiple regression to determine how much self-content and self-structure predicted grandiosity. The previous results have demonstrated that self-content is more strongly associated with grandiose beliefs. More specifically, positive self-evaluative beliefs were found to be positively related with grandiosity, indicating that higher levels of positive self-evaluative beliefs were the greatest predictor of grandiosity.

In summary, the analysis demonstrated that self-content was a greater predictor of delusional beliefs compared to self-structure, with higher levels of negative other-evaluative beliefs predicting paranoia, and higher levels of positive self-evaluative beliefs predicting grandiosity.

## **4. Discussion**

### **4.1 Overview**

The final chapter will begin with an overview of the main findings of the present thesis covering three key areas: (1) Prevalence of delusions (2) relationships between the self-structure variables and delusional beliefs, and (3) the extent to which self-content and self-structure variables predict delusional beliefs. The main findings will also be related to the existing relevant theory and research. The chapter will go on to identify clinical implications of the research, the strengths and limitations of the study and, possible future research areas. The findings of the present thesis will then be brought together within the concluding remarks.

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

The hypotheses and research questions of the present thesis were: (1) Compartmentalisation (regardless of positive or negative valence of self-aspects) will be associated with both paranoid and grandiose delusional beliefs; (2) Negative-compartmentalisation will be positively correlated with paranoid beliefs and positive-compartmentalisation will be positively correlated with grandiose beliefs; (3) To what extent do self-content and self-organisation predict paranoia and grandiosity?

#### *4.2.1 Prevalence of Delusions in Non-Clinical Population*

There is a plethora of research which highlights the prevalence of delusional beliefs in the general population (e.g. Armando et al., 2010; Ellett et al., 2003; Scott, et al., 2006; van Os et al. 2000). This evidence is viewed as supportive of the continuum hypothesis of delusions, in which clinical delusions are seen to be at the extreme end of a belief continuum of normal experiences (Chapman & Chapman, 1980; Claridge, 1997; Strauss, 1969). In the current thesis, both paranoid and grandiose beliefs were measured

in a non-clinical sample. The results demonstrated that, out of the entire sample (N = 78), 61% endorsed at least one of the two PDI items assessing grandiosity and 26.9% were found to endorse both items. These findings are similar to those presented by Verdoux et al., (1998b) in which 20.1% of a non-clinical sample were found to endorse the two components examining grandiose beliefs on the PDI. Jones and Fernyhough (2007) reported slightly higher levels of grandiose beliefs in their non-clinical student sample, with 80% of the sample endorsing at least one of the PDI items. Similarly, in relation to paranoia, the mean score on the PS in the current study was 40.34 (SD = 11.9) which is reflective of previous prevalence results. For example, Fowler et al., (2006b) reports that in their non-clinical sample the mean score on the PS was 41.14 (SD = 14.60). This is in line with the norms reported by the authors of the measure (mean = 42.7, SD = 10.2; Fenigstein & Venable, 1992). Therefore, consistent with previous studies, the results from the present thesis confirm the presence of paranoia and grandiosity in a non-clinical sample. This further supports the continuum theory of delusions and suggests that paranoia and grandiosity should be acknowledged as traits that occur across a range of presentations, from non-clinical and common mental health problems to more severe and enduring mental health difficulties. Having shown that paranoia is common in the non-clinical population, it is important to consider why this might be the case. One possible reason is that paranoia is a trait that was selected due to its potential adaptive value (Ellett, Allen-Crooks, Stevens, Wildschut, & Chadwick, 2013; Ellett et al., 2003). Individuals are frequently required to make judgements on whether to trust or mistrust others, and those who are overly trusting of others run the risk of being exploited (Bebbington et al., 2013; Ellett et al., 2003). For one's own personal safety, considering the potential of others to cause harm can therefore be viewed as an important strategy. This possible evolutionary perspective might explain

why non-clinical paranoia can be persistent and also why clinical paranoia is so resistant to change (Ellett & Chadwick, 2007).

#### *4.2.2. Relationships between self-structure variables and delusional beliefs*

##### The importance of self-structure

Delusions have been consistently related to positive and negative evaluative beliefs (Addington & Tran, 2009; Bentall et al., 2009; Freeman et al., 2008; Fowler et al., 2006b; Garety et al., 2011; Gracie et al., 2007; Kinderman, 1994; MacKinnon, et al., 2011; Palmier-Claus, et al., 2011; Pickering, et al., 2008; Smith et al., 2006; & Udachina et al., 2009; Vázquez et al., 2008). However, there has been no research into the impact of self-structure, which has been shown to determine vulnerability to negative evaluative-beliefs and negative affective states (e.g. Ditzfeld and Showers, 2014; Power et al., 2002; Showers, 1992; Showers, et al., 2004; Shower's & Kling, 1996, Stopa et al., 2010, Taylor et al., 2007). This relationship was deemed to be of interest as compartmentalised individuals have been shown to generally have more polarized views of themselves in different settings due to separating positive and negative self-attributes (Ditzfeld and Showers, 2014). Hypothesis 1 therefore aimed to identify whether compartmentalized individuals were more likely to endorse delusional beliefs compared to those with integrated structures.

In line with previous research, in the current thesis the relationship between self-structure and delusions was examined with compartmentalisation as a dimensional variable. This was done by using the Phi coefficient, ranging from 0-1, with scores closer to 1 representing a more compartmentalized sort and scores closer to 0 representing a more integrated sort. No significant relationship was observed between compartmentalisation and either grandiose or paranoid delusions. This was surprising

given previous literature in different populations which has demonstrated this association, including in depression, social anxiety and bipolar disorder (e.g. Ditzfeld and Showers, 2014; Showers, 1992; & Shower's & Kling, 1996, Stopa et al., 2010, Taylor et al., 2007). The findings suggest that, in this non-clinical sample, increased delusional beliefs were not significantly related to increased compartmentalisation. Therefore, hypothesis 1 was not supported.

There are a number of possible reasons why no association was found between self-structure and delusional beliefs. Firstly, the results might represent a true effect, meaning that there is no association between compartmentalisation and both paranoid and grandiose delusional beliefs, although this is contrary to what has been reported in the literature in relation to depression, bipolar disorder and social anxiety. The hypothesis presented was conceptual in nature as examining these two variables together was completely novel. It may be that how an individual structures their self-knowledge does not in fact influence the endorsement of delusional beliefs but only has an effect on the endorsement of more positive and negative self-views, as demonstrated in previous research (Ditzfeld and Showers, 2014; Showers, 1992; Showers, et al., 2005; & Shower's & Kling, 1996).

Furthermore, the lack of findings could be accounted for by the possibility that the variables of interest may not have been high enough within the sample used to detect an effect. Examining the descriptive data of the variables of interest, the mean score of the PDI grandiosity items was relatively low (Mean = 2.23, SD = 2.62), given the full range (0-10) of the scale was used. Other studies which have used these two items as a measure of grandiosity have reported mixed findings. Fowler et al., (2006b) reported higher mean scores within a non-clinical population (Mean = 4.55, SD = 2.55). Larøi,

Van der Linden, DeFruyt, van Os, & Aleman (2006), who used the entire PDI scale, and not just the two grandiosity items, in their study, reported lower mean scores in a sample of young adults aged 18–30 years (Mean = 1.59, SD = 0.49) and a sample of elderly adults aged 60–75 years (Mean = 1.16; SD = 0.37). Looking more closely at the distribution of scores in the current sample, 39.7% of the sample did not endorse either item of the PDI (score = 0) and only 2 participants endorsed both items fully (score = 10). Related to this, participants were not screened for high levels of grandiosity or paranoia. As such, it may be that there was not sufficient representation of those variables at the higher end of the non-clinical delusion continuum in the present sample. Therefore, to explicitly test the possibility that compartmentalization may be associated with either paranoia or grandiosity, it may be necessary for the sample to include a group of individuals who are recruited for their high levels of non-clinical delusions, to compare to those with very low/no experiences of delusions, or recruit individuals with clinical delusions.

It is worth noting that, in the literature, compartmentalised and integrated self-structures are presented as separate and distinct categories, implying that an individual can be categorised as one or the other. However, the main method of analysis is via a continuous variable with no cut-off. Showers claimed that the categories may at times be described in a dichotomous manner as a way of referring to whether a person is creating valenced self-aspect categories (i.e., the good student; the good friend), but in fact it is just “the tendency to link positives to other positives, negatives to other negatives, or to use some other basis than valence to link the attributes” (Showers, personal communication, 24 April, 2017). This means of measuring the variable



precludes examination of the variable as dichotomous, which in turn has an impact on the ability to examine significant differences between the two self-structures.

As there is no pre-existing research examining the relationship between self-structure and delusions, the observations within the present research have added to our understanding in this area of research. Whilst no significant association between compartmentalisation and delusional beliefs was found in the current study, this area of research is still in its infancy. This study has helped to identify factors which may have impacted on findings as well as ways in which research in this area could be taken forward.

#### The Importance of Valence

As well as examining overall structure, it is also important to assess valence, i.e. the positivity/negativity of each self-aspect. The conceptual argument was put forward that there may be an association between the overall positivity/negativity of an individual's self-aspects (as measured by differential importance and proportion of negative items) and the presence of different types of delusional beliefs. This proposal was based on the known associations between negative-compartmentalisation (i.e. lower DI/greater proportion of negative attributes) and negative evaluative beliefs and positive-compartmentalisation (i.e. higher DI/greater proportion of positive attributes) and positive evaluative beliefs (e.g. Showers 1992). There is also a vast amount of research which highlights the relationships between evaluative beliefs and delusions, with negative evaluative beliefs being associated with paranoia and positive evaluative beliefs being associated with grandiosity (e.g., Fowler, 2006b). It was therefore hypothesised that negative-compartmentalisation will be positively correlated with

paranoid beliefs and positive-compartmentalisation will be positively correlated with grandiose beliefs.

This hypothesis was felt to be of importance as self-structure, valance and overall positivity/negativity could potentially have important implications for outcomes during interventions (e.g., Showers and Kling, 1996; Showers, et al., 2005). As such, the implications of a relationship between positively and negatively compartmentalised self-structures and delusional beliefs may have an impact upon how delusional beliefs are managed, and potential improvements in the non-clinical population. However, evaluative self-organisation has been overlooked within the paranoia and grandiosity literature, and it remains completely unknown whether these constructs are connected within non-clinical and clinical populations. Consequently, exploring the relationship between these constructs within the general population is a useful starting point to investigations within this area, and could potentially be a bridge in contributing to the literature on clinical delusions more generally.

### Results

The results indicated that grandiosity was not significantly associated with the relative importance given to each self-aspect (DI), nor with the proportion of negative attributes an individual had. Increased paranoia was also not significantly associated with the relative importance given to self-aspects (DI). However, a significant relationship between paranoia and the proportion of negative items in the card sort task was found, suggesting that in this non-clinical sample, increased paranoia was associated with a higher ratio of negative attributes to positive attributes within an individual's self-aspects. This is an interesting finding as it highlights that, while there is a known association between negative self-evaluative beliefs and the development and

maintenance of paranoia, the ratio of these negative beliefs to positive beliefs may also be an important factor to consider.

Consistent with previous research (e.g. Ditzfeld & Showers, 2014; Showers & Kling, 1996; Showers, et al., 2005; Stopa et al., 2010), these constructs were examined further by looking at the interactions between the self-structure variables and associations with delusional beliefs. Including the importance ratings and their interaction with the measure of organization (Phi x DI) in the analysis did not yield the predicted results, as there was no association between this interaction and either grandiose or paranoid beliefs. However, when the interaction between the proportion of negative items an individual had and the measure of organization (Phi x Neg) was examined, there was a significant association with the presence of paranoia. This suggests that those who reported more negative items and were more compartmentalised reported greater levels of paranoia.

To further examine the importance of valence, a regression analysis was conducted and demonstrated that the interaction between proportion of negative attributes and compartmentalisation significantly predicted the presence of paranoid beliefs. The same analysis indicated that compartmentalisation (as measured by Phi) also significantly predicted paranoia. This was an interesting finding, and contrary to expectation, as compartmentalisation was not significantly associated with paranoia in the analysis conducted to test hypothesis one. This indicates the presence of a suppressor variable, which occurs when one of the independent variables in the regression analysis (in this case compartmentalisation) correlates significantly with one or more of the other independent variables (in this case proportion of negative attributes).

In the current study, the discrepancy between the correlational analysis (phi and paranoia) and the regression model (phi as a predictor) makes interpretation of these findings difficult. The findings from the regression suggest that after partialling out the variance in the independent variable (i.e. compartmentalisation) that overlaps with the other independent variable (i.e. proportion of negative attributes), the remaining variance in compartmentalisation does significantly predict paranoia. However, this is difficult to interpret and therefore no firm conclusion can be made as it is not possible to determine what specific part of the variance in compartmentalisation was associated with paranoia.

### *Theoretical Implications*

Overall, the findings partially support hypothesis 2 as paranoid beliefs were positively correlated with negatively compartmentalised self-structure. However, there was no evidence showing that grandiose beliefs were positively correlated with positively compartmentalised self-structures. The findings in relation to paranoia specifically have important implications. Showers et al., (2005) postulated that when a negatively-compartmentalised individual is faced with a life stressor, they have fewer positive evaluative-beliefs to buffer against the negative evaluative beliefs that get activated. This in turn may leave them more vulnerable to negative views of the self. Given the known association between negative-evaluative beliefs and paranoia, it would be expected that individuals who have more negative attributes, with little to no positive attributes to buffer against them, would be more likely to endorse paranoid beliefs. However, this would need to be established in future research. These findings also reflect the evaluative self-organisation literature, in that is not just the way in which an

individual structures their self-content that is important, but also the emotional valance that is attached to those self-concepts (Ditzfeld & Showers, 2013; Showers, 2000)

In the self-structure literature more broadly, there is still uncertainty about whether differential importance or proportion of negative attributes is a stronger moderator of compartmentalisation ( $\Phi$ ). The results of the current thesis are more consistent with proportion of negative attributions being a stronger moderator as it was only the interaction between compartmentalisation and proportion of negative attributes ( $\Phi \times \text{Neg}$ ) that was associated with paranoia. Ditzfeld and Showers (2014) stated that the measure of differential importance and proportion of negative beliefs are correlated, and the one that is the most appropriate moderator of compartmentalisation will depend on the context and the sample. For example, an individual might have a positive self-aspect category (e.g., 'when I am at university'), that contains only positive beliefs about the self (e.g., happy, optimistic, comfortable, confident and organised). As long as positively valenced self-aspects are salient, these individuals should access primarily positive self-beliefs. On the contrary, when negatively valenced self-aspects are prominent, compartmentalised individuals should access primarily negative self-beliefs. For example, a compartmentalised person who considers the 'partner self' as particularly negative will have access to mostly negative beliefs (e.g., hopeless, sad and blue, uncomfortable and insecure) when in that role. Therefore, there is essentially a four-way interaction between the self-structure variables, in which an individual's different self-aspects will only be activated in certain contexts and the impact of that self-aspect will be determined by either the proportion of negative attributes or the relative importance an individual gives that aspect (i.e.  $\Phi \times \text{DI} \times \text{Neg}$ ).

Ditzfeld and Showers (2013) postulated that one distinction may be that the different scales are sensitive to different ranges of positivity and negativity, with differential importance being more sensitive to degrees of positivity, whereas the proportion of negative items is sensitive to degrees of negativity. Given the existing evidence showing the relationship between negative self and other schematic beliefs and paranoia (e.g. Fowler, et al., 2006b, Smith et al., 2006), which was replicated in the current study, it would be expected that proportion of negative items may be a more appropriate moderator. Proportion of negative items is in some ways an aspect of 'self-content' as it is directly related to the presence of negative self-beliefs within a self-aspect. Therefore, individuals with a greater proportion of negative items are bound to have more negative beliefs about themselves. When individuals also then have more compartmentalised self-structures, it may mean that they have little or no positive information available to buffer against the negative self-content.

Ditzfeld and Showers (2013) have also postulated that individuals may become more compartmentalised when they feel under threat. The authors stated that when an individual is faced with a potential self-relevant threat, compartmentalization can be a defensive response by allowing an individual to isolate their negative attributes as a means of avoiding or denying them. However, when negative compartments are activated, compartmentalized individuals are likely to become flooded with negative self-beliefs about the self, resulting in them taking longer to recover from self-threat. This is determined by the amount of negative content an individual has to be activated in the first place. On the contrary, due to being able to regulate their emotions more quickly, individuals who are more integrated may be relatively more willing to deal with self-threats. In the current paranoia literature, there is evidence to suggest that

individuals are more likely to endorse paranoid beliefs when under threat (e.g. Chadwick and Trower, 1997; Fowler et al. 2006a). It may be that it is only when the high proportion of negative content an individual has is activated (due to threat) that paranoid individuals are impacted by their compartmentalised self-structure. However, this would need to be established in future research.

Whilst acknowledging that most of the previous research has focused on self-content, the focus of the current thesis was the effects of compartmentalisation and integration on delusional beliefs in a non-clinical population. There are however, other ways of measuring self-structure e.g. self-concept clarity. Previous research examining the relationship between self-concept clarity – that is, the extent to which an individual's beliefs about their attributes are clear, confidently held, internally consistent, stable, and accessible (Stinson, Wood, & Doxey, 2008) – and delusions has shown that individuals with lower self-concept clarity report higher levels of delusional beliefs (Cicero, Becker, Martin, Docherty, & Kerns, 2013; Evans, Reid, Preston, Palmier-Claus, & Sellwood, 2015). Evens et al., (2015) suggest that individuals develop low self-concept clarity as a result of earlier negative experiences/traumas and that the incoherent sense of self and identity resulting from low self-concept clarity is linked to the reality testing deficits, confusion, disorganisation and disorientation associated with psychosis. It may be of interest to examine the associations between evaluative self-organisation and self-concept clarity in relation to delusions further in the future.

#### *Reasons for Insignificant Findings*

There are a number of possible reasons as to why no significant relationships were seen between grandiosity, differential importance and proportion of negative attributes, and between paranoia and differential importance. As discussed previously, it is important

to acknowledge that the findings may in fact represent a true effect, indicating that the overall relative importance given to self-attributes is not associated with the endorsement of paranoid or grandiose beliefs, even though this goes against what has been found in previous research (Ditzfeld and Showers, 2014; Power et al., 2002; Showers, 1992; Showers, et al., 2005; & Shower's & Kling, 1996, Stopa et al., 2010, Taylor et al., 2007). This would also indicate that the overall positivity/negativity of an individual's self-structure is not associated with the endorsement of grandiose beliefs.

Another reason for the insignificant findings between grandiosity and any of the self-structure variables may be due to the distribution of the three self-structure variables measured by the card-sort-task. While the sample showed a slight tendency towards compartmentalisation, this was only very small. Mean compartmentalisation ( $\Phi$ ) was .54 (SD = .18), out of a possible range of 0-1, meaning that there may not have been very many individuals representing the more extreme ends of the compartmentalisation continuum. In the Showers (1992) paper the mean compartmentalization ( $\Phi$ ) score of the sample was .71 (SD = .21). It is also of interest that no single participant had a perfectly compartmentalised card-sort. In the previous literature, the distribution of phi is heavily skewed, with a number of participants whose card-sorts are perfectly compartmentalized. However, the maximum value for phi in the current sample was .94. While there is no clear understanding of why this occurred, one possibility for the differences between the samples could potentially be cultural differences. Stopa et al, (2010) examined evaluative self-structure in a sample of UK undergraduate students and the authors reported a similar level of compartmentalisation within their sample (Mean = 0.57, SD = 0.23). There has been no research examining cultural differences



in evaluative self-structure, and therefore this explanation is extremely speculative and would require further investigation.

It is also worth noting that, in the present sample, only 21% of participants obtained differential importance scores that were less than zero, meaning that their more negative self-aspects were rated as more important than their positive ones. Showers (1992) noted that a random sample of individuals would be more likely to evaluate their positive self-aspects as most important. This may indicate that the card sort-task may elicit self-aspects that are more positive or that are not the most important aspects to individuals. Having higher levels of compartmentalisation and a higher proportion of individuals who give greater importance to their negative self-aspects within the sample may allow for greater accuracy in testing the relationship between these variables.

In the literature, Showers (1992) noted that negative mood is likely to be associated with a negative view of the self, rather than simply being a one-time response to an unusually severe negative event. This may be relevant in terms of how paranoia and grandiosity were represented in the sample. While a valid measure of trait paranoia was used in the current study, as mentioned previously, participants were not assessed for high levels of paranoia. Therefore, trait paranoia may not have been adequately represented in the current sample, which could have in turn impacted on the strength of the relationship between paranoia and compartmentalisation. It would also appear that this could have been the case for grandiose beliefs. Similarly to the Showers (1992) study, it may be necessary to include a sample of individuals who are more likely to experience the variables of interest (e.g. a paranoia and grandiose “prone” sample or individuals with high trait grandiosity and paranoia) to provide a more robust test of the relationship between delusions and self-structure. It would also be interesting to see if

increasing state delusional beliefs produces different findings. By conducting an experimental study involving the induction of delusional beliefs, participants may be able to access their positive and negative self-schema more readily and in turn may be more likely to articulate some of their more important negative self-aspects. Inducing delusional beliefs within an experimental context would also allow their impact on compartmentalisation to be explicitly examined.

This point highlights another factor to consider; the stability of self-structures. While compartmentalisation was previously thought to be stable, it is now believed to be more dynamic with self-structure being at least as amenable to change as the content of specific self-beliefs (Showers, 2002). Whilst the findings from the current study are silent on this issue, as self-structure was only measured cross-sectionally at one time point, the dynamic model of compartmentalisation presented by Showers (2002) postulates that most individuals will have a positive compartmentalized self-organization as a baseline in order to maximize the salience of their positive attributes. However, when negative attributes become more prominent (e.g. after a stressful life events), then an individual's self-structure may become more integrated to minimize the impact of the negative beliefs. Once concerns related to the negative self-aspects have reduced, individuals self-structure may re-compartmentalize to its original form. Some individuals however, may remain rigidly positively-compartmentalized in the face of an adverse event that increases the perceived importance of their negative self-aspects. By not shifting from a compartmentalised self-structure to a more integrated one when negative attributes are more prominent, they become overwhelmed by the content of their negative compartments. Given that compartmentalisation can fluctuate over time, it would be important to consider this when trying to truly capture the

multidimensional nature of the variable. This could be achieved by examining compartmentalisation longitudinally in future research.

#### *4.2.3. Does content or structure contribute more to delusional beliefs?*

##### *Relationship Between Self-Content and Delusions*

In order to determine which variables to enter into the regression models, correlations between the self-content variables and delusional beliefs were undertaken. The observed findings support and add to the existing evidence base regarding self-content and delusions, by highlighting that self-content is strongly associated with delusional beliefs (Fowler et al., 2006a). More specifically, they support the idea that paranoia is strongly associated with higher levels of negative-self and -other evaluative beliefs and lower levels of positive-self and other-evaluative beliefs. Furthermore, grandiosity was associated with higher levels of positive-self evaluative beliefs. This is consistent with current models of the formation and maintenance of delusional beliefs (Freeman et al., 2005a; Freeman & Garety, 2000, 2003; Garety et al., 2013; Smith et al. 2006).

##### *Self-content and Self-Structure as Predictors of Delusional Beliefs*

Determining whether self-content or self-structure contributes more to delusional beliefs provides a novel contribution to the literature and has potentially important clinical implications. At present, psychological interventions for delusions are focused on dealing with negative content (Rector & Beck, 2001). There have been arguments put forward to suggest that self-structure can be implicitly changed during psychological interventions, helping individuals become more integrated and in turn develop a balanced view of the self (Showers, et al., 2005). As the previous findings reported in this study suggest that both negative-compartmentalised structures and negative-evaluative beliefs are associated with paranoia, it is of further interest to test

which of these two factors is a greater predictor of paranoia. Therefore, the final research question aimed to explore to what extent self-content and self-organisation predict paranoia and grandiosity.

#### *Assumptions of a Regression Analysis*

As stated in the previous chapter, in the preliminary analysis of the regression analysis it was noted that some of its assumptions were violated in the current data set. Firstly, the assumption of multicollinearity was violated. This occurs when two or more of the variables, in this case proportion of negative attributes and the interaction effect (Phi x Neg), are highly correlated. As the interaction effect is a product of the proportion of negative items, it is expected that there would be a strong association between the two variables. Given that these two variables were previously found to be significantly related to paranoia, and there was no perfect collinearity observed, they were retained in the model (Field, 2013). It was also felt necessary to include the interaction effects in the final step of the analysis as this is in line with the previous self-structure literature (Ditzfeld & Showers, 2013, 2014; Showers & Kling, 1996; Showers, et al., 2005; Stopa et al., 2010).

Secondly, the assumption of no outliers in the data set was violated as the analysis indicated that there was one outlier present. On further examination, this participant was found to have the most negatively-compartmentalised self-structure (highest Phi x Neg score) in the data set. As this participant was a true representative of the population intended to be examined, their data was retained in the analysis (Field, 2013). For exploratory purposes the analysis was also conducted without the outlier in the data set. While, there was an expected slight reduction in the predated variance of the model, the

overall observed results did not change, and negative other-evaluative beliefs remained the greatest predictor of paranoid beliefs.

Finally, including the compartmentalisation variable in the analysis meant that the guidance to have at least 10 participants per predictor variable was not adhered to (Field, 2013), and may have resulted in the analysis being underpowered. However, similarly to above, when the analysis was conducted without the compartmentalisation variable included in the model, the observed results did not change, and negative other-evaluative beliefs remained the greatest predictor of paranoid beliefs.

### Findings

The findings for the final research question demonstrated that, when the effects of low mood were considered, self-content accounted for 13.9% of the variance in paranoia. This finding is reflective of the results in the Fowler et al., (2006b), in which self-content accounted for 15.6% of the variance of paranoia. However, when items were examined individually, only negative other-evaluative beliefs made a significant unique contribution to the prediction of paranoia. The results also demonstrated that self-structure did not significantly contribute to the variance in paranoia. Therefore, the results indicated that self-content appeared to be a stronger predictor of both paranoia and grandiosity.

The findings of the current thesis support the existing literature on evaluative beliefs and delusions. Previous studies have also found negative other-evaluative beliefs to be the strongest predictor of paranoia (e.g. Fowler et al, 2006b). This association has led to various ideas and theories about the development and maintenance of delusional beliefs. For example, Fowler et al. (2006a) postulated that individuals are left feeling

weak and under threat due to having negative self-evaluations while evaluating others as bad, and in turn having an increased sense of vulnerability. This sense of vulnerability fits in with Freeman and Garety's (2000) criteria for persecutory delusions, in which the individual experiencing paranoia believes that the persecutor is intentionally causing or planning to cause harm. Another model of the formation of persecutory delusions, proposed by Freeman & Garety (2003) postulates that persecutory delusions are a response to experiences that contain threat beliefs about physical, social, or psychological harm from others. The findings of the current study provide evidence to support the role of negative other-evaluative beliefs in the development and maintenance of paranoid beliefs, as highlighted in these theories.

The findings in relation to grandiosity also support the findings presented by Fowler et al., (2006b) in which grandiose beliefs in a non-clinical sample were strongly, and exclusively predicted by positive self-evaluative beliefs. This further supports the arguments suggesting that grandiose delusions are a reflection of an overly positive self-view (Garety et al., 2013), with neither negative-self nor negative-other scores contributed to grandiosity. Positive self-evaluative beliefs have been incorporated into potential theoretical models of the formation and maintenance of grandiose delusions. Smith et al. (2006) hypothesised that the combination of elevated mood and positive self-beliefs occurring in conjunction with negative evaluations of others can lead to the endorsement of a higher social position that sustains the positive self-beliefs and rejects contradictory social cues. Similarly, Garety et al., (2013) suggested that grandiose delusions increased with higher positive evaluations of self and others and lower depression. Interestingly our data did not fully support this argument as, while grandiosity was associated with higher positive-self beliefs, it was not significantly

related to negative- or positive-other beliefs. However, there is some evidence to suggest that higher levels of negative-other beliefs are only seen in clinical samples (Fowler, et al., 2006b).

Overall, the findings indicated that self-content appeared to be a stronger predictor of both paranoia and grandiosity which is consistent with previous research. However, given the issues with measurement described above, it is not possible to draw any definitive conclusions and future research is needed.

### **4.3. Clinical implications**

The current thesis used a non-clinical sample and, therefore any suggested clinical implications must be discussed tentatively. While previous research has highlighted the importance of negative self-evaluative beliefs in relation to paranoia, the present study has helped identify a potentially new factor, the proportion or ratio of negative to positive self-attributes, which may also be associated with the presence of paranoid beliefs. This may indicate that it is not just the content of self/other beliefs that may be associated with paranoia, but the ratio of positive to negative items. The proportion of negative attributes has also been shown to moderate the association between compartmentalisation and paranoia, indicating that compartmentalisation could be another important factor associated with paranoia. The current models of delusion formation and maintenance highlight the importance of the type of self-content an individual has and, therefore, this factor is frequently considered during assessment. However, given this novel association between paranoia and the proportion of negative attributes, it may be important to also consider including an assessment of the quantity of negative beliefs at the assessment stage to fully understand an individual's experiences. Leading on from this, it would also be important to consider how this novel

finding would impact on individual formulations. Currently formulation models used within the paranoia literature capture content, however it may also be relevant to also capture proportions of positive to negative attributes and how that information is structured.

While content has still been identified as a greater predictor of paranoia, it is possible that increasing the number of positive attributes an individual has across self-aspects can help act as a buffer against the negative attributes and in turn have an effect on the endorsement of paranoid beliefs. One study which has looked at this and found a significant effect was conducted by Kingston and Ellett (2014). The authors used an experimental paradigm to examine the effects of self-attribution processes on state paranoia. They found that self-affirmation acted as an intervention against further paranoia by directly reducing baseline levels of state paranoia prior to a threatening encounter. The authors postulated that affirming a valued domain may render an individual as more psychologically robust when they enter an environment that poses a threat to their self-image. Future research might examine if a similar process is seen by increasing the levels of positive attributes an individual has, which in turn could boost their positive psychological resources if their negative content is activated in a threatening situation.

Delusional beliefs are also known to be held with high levels of conviction (APA, 2013) which may make them more resistant to change. Hence, it may be beneficial to explore the effects of an intervention which aims to increase the amount of positive self-content and in turn implicitly change negatively-compartmentalised self-structures to a more positively-integrated one (Showers, et al., 2005). By restructuring an individual's negatively-compartmentalised self-structure to a more positively-integrated one in



treatment, individuals can then balance their negative schemata with the activation of more positive schemata, and in turn create a more balanced view of the self. This allows interventions to move away from approaches in which negative schemata and thoughts are directly challenged. Furthermore, considering increased ratios of positive to negative self-content as a buffer against paranoia may be particularly helpful for individuals who are more susceptible to experience increases in paranoia, such as those with high levels of paranoia in the non-clinical population (e.g., Dominguez, Wichers, Lieb, Wittchen, & van Os (2011); Poulton et al., 2000) and those in the clinical population experiencing sub-threshold symptoms (e.g., McGorry et al., 2002).

Due to providing further evidence to support the presence of non-clinical delusions in the general population, the present thesis also further highlights the need for literature on delusional beliefs aimed at the general population, in line with the assertions made by Freeman and Garety (2006) regarding paranoid thinking. This is especially relevant given the fact that Olfson et al. (2002) found various studies in which delusions in the non-clinical population are associated with distress and impairment in work, family, and social functioning yet many of these individuals do not receive any support (Freeman, 2006). Various publications and resources, such as self-help materials (e.g. *Overcoming Paranoid and Suspicious Thoughts*’; Freeman, Freeman & Garety, 2012), aimed at the general population are now more readily available for this population.

The present thesis, can also contribute to the growing number of study’s which can help destigmatise paranoid and grandiose thinking and help weaken the perception that they are merely associated with severe and enduring mental health conditions. Research has shown that a normalizing approach in CBT for psychosis, in which the patients’ symptoms are validated and normalized can have positive implications for treatment

outcomes. Lüllmann and Lincoln (2013) found that normalizing delusional beliefs in treatment resulted in higher overall treatment motivation. Participants reported that a normalising approach lead to higher clinician-related and psychological treatment motivation. This was accounted for due to participants feeling more comfortable and validated and having more trust and a better therapeutic relationship. Normalising delusions can also encourage individuals to share their experiences, which may in turn help minimise the distress related to their symptoms (Turkington, et al., 2006).

#### **4.4. Strengths of the research**

##### *4.4.1. Area of Research*

A considerable strength of the current thesis is that it is the first study to examine the relationship between delusions and self-structure, and to assess the relative contribution of content versus that of structure. Self-structure has increasingly been shown to influence an individual's vulnerability to negative self-beliefs and affective states. It has also been identified as a potentially important factor within psychological interventions, by helping individuals develop more integrated and balanced views of themselves. There was a clear conceptual argument for the need to examine the impact of self-structure on delusional beliefs. The findings contribute valuable knowledge to an area of research that is in its complete infancy, thereby providing a foundation for multiple areas for future research. Furthermore, the present research furthers the work looking at the relationship between self-content and delusions, an area that has very important implications for the interventions used with those experiencing delusional beliefs.

#### *4.4.2 Measures*

Another strength was that a range of self-report measures were carefully selected for the current study. The Paranoia Scale was designed to measure non-clinical paranoia within a non-clinical sample. The measures chosen to examine evaluative-beliefs (the BCSS) and depression (DASS-21) are both well validated measures. A robust and established methodology was utilised to measure evaluative self-structure. The use of all these measures ensured that the full range of components required for the analysis were explored.

### **4.5. Limitations of the research**

#### *4.5.1. Design:*

The first limitation of the present thesis is related to the design. The study used a cross-sectional correlational design which does not allow causality between variables to be inferred so the data must be interpreted tentatively with this in mind. However, cross-sectional designs are widely regarded as an efficient and valid means of examining novel associations which can then be studied more rigorously afterward. To determine causality, a longitudinal design would need to be used to explain the sequential relationship of variables, or an experimental design to examine mediating variables and the impact of introducing a novel stimulus.

#### *4.5.2. Sample:*

Another limitation of the present research is that the sample mostly consisted of undergraduate psychology students, with a mean age of 20 years. While this is an extremely common sample within the non-clinical delusion literature, it does limit the generalizability of the study. While attempts were made to recruit outside of the undergraduate psychology credit scheme, only 9% of the study participants were

recruited through the paid pool/advertisements, meaning generalizability was still limited by age group, and educational background. Nevertheless, the mean age of the sample lay within the common age of onset of clinical delusional experiences (e.g., Kessler et al., 2007), meaning that, although the spread of ages was limited, the mean age could be perceived as relevant to this subject area. The sample was also predominately female (83%) and white British (42%), further reducing the generalisability of the findings.

The present research also used convenience sampling which presents various limitations in and of itself (Barker et al., 2003). Given that participants were selected from a university student sample, there is greater likelihood of the sample being composed of individuals who are more likely to be younger, wealthier, and more highly educated (Dutton & Blank, 2011). It could be argued that, given the known associations between delusions and poverty, poorer physical health, and lower social cohesion (Freeman et al., 2011, Knowles, et al., 2011) we would expect such a sample to generally have less delusional beliefs than a more diverse sample with a range of socio-economic and educational backgrounds. Any further research aiming to explore these variables in the future should aim to obtain a sample representing a broader mix of ethnicities and a more even distribution of age and gender. The sample was also self-selected. There is some evidence to suggest that research using opt in strategies include higher proportions of individuals with some level of psychological difficulty (Freeman et al., 2005b). However, the low scores on measures of delusions and depression within the current the study, may be indicative that this is not a factor of concern.

The initial number of participants recruited for the study was slightly above the number recommended by the a priori power calculation ( $N = 86$ ). However, the card-sort

criteria, requiring at least two negative attributes or more on a card sort to be able to calculate the phi coefficient, resulted in eight participants being excluded from the study. This resulted in not meeting the target sample size for the study to be sufficiently powered, therefore increasing the likelihood of a Type II error occurring.

#### *4.5.3. Measures:*

There are a number of limitations which are associated with the use of self-report measures in research such as social-desirability bias (the tendency to answer questions in a manner that will be viewed favourably by others), response bias (the tendency to respond in a similar way across measures) or exaggeration (Field, 2013). The PDI yielded a high number of zero scores (39%), indicating that a proportion of participants did not endorse the PDI items assessing grandiosity. This may have been reflective of some the aforementioned biases associated with self-report measures, particularly those related to producing socially ‘acceptable responses’.

This also might indicate that the measure of grandiosity may not have captured the variable effectively. The two items examining the presence of grandiosity on the PDI have been utilised as a means of assessing grandiosity in previous studies (e.g. Verdoux et al., 1998a; Fowler et al., 2006b). However, while the PDI has been shown to have good reliability and validity, there has not been much research into the use of the individual questions as a reliable and valid means of measuring the relevant constructs of interest. Both Verdoux et al. (1998b) and Lopez-Ilundain et al. (2006), reported that the two-items assessing grandiosity had a Cronbach’s alpha of 0.68, which falls just slightly below the 0.7 mark indicating satisfactory internal reliability. In the current study a similar value was obtained ( $\alpha = 0.67$ ). This brings into question the validity of the results gained using this measure. There currently remains the need to develop a

valid and reliable grandiosity measure, rather than simply using 2 items from a scale. A more robust measure may have yielded a more accurate representation of grandiosity within the sample.

There are also some limitations resulting from the use of the self-descriptive card-sort task as a measure of compartmentalisation and the valence rating scales. The idea that paranoid and grandiose individuals have important, frequently accessed aspects of the self that are extremely negative and extremely positive respectively, fits well with descriptions of delusional symptomatology and the theoretical background. However, the present procedure may not have been successful in identifying those aspects. Showers (1992) noted that the self-concept sorting task can limit subjects' self-aspects to those that are well-described by the adjectives included in the card deck. It is possible that the positive and negative attributes used did not permit individuals to generate the kinds of self-aspects that are most important for their self-view.

The set of adjectives used in the study were devised by Shower's (1992) from commonly reported self-descriptions of a random sample of subjects and with the later addition of nine negative trait and mood adjectives (Bipolar Adjective Scales; Dykman, Abramson, Alloy, & Hartlage, 1989). Prior to the inclusion of the negative trait and mood adjectives, Showers, (1992) noted that the list of common self-descriptive adjectives were more likely to represent more transient negative feelings or states and not likely to influence global feelings of self-worth. This was reflected in the different findings produced using the two different lists of attributes, using similar samples, to assess compartmentalisation, differential importance and proportion of negative attributes (See Showers, 1992 for full details). Stopa et al., (2010) also altered the adjectives used within the card sort task when used to assess the relationship between

compartmentalisation and social anxiety. Therefore, in order to truly examine the relationship between compartmentalisation and delusions, it may be useful to develop a list of adjectives that represent traits and states that are prototypically descriptive of paranoid and grandiose individuals that can be included within the card-sort task. A list of prototype features of paranoia has recently been identified (Stringer et al., in prep) which could be used for this purpose.

Finally, the measure of paranoia used meant that paranoia was only assessed as a trait and therefore it was not possible to measure the multidimensional facets. As previously mentioned, the current research utilised Freeman and Garety's (2000) criteria for persecutory delusions to define paranoia, in line with previous research looking at both clinical and non-clinical paranoia. This definition however, does not capture the multidimensional nature of paranoia, leaving out important dimensional elements such as the 'reasonableness' of belief and the level of conviction (Freeman, 2007). These elements are not assessed within the measure used in this study (the PS), meaning that paranoia was measured unidimensionally and dimensional properties cannot be accessed. Therefore, this limitation could be addressed in future studies by including additional measures so that a more multidimensional representation of paranoia can be examined.

#### **4.6. Future research**

As the current study is completely novel there are a range of possible areas for future research to replicate and expand on the findings, some of which have been briefly touched upon throughout this chapter. Firstly, it would be important to conduct a similar study in which the variables of interest are sufficiently being captured in the sample. One method of doing this would be to include a more diverse and representative sample,

in terms of basic demographic factors such as age, gender, educational background, and ethnicity. As well as making the results more generalizable, it may also result in a more diverse representation of paranoia and grandiosity scores.

Another means of achieving this would utilize more robust measures, particularly for grandiosity. As repeatedly noted throughout this thesis, grandiose delusions have received considerably less attention than paranoia in the literature and therefore there are not as many adequate stand-alone measures of grandiosity within the context of psychosis. Therefore, more consideration should be given in future research as to how to ascertain that grandiosity is purely captured. It may also be interesting to screen participants for high levels of grandiosity and paranoia to ensure the sample represents the entire range of the non-clinical delusion continuum. Future studies should also aim to measure paranoia as a multidimensional construct. This would allow for a more nuanced examination of the relationship between self-structure and paranoia. As mentioned in the limitations section, the adjectives used in the card-sort task may limit the types of self-aspects generated by participants. Future research could attempt to use adjectives that are prototypically descriptive of paranoid and grandiose individuals in the card deck to see if participants generate self-aspects that are more important for their self-view.

Secondly, the significant positive relationships found between non-clinical paranoia and the proportion of negative attributes and negatively compartmentalised self-structures, are entirely novel. Once this finding has been successfully replicated in a non-clinical sample, the same measures could be administered to a clinical sample of participants including those currently suffering from persecutory delusions according to the Freeman and Garety (2000) definition, and those who are not. This would further



increase the validity of this novel relationship. It would also further support the proposal to focus on positive attributes within interventions, with the aim of bolstering the amount of positive attributes an individual has. This, in turn, may then change individual's self-structures from a more compartmentalised to a more integrated one. Also, the current study aimed to be an analogue study in which non-clinical and clinical delusions are seen as qualitatively similar, only differentiating in severity. However, as Showers (1992) noted, a sample of individuals in the general population may not generally articulate some of the more negative or important self-aspects through the use of the card-sort task. A clinical sample might access these aspects more readily on comparison, as they may give greater importance to their more negative and positive attributes. It would be of interest to see if different results would be identified using a clinical sample.

If significant associations are found using a clinical sample, then future research might also usefully investigate the longitudinal effects of self-structure and how amenable it is to change, to assess the utility of compartmentalisation in these contexts. This could potentially be investigated by examining compartmentalisation pre- and post-therapy, using known effective interventions for paranoia and grandiosity (e.g. CBT; Chan & Leung, 2002; Turkington, Dudley, Warman, & Beck, 2004). Another potential future study may be to examine the effects of the two chair method (Chadwick 2003, 2006) on compartmentalisation. The two chair method is an experiential role-play strategy, which explicitly brings into awareness both negative and positive self-schema. The aim of this method is to help individuals create a more varied and flexible model of the self in which self-discrepancies are admitted. The effect of this method on compartmentalisation could be examined using a single-case experimental design.

Examining compartmentalisation across these time points would help improve our understanding of the stability of self-structure.

Another interesting area for future research would be to include an experimental component in the study to elicit paranoid and grandiose beliefs. There are number of studies in which experimental manipulations have been used to induce paranoia in non-clinical participants (e.g. Ellet and Chadwick, 2007; Ellett, Allen-Crooks, Stevens, Wildschut and Chadwick, 2013; Lincoln, Peter, Schafer and Moritz, 2009). These studies have allowed for the study of multiple factors, without reliance on lengthy and potentially biased self-report measures alone. They also go beyond simple associations between variables and provide an opportunity to draw conclusions regarding causality. There currently have not been any studies in which experimental manipulations have been used to induce and examine grandiosity in the content psychosis. By including an experimental variable within the current area of research, differences in trait and state delusional beliefs could be examined. An experimental study would also allow for the mechanisms of the associations between negative-compartmentalisation and paranoia to be explored. This could help provide evidence to support the tentative hypothesis that individuals who are more integrated are able to buffer against negative self-attributes due to having more balanced views.

#### **4.7. Conclusions**

The results of the present thesis allow us to draw a number of tentative conclusions whilst holding the limitations outlined in mind. Three key findings emerged from the analyses. Higher levels of non-clinical paranoia were associated with a greater proportion of negative attributes an individual has within their self-structure. There was also evidence to suggest that negatively compartmentalised self-structures were also

associated with paranoia, with those who reported more negative attributes and were more compartmentalised reporting greater levels of paranoia. Finally, the study demonstrated that evaluative beliefs are a greater predictor of delusions compared to self-structure, with negative other-evaluative beliefs being the strongest predictor of paranoia and positive self-evaluative beliefs predicting grandiosity. Collectively, the findings of the current thesis provide a platform for further research examining the role of self-structure in non-clinical delusions which could potentially have exciting implications for both the understanding of the development and maintenance of paranoia and the clinical treatment of paranoia as an individual symptom.

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## Appendices

### **Appendix 1: Sociodemographic Questions**

Please take a few minutes to complete the information below before you start.

- 1. Please write down your date of birth (dd/mm/yyyy).**
- 2. Please specify your gender.**
- 3. Which of the following best describe your ethnic group or cultural background?**

White British  
Any Other White Background  
Asian Background  
African Background  
Any Other Black Background  
Mixed White British and Other  
Mixed White Non-British and Other  
Any Other Mixed Background

- 6. What is your religion?**

Christian  
Buddhist  
Hindu  
Sikh  
Muslim  
Jewish  
Other  
None  
I would rather not say

- 9. Have you had previous contact with mental health services for personal reasons?**

Yes  
No

If yes, please give a brief description:

## Appendix 2: The Paranoia Scale (PS; Fenigstein & Venable, 1992)

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

is usually your initial response that is most accurate so please do not spend a long time considering

each item.

	Not at all applicable to me.	Slightly applicable to me.	Moderately applicable to me.	Very applicable to me.	Extremely applicable to me.
1. Someone has it in for me					
2. I sometimes feel as if I am being followed					
3. I believe that I have often been punished without cause					
4. Some people have tried to steal my ideas and take credit for them.					
5. My parents and family find more faults with me than they should.					
6. No one really cares much about what happens to you.					
7. I am sure I get a raw deal in life.					
8. Some people will use somewhat unfair means to get profit or an advantage, rather than lose it.					
9. I often wonder what hidden reason another person may have for doing something nice for you.					
10. It is safer to trust no one.					

11. I have often felt that strangers were looking at me critically.					
12. Most people make friends because friends are likely to be useful to them.					
13. Someone has been trying to influence my mind.					
14. I am sure I have been talked about behind my back.					
15. Most people inwardly dislike putting themselves out to help other people.					
16. I tend to be on my guard with people who are somewhat more friendly than I expected.					
17. People have said insulting and unkind things about me.					
18. People often disappoint me.					
19. I am bothered by people outside, in cars, in stores, etc watching me.					
20. I have often found people jealous of my good ideas just because they had not thought of them first.					

**Appendix 3: The Depression Anxiety Stress Scales 21 (DASS-21; Lovibond & Lovibond's, 1995) – Depression subscale**

DASS 21 NAME \_\_\_\_\_ DATE \_\_\_\_\_

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 - NEVER
- 1 Applied to me to some degree, or some of the time - SOMETIMES
- 2 Applied to me to a considerable degree, or a good part of time - OFTEN
- 3 Applied to me very much, or most of the time - ALMOST ALWAYS

	N	S	O	AA
1. I couldn't seem to experience any positive feeling at all	0	1	2	3
2. I found it difficult to work up the initiative to do things	0	1	2	3
3. I felt that I had nothing to look forward to.	0	1	2	3
4. I felt down-hearted and blue	0	1	2	3
5. I was unable to become enthusiastic about anything	0	1	2	3
6. I felt I wasn't worth much as a person	0	1	2	3
7. I felt that life was meaningless	0	1	2	3

Total: \_\_\_\_\_

## Appendix 4: The Brief Core Schema Scales (BCSS; Fowler, et al. 2006)

### The Brief Core Schema Scales: beliefs about self and others

This questionnaire lists beliefs that people can hold about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1–4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response to each belief is often the most accurate.

					Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
<b>MYSELF</b>	I am unloved	No	Yes	→	1	2	3	4
	I am worthless	No	Yes	→	1	2	3	4
	I am weak	No	Yes	→	1	2	3	4
	I am vulnerable	No	Yes	→	1	2	3	4
	I am bad	No	Yes	→	1	2	3	4
	I am a failure	No	Yes	→	1	2	3	4
	I am respected	No	Yes	→	1	2	3	4
	I am valuable	No	Yes	→	1	2	3	4
	I am talented	No	Yes	→	1	2	3	4
	I am successful	No	Yes	→	1	2	3	4
	I am good	No	Yes	→	1	2	3	4
	I am interesting	No	Yes	→	1	2	3	4
<b>OTHER PEOPLE</b>	Other people are hostile	No	Yes	→	1	2	3	4
	Other people are harsh	No	Yes	→	1	2	3	4
	Other people are unforgiving	No	Yes	→	1	2	3	4
	Other people are bad	No	Yes	→	1	2	3	4
	Other people are devious	No	Yes	→	1	2	3	4
	Other people are nasty	No	Yes	→	1	2	3	4
	Other people are fair	No	Yes	→	1	2	3	4
	Other people are good	No	Yes	→	1	2	3	4

Other people are trustworthy	No	Yes	→	1	2	3	4
Other people are accepting	No	Yes	→	1	2	3	4
Other people are supportive	No	Yes	→	1	2	3	4
Other people are truthful	No	Yes	→	1	2	3	4

**Appendix 5: Attribute Index Cards and Card-Sort Task Recording Sheets**

1. Successful	11. Independent
2. Disagreeing	12. Not the “real me”
3. Giving	13. Needed
4. Hopeless	14. Immature
5. Capable	15. Communicative
6. Confident	16. Weary
7. Lazy	17. Mature
8. Self-centered	18. Uncomfortable
9. Unloved	19. Sad & Blue
10. Comfortable	20. Incompetent

21. Organized	31. Irritable
22. Insecure	32. Like a failure
23. Worthless	33. Hardworking
24. Inferior	34. Isolated
25. Intelligent	35. Happy
26. Lovable	36. Indecisive
27. Fun & Entertaining	37. Friendly
28. Interested	38. Disorganized
29. Outgoing	39. Optimistic
30. Energetic	40. Tense




## **Appendix 6: Study Information Sheet**

### **'Self-structure and delusions'**

Before you decide to take part, it is important for you to fully understand what the study involves and all relevant information. Please take time to read the following sheet carefully.

#### **Why is this study being conducted?**

Previous research has highlighted the influence of the content of how people view themselves on the development and maintenance of delusional beliefs. However, there is a growing evidence base indicating that how individuals store information about themselves, otherwise known as self-structure, may be a fundamental component in the accessibility of that content. The current project aims to explore the impact of how individuals structure their self-knowledge on the development of delusions, particularly paranoia and grandiosity. The findings of the study may contribute our understating of the development and maintenance of delusions. It may also have implications for future psychological interventions.

#### **What does the study involve?**

During the study you will be ask to complete a card sorting task which requires you to organize index cards, each containing either a positive or negative adjective into different aspects of yourself and life. You will also complete five questionnaires which examine delusional beliefs, self-content and mood. The card sort task will be explained fully to you before you start. The study will be completed in one session and will take approximately 35-45 minutes to complete the study.

#### **Who is involved in this study?**

The principal investigator for this study is Laura Gallardo, a Trainee Clinical Psychologist. The project will be supervised by Dr Lyn Ellett and Dr Kate Theodore, lecturers in Clinical Psychology. All are from Royal Holloway University.

#### **Why have I been asked to participate?**

We are recruiting undergraduate students to take part in the study.

#### **Do I have to take part?**

It is up to you to decide to take part. If you do decide to take part in the study you will be asked to sign a consent form to agree that you have read and understand the study information.

#### **Can I withdraw from the study?**

Yes, you can withdraw at any time even if you have already signed the consent form without giving a reason. The data you have supplied up to that point will be removed and won't be used in the study.

### **What are the incentives to complete the study?**

If you are part of the psychology participation pool, you will gain course credits for your participation. If you are part of the general participation pool you will be entered into a prize draw from a £100 'All4one' voucher.

### **Will my taking part in the study be kept confidential?**

All information which is collected during the course of the research will be kept strictly confidential. The questionnaire scores and task data will be anonymised and stored securely on a database. Only the researchers will have access to the information you give during the study.

### **What are the possible disadvantages and risks of taking part?**

There are no known disadvantages or risks to participating in this study. However, if you do feel worse after taking part in the study and you feel you need some support to help with difficult emotions, please contact your GP and inform the principal researcher via email (see details below). The university also offers a counselling service or you may also wish to contact the Samaritans.

#### *Royal Holloway Counselling Service*

Website: <https://www.royalholloway.ac.uk/ecampus/welfare/counselling/home.aspx>

Telephone: 01784 443 128

Email: [counselling@royalholloway.ac.uk](mailto:counselling@royalholloway.ac.uk)

Location: FW171

#### *Samaritans*

Website: <http://www.samaritans.org/>

Telephone: 116 123 (UK & ROI)

Email: [jo@samaritans.org](mailto:jo@samaritans.org)

### **What will happen to the results of the research study?**

The research study will be written up and submitted in partial fulfilment of the requirements of the Doctorate in Clinical Psychology. It is also proposed that the findings of the study will be written up and submitted to a peer-reviewed journal. If you are interested in hearing about the results and conclusions of the study, please inform the principal researcher via email who will send you a summary once the research is complete.

### **Who has reviewed the study?**

The study has been reviewed by the Royal Holloway University of London Department Ethics Committee.

**Who is organizing the funding of the research?**

The research is a requirement of Laura Gallardo's doctoral thesis as part of her training in Clinical Psychology. Her training is funded by Camden and Islington Mental Health Foundation Trust.

**How can I get more information?**

Please do not hesitate to contact Laura Gallardo, the principal researcher, via email should you need any further information about the study. You may also contact Dr Lyn Ellett or Dr Kate Theodore.

Laura Gallardo: [laura.gallardo.2014@live.rhul.ac.uk](mailto:laura.gallardo.2014@live.rhul.ac.uk)

Dr Lyn Ellett: [lyn.ellett@rhul.ac.uk](mailto:lyn.ellett@rhul.ac.uk)

Dr Kate Theodore: [kate.theodore@rhul.ac.uk](mailto:kate.theodore@rhul.ac.uk)

## Appendix 7: Participant Consent Form

### Consent Form

Self-structure and Delusions

Name of Researcher: Laura Gallardo

Please initial box

1. I confirm that I have read the information sheet for the above study.  
I have had the opportunity to consider the information, ask  
questions and have had these answered satisfactorily.
  
2. I understand that my participation is voluntary and that I am free to  
withdraw at any time without giving any reason, without my medical  
care or legal rights being affected.
  
3. I understand that the information collected about me will be used  
to support other research in the future, and may be shared  
anonymously with other researchers.
  
4. I agree to take part in the above study.

\_\_\_\_\_  
Name of Participant                      Date                      Signature

\_\_\_\_\_  
Name of Person                      Date                      Signature  
taking consent

## Appendix 8: Card-Sort Task Instruction Sheet

### Card Sort Instructions

In this part of our study, we are looking at how you describe yourself. In front of you, you have a sheet with word cards on it and a recording sheet.

Your first task is to use the cards in front of you to generate a description of yourself. You have 40 cards and one recording sheet. Each card contains the name of a trait or characteristic. **Your task is to think of the different aspects (i.e. roles/identities) of yourself or your life and then form groups of traits that go together, where each group of traits describes an aspect of yourself or your life. In other words, you will think about the aspects (roles/identities) of yourself and sort the cards into groups so that each group of traits represents a different aspect of yourself.** Use whatever groups best describe the way you think about yourself and the different aspects of your life.

You may form as many or as few groups of traits as you desire. Continue forming groups until you feel that you have formed the important ones. We realize that this task could be endless, but we want only groups of traits that are currently meaningful to you. When you feel you are straining to form more groups, it is probably a good time to stop.

Each group may contain as few or as many traits as you wish. You do not have to use every card, only those that you feel can be used to describe yourself. Also, each card may be used in more than one group, so you may keep re-using traits in different groups as many times as you like.

The attached sheet with the columns is your recording sheet. Please write a label for each group that you create at the top of the column and then list the numbers that correspond to the traits included in that group underneath.

You will have 25 minutes to complete this task. Please sit quietly and do not work on any outside material once you have finished. The experimenter will tell you when to proceed. You may begin.

## Appendix 9: Differential Importance Questions

Card sort aspect questions (Differential importance ratings)

**INSTRUCTIONS:** Now we would like you to make some additional ratings for each aspect you previously created. You will fill out 3 ratings for each aspect you have created. The aspect label will be presented on the screen as a reminder. Please click the tab below to continue on.

1. How important is this aspect of yourself for the way you think about yourself? In other words, how central is this aspect to your overall concept of yourself?

1	2	3	4	5	6	7
Not at all important important						Very

2. How positive is this aspect of yourself?

1	2	3	4	5	6	7
Not at all positive positive						Very

3. How negative is this aspect of yourself?

1	2	3	4	5	6	7
Not at all negative negative						Very

## Appendix 10: Self-Certification Approval Document



### Ethics Review Details

You have chosen to self certify your project.	
Name:	Gallardo, Laura (2014)
Email:	PBVA071@live.rhul.ac.uk
Title of research project or grant:	Self-structure and delusions
Project type:	Royal Holloway postgraduate research project/grant
Department:	Psychology
Academic supervisor:	Kate Theodore
Email address of Academic Supervisor:	kate.theodore@rhul.ac.uk
Funding Body Category:	No external funder
Funding Body:	
Start date:	04/03/2016
End date:	31/05/2017

### Research question summary:

Previous research has highlighted the influence of the content of an individual's self-concept on the development and maintenance of delusional beliefs in psychosis. However, there is a growing evidence base indicating that self-structure may be a fundamental component in the accessibility of that content. Self-structure refers to the way in which self-content is organised. According to the model proposed by Showers (1992, 2000) there are two ways in which self-beliefs can be organised: compartmentalised (self-aspects contain either primarily positive or negative attributes) or integrated (self-aspects contain both positive and negative attributes).

The current project aims to explore the impact of how individuals structure their self-knowledge on the development of delusions, particularly paranoia and grandiosity. As delusional beliefs such as paranoia and grandiosity have been shown to be on a continuum ranging from non-clinical to clinical, the current sample will be selected from a non-clinical population. It is predicted that individuals who structure positive or negative attributes



separately (i.e. compartmentalised) will be more likely to endorse delusional beliefs due to having more polarised views of themselves. Also, individual who attribute more importance to positive attributes (i.e. positively compartmentalised individuals) will be more likely to have grandiose beliefs and those who give more importance to negative attributes (i.e. negatively compartmentalised individuals) will be more likely to have paranoid beliefs. The findings of the study may contribute our understating of the development and maintenance of delusions. It may also have implications for future psychological interventions.

#### Research method summary:

The study will use a cross-sectional, correlational design. Self-content (independent variable) will be assessed and compared to selfstructure (independent variable) to determine which is a stronger predictor of delusions (dependent variable).

Participants will be recruited from the Royal Holloway student population using the psychology and general student participant pool. A sample size of 85 is required. Participants will be tested as and when they are available. All tasks and questionnaires will be completed in one sitting within the RHUL psychology department.

Each student will be given an information sheet outlining the details of the study and a consent form. Those who consent to taking part will be asked to complete a self-concept card sorting task, in which they organise positive and negative adjectives into different self-aspects, to determine compartmentalisation (Linville, 1987). On completion of the card sort task, participants will be given a pack of questionnaires consisting of the Paranoia Scale (Feninstein & Vabable, 1992), Depression Anxiety Stress Scales 21 (DASS-21; Lovibond & Lovibond's, 1995), Brief Core Schema Scales (BCSS; Fowler, et al., 2006), and the Peters et al. Delusions Inventory (PDI; Peters et al. 1999). A demographic sheet will also be enclosed. After completing the measure participants will be offered the opportunity to attend a debrief session and ask any questions they might have a about the study.

The analysis will consist of three parts; Between groups t-test - to determine if there is a difference between compartmentalised individuals vs. integrated individuals, on measures of paranoia and grandiosity; Correlational analysis to explore the relationship between compartmentalisation and paranoia and grandiosity; Multiple regression to explore whether self-content or self-structure is a stronger predictor of delusional beliefs.

#### Risks to participants

Does your research involve any of the below?

Children (under the age of 16),

No

Participants with cognitive or physical impairment that may render them unable to give informed consent,

No

Participants who may be vulnerable for personal, emotional, psychological or other reasons,

No

Participants who may become vulnerable as a result of the conduct of the study (e.g. because it raises sensitive issues) or as a result of what is revealed in the study (e.g. criminal behaviour, or behaviour which is culturally or socially questionable),

Yes

Participants in unequal power relations (e.g. groups that you teach or work with, in which participants may feel coerced or unable to withdraw),

No

Participants who are likely to suffer negative consequences if identified (e.g. professional censure, exposure to stigma or abuse, damage to professional or social standing),

No

Details,

Given the sensitive nature of some of the variables being measured (e.g. negative self-aspects, low mood, delusions), it will be important to provide participants with the opportunity to bring forward any issues that may have arisen for them whilst taking part. A debrief session will be offered to all participants to discuss the project in more detail and to check how they are feeling after completing the measures. If participants report feeling distressed, there will be signposting information provided both for university services (e.g. student counselling) and GP services. If any of the participants have concerns regarding their results on any of the measures, it will be highlighted that the measures being used are not diagnostic. Participants will also be given contact details (the department research telephone number) should they have any future queries regarding the study.

As a non-clinical sample is being used it is not expected that any issues should arise. Also as a trainee clinical psychologist I have experience in managing distress and difficult emotions. This along with the aforementioned measures lead me to believe that no ethical issues should arise from this study.

## Design and Data

Does your study include any of the following?

Will it be necessary for participants to take part in the study without their knowledge and/or informed consent at the time?,

No

Is there a risk that participants may be or become identifiable?,

No

Is pain or discomfort likely to result from the study?,

No

Could the study induce psychological stress or anxiety, or cause harm or negative consequences beyond the risks encountered in normal life?,

No

Does this research require approval from the NHS?,

No

If so what is the NHS Approval number,

Are drugs, placebos or other substances to be administered to the study participants, or will the study involve invasive, intrusive or potentially harmful procedures of any kind?,

No

Will human tissue including blood, saliva, urine, faeces, sperm or eggs be collected or used in the project?,

No

Will the research involve the use of administrative or secure data that requires permission from the appropriate authorities before use?,

No

Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?,

No

Is there a risk that any of the material, data, or outcomes to be used in this study has been derived from ethically-unsound procedures?,

No

Details,

### Risks to the Environment / Society

Will the conduct of the research pose risks to the environment, site, society, or artifacts?,

No

Will the research be undertaken on private or government property without permission?,

No

Will geological or sedimentological samples be removed without permission?,

No

Will cultural or archaeological artifacts be removed without permission?,

No

Details,

### Risks to Researchers/Institution

Does your research present any of the following risks to researchers or to the institution?

Is there a possibility that the researcher could be placed in a vulnerable situation either emotionally or physically (e.g. by being alone with vulnerable, or potentially aggressive participants, by entering an unsafe environment, or by working in countries in which there is unrest)?,

No

Is the topic of the research sensitive or controversial such that the researcher could be ethically or legally compromised (e.g. as a result of disclosures made during the research)?,

No

Will the research involve the investigation or observation of illegal practices, or the participation in illegal practices?,

No

Could any aspects of the research mean that the University has failed in its duty to care for researchers, participants, or the environment / society?,

No

Is there any reputational risk concerning the source of your funding?,

No

Is there any other ethical issue that may arise during the conduct of this study that could bring the institution into disrepute?,

No

Details,

#### Declaration

By submitting this form, I declare that the questions above have been answered truthfully and to the best of my knowledge and belief, and that I take full responsibility for these responses. I undertake to observe ethical principles throughout the research project and to report any changes that affect the ethics of the project to the University Research Ethics Committee for review.

Certificate produced for user ID, PBVA071

Date:	30/03/2016 17:03
Signed by:	Gallardo, Laura (2014)
Digital Signature:	Laura Gallardo
Certificate dated:	3/30/2016 5:43:31 PM
Files uploaded:	information sheet.docx Consent form.doc