THE COGNITIVE MODEL OF VOICES IN PSYCHOSIS: AN ECOLOGICAL VALIDATION OF THE SOCIAL RANKING PERSPECTIVE

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BY

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Abstract

Influential cognitive models of distressing symptoms in psychosis have been informed by evolutionary-based Social Ranking Theory. Social ranking theory views the formation and maintenance of symptoms as being significantly defined by ‘social mentalities’ that are operational during everyday social processes, such as when we compare ourselves to others. One framework of psychotic symptoms which has incorporated this social evolutionary perspective is the cognitive model of voices.

The introduction of this thesis gives an overview of the nature of psychosis, and argues affective dysfunction and emotional factors are now included as a dimension of psychosis. It also draws attention to auditory hallucinations and persecutory beliefs and models of these symptoms are outlined. The cognitive model of voices is described and beliefs about the nature of voices, including their supposed omnipotence and power, are argued to be the critical determinants of affective and behavioural outcomes in voice hearers. For persecutory delusions, the deservedness of persecution is highlighted as a pertinent construct.

The evolutionary basis of social defeat and rank is also outlined. Particular attention is drawn to the Involuntary Defeat Strategy (IDS) which is argued to automatically escalate when an individual encounters defeat and they perceive their social status to be lowered. The IDS is argued to be a dynamic mechanism, which may be attenuated when defeat is accepted. The current thesis is based on the rationale that the IDS is implemented in psychotic onset, affective dysfunction arising from the experience of psychosis, positive symptomology and relapse. Specifically, it argues that the specific nature of the IDS within the cognitive model of voices remains underdeveloped: there is a paucity of behavioural and ecologically valid support for the role of the core elements of the IDS contributing to beliefs and behavioural outcomes in relation to voices.
The empirical section of the thesis (chapters 4-6) contains four empirical studies, which aim to operationalise and test the main social evolutionary aspects of the cognitive model of voices in new ways. Section one of chapter four presents an analogue study with twenty-five undergraduate students and members of the general population, which aimed to test the reliability and validity of the Ethological Coding System for Clinical Interview (ECSI) for assessment of key behavioural components of the IDS during social interaction. This was within the context of an interview paradigm which requires participants to talk about a neutral subject, after which they are asked to disclose shameful experiences and behavioural changes are coded. As predicted, increases in a core IDS behaviour was significantly related to shame and low social rank. Participants with lower social rank also displayed a larger activation of this key IDS behaviour when talking about shame. This result is argued to provide partial ecological support for the IDS as being activated when shame cognitions are online; being particularly active when social rank is seen as low and vulnerable to attack from others.

Informed by the analogue study, section two of chapter four details a clinical study which applied the ECSI to assessment of the IDS in a sample of twenty-four voice hearers. Participants with psychosis were videotaped during an interview paradigm which required them to talk about a neutral topic (e.g. daily life), after which they were ‘shame challenged’ through being asked to talk about their voices. The results indicated that belief in the omnipotence of voices was the best predictor of increases in aspects of IDS behaviour when participants were asked to talk about voices. It is argued that this study may provide behavioural support for the role of an active IDS in participants who believe their voices to be greatly omnipotent, and when these social mentalities are online. It is argued that the experience of living with highly omnipotent voices may prime the IDS over time, whereby the IDS remains escalated by the individual’s own beliefs and subordinate social schema.
The third research study detailed in chapter five builds on the first two studies, by aiming to assess important elements of the IDS in the longitudinal and ecologically valid context of the individual’s day to day experience (i.e during one week of daily life). This was achieved by use of the Experimental Sampling Method (ESM) with forty participants with psychosis. The results suggested that social and voice subordination experienced during daily life predicted active elements of the IDS (e.g. feelings of defeat, entrapment and shame). These elements of the IDS were also found to predict daily levels of positive and negative affect. It is argued that these results may partially support the view that the IDS and beliefs in power and omnipotence of voices are not independent. Moreover, it is argued that this work provides the first demonstration of the governance of daily positive and negative affect by the IDS in participants with psychosis.

Chapter six describes a fourth empirical study with forty participants with psychosis, which aimed to assess deservedness of persecution framed within the context of the cognitive model of voices. Voice hearers high in deservedness may believe their voices to be incredibly powerful and omnipotent, and therefore more likely to acquiesce and comply to their wishes. The results were mixed: whilst compliance did not show any link with deservedness, participants high in deservedness had greater beliefs in the omnipotent and powerful nature of voices. It is argued that this indicates that the deservedness framework may be useful as a way of understanding relationships with hallucinations.

In the final chapter seven, the main findings are summarised and implications for the model and clinical treatment of psychotic symptoms are explored. It is argued that the role of an active IDS could potentially be incorporated into the cognitive model of voices as a governor of voice beliefs and daily affect. As such, therapeutic interventions that aim to reduce the IDS may infer a similar decrease in the omnipotent and powerful nature of voices. This may be potentially achieved through the acceptance of defeat and a focus on more realistic goals.
Current psychological therapies which may help facilitate this are suggested. Moreover, it is argued that feelings of deservedness could potentially infer vulnerability for voices to become construed as powerful and omnipotent. The limitations of the work are also discussed and future research directions proposed.
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Glossary

**Blocked Escape**: When escape from a defeating situation is impossible for the individual.

**Arrested Flight**: A specific form of behavioural profile arising from blocked escape. When escape from aversive contexts is not possible, the individual will attempt to reduce social output and engagement with the environment. Arrested flight functions to signal ‘no-threat’ and ‘out of action’ to others.

**Defeat**: A failure to successfully compete for valued resources and social attractiveness; a perceived loss of social rank.

**Entrapment**: The inability to remove oneself from the situation in which defeat was encountered. A cognitive state of helplessness and powerlessness in the face of defeat.

**Involuntary Subordination**: The core cognitive component of the Involuntary Defeat Strategy. Automatically generated, and genetically programmed, feelings of social inferiority, shame and defeat following loss of social rank. The individual may also feel useless and powerless.
Chapter 1
Section I
Psychosis Conceptualised: Definitions and Symptoms

Introduction

Psychosis remains one of the most pernicious and controversial psychopathologies in modern society (Bentall, 1993; Cuesta, Basterra, Sanchez-Torres, & Peralta, 2009; Guest & Cookson, 1999; Knapp, Mangalore, & Simon, 2004; Levin, 2006). Once called the “worse disease of mankind”, the diagnosis of Schizophrenia represents the most severe outcome on the continuum of psychotic experience and has a lifetime prevalence rate of 4/1000, considerably higher than once traditionally believed (Bhugra, 2005). Early signs of schizophrenia may be evident in childhood, but typically reach fruition within the ages of 18 and 25 years old for men and 25-30 years old for women (Castle, 2000; Salem & Kring, 1998). Later onset (i.e. over the age of 40) may also routinely observed (Castle & Murray, 1993; Lloret, Harto, Tatay, Almonacid, Castillo, Calabuig, 2011; McGlashan, 1994).
**Burden**

Schizophrenia is ranked ninth in terms of global burden of illness, and the life expectancy of someone with a diagnosis of schizophrenia is fifteen years less than the normal population (Harris & Barraclough, 1998; Murray & Lopez, 1996). Schizophrenia not only debilitates the individual experiencing the symptoms. A major consequence is the experience of significant burden and stigma by the individual’s family, who often become the primary care-givers (Birchwood, 1983; Birchwood & Smith, 1987; Hoenig & Hamilton, 1966; Perlick, Rosenheck, Kaczynski, Swartz, Canive & Lieberman, 2006; Stirling, Tantam, Thonks, Newby, & Montague, 1991; Wong, Davidson, Anglin, Link, Gerson & Malaspina et al., 2009). As an example, around 50% of patients will stay with their families following discharge from hospital (Chan, 2011). This results in significant distress being common amongst relatives (Martens & Addington, 2001; Winefield & Harvey, 1993; Spaniol, Zipple & Lockwood, 1992). Families also routinely experience financial (e.g. giving up employment) and social (e.g. reduced leisure time) burden as a consequence of caring for someone with psychosis (World Federation of Mental Health, 2010).

**Cost**

The total cost of schizophrenia is argued to be comprised of a mixture of direct factors arising from treatment (e.g. medication), along with indirect factors (e.g. lost productivity from unemployment) which can commonly exceed the direct costs (Knapp et al., 2004). Treatment expenditure for the National Health Service (NHS) in the UK exceeds upwards of £2 billion a year (Guest & Cookson, 1999; Knapp, 1997; McCrone, Dhanasiri, Patel, Knapp & Lawton-Smith, 2007). In the United States, Wu, Birnbaum, Shi, Ball and Kessler (2002) report that the overall economic cost of Schizophrenia exceeded $60 billion. In Asia, the overall cost has also been estimated to be around $3 billion (Chang, Cho, Jeon, Hahm, Lee, Park & Cho, 2008). A major
contributor to cost is the high propensity for people with schizophrenia to have a relapse of psychotic symptoms and require rehospitalisation. For instance, the twenty year longitudinal Madras study conducted by Thara (2004) indicated a relapse rate of 40% following complete remission. Consequently, relapse of distressing symptoms represents the largest share of the cost involved in treating schizophrenia (Almond, Knapp, Francois, Toumi & Brugha, 2004; Weiden & Olfson, 1995).

Co-morbidity

Individuals diagnosed with schizophrenia are around 12 times more likely to commit suicide compared to the general population, with the highest rates occurring around the early stages of psychosis (Dutta, Murray, Hotopf, Allardyce, Jones & Boydell, 2010). Suicide is not however limited to the first episode, and epidemiological studies have indicated people with schizophrenia have an elevated lifetime suicide risk of between 5% and 10% (Palmer, Pankratz & Bostwick, 2005). As will be expanded further in the current chapter, depression and anxiety disorders are also now acknowledged to commonly accompany schizophrenia (Braga, Mendlowitz, Marrocos & Figueira, 2005). For example, a meta-analysis conducted by Achim, Maziade, Raymond, Olivier, Merette and Roy (2011) indicated that 38.3% of patients with schizophrenia suffered from a co-morbid anxiety disorder (e.g. social anxiety disorder). Individuals with schizophrenia are also more likely to abuse substances such as cannabis and alcohol: Buckley, Miller, Lehrer and Castle (2009) argue that 47% of patients with schizophrenia will have received a diagnosis of comorbid substance abuse. Substance abuse can also result in an increase in medical co-morbidities in which people with psychosis are less less likely to seek treatment for (e.g. diabetes mellitus) (Folsom, McCahill, Bartels, Lindamer, Ganiats & Jeste, 2002; Jeste, Gladsjo, & Lindamer, 1996). Lambert, Velakoulis and Pantelis (2003) argue that it is these physical co-morbidities that account for 60% of deaths in schizophrenia which are not related to suicide.
Definitions

The concept of schizophrenia is heterogeneous and complex, with little consensus being reached within the scientific community regarding what it actually represents (Bentall, 2009; Read, 2007). Consequently, there are calls for the diagnosis to be abandoned due to its questionable reliability and validity (Bentall, 1990, 1992, 1993; Bentall, Jackson & Pilgrim, 1988; Read, Bentall & Fosse, 2009). Theorists have argued that the heterogeneity in symptoms (e.g. hallucinations and delusions) across individuals point to the need for two to three independent syndromes (Crow, 1980; Liddle, 1987). Consequently, psychotic symptoms are now argued to be better represented on a continuum ranging from subclinical experiences in the general population (e.g. minor paranoia) to more severe experiences found in people with psychosis (e.g. persecutory delusions) (Hanssen, Bak, Bijl, Vollebergh & Van Os, 2005; McGorry, 1998; Van Os, Linscott, Myin-Germeyns, Delespaup & Krabbendam, 2009; Verdoux & Van Os, 2002). This has led to a shift in focus which aims to address the main and most distressing symptoms for each individual; with contemporary psychological models framing psychotic experiences firmly within social and emotional contexts, and placing less emphasis on strict diagnostic criteria which are argued to be stigmatising and largely invalid for informing treatment plans (Birchwood, Trower, Brunet, Gilbert, Iqbal, & Jackson, 2007; Estroff, 1989; Read et al., 2009; Van Zelst, 2009). People with the same standardised diagnosis of schizophrenia will show wide variability in response to treatment. Some will show a full recovery, whilst a significant number will not respond to strong antipsychotic medication and continue to experience distressing symptoms over the course of their life (Bleuler, 1974; Harding, Brooks, Ashikaga, Strauss & Breier, 1987; McGlashan, Levy & Carpenter, 1975; Peuskens, Bech, Moller, Bale, Fleurot, & Rein, 1999; Shergill, Murray & McGuire, 1998). This thesis is therefore informed by the need to further expand current evolutionary models of symptom maintenance and psychological treatment for the individuals who continue to
experience highly distressing hallucinations and delusions. In order to provide this, it is first necessary to give an overview of the main psychotic symptoms which are the focus of the current thesis, after which the historical foundation and contemporary models will be discussed (section II).

**Symptoms**

It is now well-recognised that the individual presenting with psychosis or a diagnosis of schizophrenia will experience a wide array of difficulties in cognitive, affective and psychosocial domains (Birchwood, 2003; Bellack, Morrison, Wixted & Mueser, 1990; Troisi, Spalletta, & Pasini, 1998). Neuropsychological deficits are pervasive both in the prodromal and acute stages of psychosis, and closely infer social and functional disability (Green, 1996; Velligan, Bow-Thomas, Mahurin, Miller & Halgunseth, 2000). Specific reductions in executive function (e.g. planning and carrying out goal-directed activities) are routinely observed, along with impaired memory and attention (Cornblatt & Erlenmeyer-Kimling, 1985; Laurent, Saoud, Bougerol, d’Amato, Anchisi, & Biloa-Tang et al., 1999; Kar Ray, Crow, Connell, Ahmad, Barrera, & Quested et al., 2008; Pflueger, Gschwandtner, Steiglitz, & Rössler, 2007). Significant changes in brain anatomy are also now well acknowledged in people with psychotic symptoms. For example, structural changes in the ventricular system are highly related to psychosis (Andreasen, Olsen, Dennert & Smith, 1982; Mitelman, Canfield, Brickman, Shihabuddin, Hazlett & Buchsbaum, 2010; Weinberger, Cannon-Spoor, Potkin & Wyatt, 1980). The current diagnostic and statistical manual of the American Psychiatric Association (DSM-IV TR, 2000) defines psychosis by the main presence of the following positive (i.e. traits over and above those found in the normal population) and negative symptoms (i.e. those which are lacking in clinical populations respective to the normal population).
Positive Symptoms

The current thesis is concerned with both persecutory delusions and auditory hallucinations, both of which are considered core positive symptoms in psychosis. It is important to highlight however that there are other positive symptoms associated with schizophrenia. These commonly pertain to Formal thought disorder (FTD), in which disruptions to speech and communication are evident. Speech will often appear derailed and jumbled; in more severe cases the patient will be largely incomprehensible. Salient presentations of FTD include thought blocking, whereby normal speech is interrupted by long silences.

Hallucinations

A hallucination refers to the perception of a stimulus in the absence of any true external stimulus. The most prevalent psychotic hallucinatory experience is auditory, more colloquially referred to as “hearing voices”. Hallucinations can also occur across the visual, olfactory and tactile sensory domains (Mueser, Bellack & Brady, 1990; Lewandowski, DePaola, Camsari, Cohen & Ongur, 2009). It is now recognised that the experience of hallucinations is not limited to people with psychosis. For example, it is estimated that between 1%-10% of the general population will hear voices (Johns, 2005; Verdoux & Van Os, 2002). Hallucinations may also be caused by medical conditions such as migraine and epilepsy, along with recreational drugs such as LSD (Choong, Hunter & Woodruff, 2007; Elliot, Joyce & Shorvon, 2009). Further, around one quarter of bipolar inpatients will hear voices (Baethge, Baldessarini, Freudenthal, Steeruwitz, Bauer & Bschor, 2005). Hallucinatory experiences are also frequently reported in individuals experiencing post-traumatic stress disorder (PTSD) (Anketell, Dorahy, & Curran, 2011; Brewin & Patel, 2010). Additionally, Yee, Korner, McSwiggan, Mearns and Stevenson (2005) also report that up to 30% of people with borderline personality disorder (BDP) hear voices.
Voices may be present in childhood (Escher, Romme, Buiks, Delespaal & van Os, 2002). Bartels-Velthuis, Jenner, van de Willige, van Os and Wiersma (2010) indicated that 9% of 7 and 8 year old children reported hearing voices, the majority of which had limited functional impact.

Bartels-Velthuis, van de Willige, Jenner, van Os and Wiersma (2011) recently conducted a 5 year follow-up on the same sample, and report that auditory hallucinations had a 24% persistence rate (i.e 76% remission). Importantly, persistence and incidence of voices was associated with psychotic symptoms assessed by the Child Behaviour Checklist (CBCL: Achenbach, 1991) (e.g. delusions, thought problems). Children with persistent auditory hallucinations also had lower primary school test scores compared to children who did not hear voices. These results therefore indicate that auditory hallucinations in childhood are likely to be transient and not infer risk for psychosis for the majority of children. However, in a small group of individuals, their persistence, and pertinent association with reduced cognitive ability, may infer risk for later transition to a first episode of psychosis (Van Oel, Sitskoom, Cremer & Kahn, 2002; Welham, Isohanni, Jones, & McGrath, 2009).

In adulthood, it is thought up to 74% of people with psychosis will hear voices, even in those who are profoundly deaf (Mueser, Bellack, & Brady, 1989; Nayani & David, 1996; Wing, Cooper, & Sartorius, 1974). Within psychosis, there are considerable individual differences in the existential quality of voice hearing and its treatment (Romme & Escher, 1989). The characteristics of voices are experienced on a wide spectrum; from quiet, unintelligible noises through to loud, shouting voices. Nayani and David (1996) report that male voices were the most common, with the patient often personifying the voice as someone close to them (Benjamin, 1989). The majority of voice content in schizophrenia tends to be negative (e.g. “You are worthless”) but it is important to note that positive voices are also observed (e.g. “You are lovely, my angel”). Voices may be present almost continually, or only once or twice a
week (Nayani & David, 1996). They may be perceived as coming from outside the head (external), inside the head (internal), or both (Copolov, Trauer & MacKinnon, 2004; Hunter & Woodruff, 2004; Jaspers, 1962). External hallucinations are reported as being less clear and are associated with less insight from the patient (Copolov et al., 2004; Junginger & Frame, 1985). The most severe form of voices are command hallucinations (e.g. “Cut yourself”). Up to 88% of voice hearers will comply with the wishes of their command hallucinations (Braham, Trower & Birchwood, 2004; Chadwick & Birchwood, 1994; Kasper, Rogers & Adams, 1996). These acts of compliance or appeasement routinely predict increased violence to the self and other people (Falloon & Talbot, 1981; Hor & Taylor, 2010; McNeil, Eisner & Binder, 2000). Consequently, a significant majority of voice hearers will have at least one suicide attempt in response to their voice (s) (Harkavy-Friedman, Kimhy, Nelson, Venarde, Malaspina, & Mann, 2003; Hellerstein, Frosch & Koenigsberg, 1987)

**Delusions**

Delusions are broadly classed as beliefs held by the individual whom the vast majority of other people would not subscribe to. A delusion may seem implausible or unfounded to others, but may be highly distressing and veracious for the individual who holds the belief (Freeman, 2007). Delusions tend to be initially firm and concrete, although may be modified when alternative evidence is presented (Chadwick & Lowe, 1990, 1994; Chadwick, Lowe, Horne & Higson, 1994). Delusional beliefs may be bizarre or grandiose (e.g. “I am God”) or persecutory (e.g. “Ian wants to kill me”). Delusions also commonly pertain to feelings of external influence (e.g. “I am being controlled by Aliens”) and somatic complaints (e.g. “My heart is infected”). As in voice hearing, it should be noted that delusional beliefs are not resigned to someone with a diagnosis of schizophrenia; having been reported in the general population, along with individuals with a wide range of clinical diagnoses (e.g. bipolar disorder, body dysmorphia,
clinical depression) (Cerimele, 2010; Knowles, McCarthy-Jones & Rowse, 2011; Labuschagne, Castle, Dunai, Kyrios, & Rossell, 2010). It is thought up to 50% of people with psychosis will experience persecutory delusions, and this persecution is often linked to the experience of distressing voices (Sartorius, Jablensky, Korten, Ernberg, Anker & Cooper et al., 1986). Persecutory delusions are perhaps the most severe and limiting type of delusion, with the individual believing harm is imminent or likely in the future. Indeed, whilst grandiose or bizarre delusions may in some instances be associated with positive affect, persecutory delusions are almost always accompanied by significant distress (Bentall, Corcoran, Howard & Kinderman, 2001). Freeman and Garety (2000) stipulate the following criteria that must be met for delusions to be considered persecutory:

A. The individual believes harm is occurring, or going to occur, to themselves;
B. The individual believes the persecutor has the intention to cause harm.

There are also a number of caveats:

- Harm concerns any action that leads to the individual experiencing distress;
- Harm only to friends or relatives does not count as persecutory, unless the persecutor intends this to also have a negative effect on the individual;
- The individual must believe that the present or future harm by the persecutor will occur;
- Delusions of reference do not count within the category of persecutory beliefs.
Negative Symptoms

There are a number of negative symptoms associated with psychosis. Negative symptoms are harder to treat, and associated with poorer quality of life and outcomes compared to positive symptoms (Kirkpatrick & Fischer, 2006; Tarrier, 2006). It has been suggested that negative symptoms can be subdivided into primary and secondary negative symptoms (Carpenter, Heinrichs & Wagman, 1988). Primary negative symptoms are the core symptoms arising from the pathology of psychosis, and are briefly outlined in the current section. Secondary negative symptoms are derived from factors associated with, and secondary to, psychosis. For example, depression, social isolation and extrapyramidal side-effects from medication (Peralta, Cuesta, Larrea & Serrano, 2000). There still remains considerable debate surrounding the best way to differentiate primary and secondary negative symptoms (Buchanan, 2007; Stahl & Buckley, 2007). The main primary negative symptoms include Affective flattening, which refers to a generalised decrease in emotional, expressivity and reactivity. Anhedonia is attenuation in the ability to experience positive affect with physical and social sub-categories. Alogia presents generally as a lack of unprompted and free-flowing speech found in normal discourse, with answers instead being short and typically one-worded. Avolition is a deficit in drive and motivatory behaviour usually seen in the normal population. It is also characterised by a lack of desire and a failure to set and pursue worthwhile goals in life.

Historical Perspectives on Psychosis

The German Psychiatrist Emile Kraepelin (1856-1926) is widely regarded as the founding father of modern psychiatric nosology. He classified psychosis into two distinct forms: dementia praecox and manic depression largely based on differences in chronicity and symptom severity between the two. Kraepelin (1919) forwarded dementia praecox as a biological illness primarily deleterious to intellectual functioning. In predicating what is referred to as the
“Kraepelinian dichotomy”, dementia praecox was classified as an illness absent of affective disturbance which followed a steady deterioration. Symptoms (e.g. hallucinations) were seen as accessory to this primary degenerative course of dementia praecox/schizophrenia. The Kraepelinian dichotomy (schizophrenia vs. bipolar disorder) is regarded as one of the cornerstones of modern psychiatry, continuing to influence clinical work and diagnostic classifications (Kendell & Gourlay, 1970; Loeber, Sherwood, Renshaw, Cohen, & Todd, 1998; Maier, Zobel, & Wagner, 2006; Murray, Sham, van Os, Zanelli, Cannon & McDonald, 2004).

With regard to paranoia and persecutory ideation, Kraepelin (1919) argued that dementia paranoids represented a separate group within dementia praecox which followed a chronic and unremitting course: “…to describe a small group of patients who after rapidly developing nonsensical and incoherent persecutory and grandiose delusions tend to quickly progress from slight agitation into permanent confusion.” [p. 463]

Following from Kraepelin, the next significant development came from Eugen Bleuler (1857-1939). Bleuler founded the term “Schizophrenia”, formed from the Greek words schizein (split) and phren (mind). In contrast with Kraepelin’s nosology, Bleuler was more optimistic – placing less emphasis on the degenerative course of the illness and instead favoured focusing on symptomology underpinned by broader psychological influences. With regard to the main symptoms that are the focus of this thesis, persecutory delusions and auditory hallucinations, Bleuler classed these as secondary to the fundamental features or “4 A’s” of the illness: loosening of associations, autism, loss of affective responsiveness and ambivalence. Bleuler also gave prominence to affective variation across bipolar and schizophrenic disorders, arguing that an initially treatable psychosis may become chronic and deeper entrenched when affect begins to recede. Another major nosological point of interest came when Kurt Schneider (1887-1967) stipulated the “first-rank” symptoms which he believed to be highly characteristic of schizophrenia:
• Auditory Hallucinations: Audible thoughts, Voices arguing, Voices commenting

• Delusional Perceptions

• Thought Withdrawal

• Thought Broadcast

• Thought Insertion

• Experience of influences on the body

From this, it is clear Schneider considered both delusions and hallucinations as core and primary features of the illness, whilst the role of affect was still largely neglected. Today, first rank symptoms still contribute heavily to the major standardised diagnostic systems (i.e. ICD-10, World Health Organisation, 1992; DSM-VI-TR, American Psychiatric Association, 2000). Schneider (1959) was clear to differentiate between the content of symptoms vs. their form (e.g. presence), casting content as relatively unimportant and arbitrary. This general irrelevance and meaninglessness of symptom content was also promulgated by prominent psychiatrists such as Karl Jaspers (1919-1963) and has continued to pervade into the last few decades. Indeed, Berrios, (1991) argued that symptoms “…refer neither to the self or world. They are not the symbolic expression of anything” (pp.12). Modern perspectives have however begun to challenge this view, as will now be discussed.

The Relevance of Emotion

Challenges to the Kraepelinian dichotomy have been apparent throughout recent history, with the creation of the diagnostic category of schizoaffective disorder being partly indicative of this (Bentall, 1990; Craddock & Owen, 2005, 2010; Crow, 1986; Kasanin, 1933; Kendell & Brockington, 1980; Laing, 1960). There is now growing support for the abandonment of the
dichotomy, with affective disturbance being recognised as pervasive in non-affective psychosis (Bentall, 2009; Birchwood, 2003; Fischer & Carpenter, 2009; Michail & Birchwood, 2009; Siris, 2000; Upthegrove, Birchwood, Ross, Brunett, McCollum, & Jones, 2010). Indeed, genetic studies have repeatedly indicated that increased risk for schizophrenia also infers risk for bipolar disorder and other mood disorders. These findings therefore challenge the notion of schizophrenia as a discrete entity (Craddock & Owen, 2005; Owen, Craddock & O’Donovan, 2010; Owen, O’Donovan, Thapar & Craddock, 2011).

Affective dysfunction increases rapidly during the prodromal phase of psychosis, with up to 80% of first-episode patients (FEP) reporting significant depression (Upthegrove et al., 2010; Harrison, Hopper, Craig, Laska, Siegel & Wanderling et al., 2001). Post-psychotic depression (PPD) is also common (McGlashan, 1988). For instance, Birchwood, Iqbal, Chadwick and Trower (2000), demonstrated that 36% of people developed PPD twelve months following an acute episode with no concomitant increase in psychotic symptoms. Sands and Harrow (1999) have illustrated that up to 40% of people with schizophrenia and related disorders will also have clinical depression at seven years follow-up. Moreover, the individuals who had depression presented with significantly poorer overall outcome, work impairment and greater suicidal ideation. Indeed, it is the distress associated with the experience of symptoms within psychosis that is argued to be the key differentiator from other non-clinical voice hearers (i.e. religious individuals) (Davis, Griffin & Vice, 2001; Hanssen, Peeters, Krabbendam, Radstake, Verdoux & Van Os, 2003; Peters, Day, McKenna & Orbach, 1999). Social Anxiety Disorder (SaD) is also now recognised to be a significant comorbidity: up to 25% of people with psychosis will also have a standardised diagnosis of SaD (Michail and Birchwood, 2009, 2011). These individuals experience intense anxiety and depression during social encounters, along with feelings of shame and social loss arising from their symptoms (Birchwood, Trower, Brunet, Gilbert, Iqbal & Jackson, 2007). Consequently, the role of emotion is now fully incorporated as
one of the dimensions of psychosis - with both neurotic and psychotic disorders argued to be connected by common factors involved in their maintenance (Freeman & Garety, 2003).
Section II
Psychosis Conceptualised: Models & Treatment of Positive Symptoms

Psychological Theories of Positive Symptoms

Persecutory Delusions

Persecutory delusions are thought to be highly observed and maintained due to a number of cognitive biases associated with the illness. For example, Garety & Freeman (1999) argue that the bias for individuals to “jump to conclusions” (JTC) means that information that could potentially disconfirm the threat belief is not gathered (Dudley & Over, 2003; Huq, Garety, & Hemsley, 1988). In this context, patients display a “data gathering” deficit which does not allow for full testing of the veracity of their hypotheses (e.g. “The voice will kill me if I don’t hurt myself”). For example, up to 50% of people with strong delusions will JTC on probabilistic reasoning tasks (Fine, Gardner, Craigie & Gold, 2007; Woodward, Munz, LeClerc, & Lecomte, 2009). This has been routinely demonstrated using a task requiring participants to judge which jar coloured beads are being drawn from, based on the proportions of beads within the jar. Notably, JTC is more pronounced for emotionally relevant material, and has also been related to the degree of delusional conviction within psychosis (Garety, Freeman, Jolley, Dunn, Bebbington & Fowler et al., 2005; Peters, Day & Garety, 1997; Young & Bentall, 1997). Further, a propensity to JTC is common among relatives of people with psychosis, along with individuals with an at risk mental state (Broome, Johns, Valli, Woolley, Tabraham, & Brett et al., 2007; Van Dael, Versmissen, Janssen, Myin-Germeys, Van Os & Krabbendam, 2006).
Another major branch of thought regarding the pervasive nature of persecutory delusions within psychosis, is that they are primarily driven by the intrinsic low self-worth and depression harboured by the individual (Bentall & Kaney, 1996). In this psychodynamic model, persecutory delusions function as a defense against low self-esteem and maintain congruency between ideal (e.g. who we would like to be) and actual (e.g. who we are) views of the self following a negative event (Bentall & Kaney, 1996; Bentall, Kinderman, & Kaney, 1994; Kinderman, 1994). Negative events are argued to arouse intrinsic negative beliefs held about the self. In order to reduce distress, a number of cognitive biases are thus activated in order to project these beliefs onto others. For example, patients with persecutory delusions are more likely to attribute bad events to others and good events to the self: the “self-serving bias” (Bentall, Kaney, & Dewey, 1991; Candido & Romney, 1990; Lee & Won, 1998). It should be noted however that support for this model is equivocal: patients with paranoia have been reported to have low self-esteem compared to healthy controls (Combs, Penn, Michael, Basso, Wiedeman, & Siebenmorgen et al., 2009; Kesting, Mehl, Rief, Lindenmeyer, & Lincoln, 2011; McKay, Langdon & Coltheart, 2007; Merrin, Kinderman, & Bentall, 2007; Vazquez, Diez-Alegria, Hernández-Lloreda & Moreno, 2008). Some studies have also failed to show a decrease in self-esteem or increase in depression in line with remission of persecutory delusions following therapeutic interventions (Chadwick & Lowe, 1994; Freeman, Garety, Fowler, Kuipers, Dunn & Bebbington et al., 1998).

An additional account of persecutory delusions argues they arise due to a bias toward selective attention and recall of threat-related stimuli (Kaney, Wolfenden, Dewey & Bentall, 1992; Kinderman, 1994; Ullman & Krasner, 1969). For instance, paranoid patients will take a longer time to name the colours of threatening, compared to neutral words in an emotional stroop test (Bentall & Kaney, 1989). There is evidence to suggest however psychotic patients with persecutory delusions actually spend less time looking at non-threatening stimuli (Phillips,
Senior & David, 2000). Frith (1992) has also argued that an inability to detect the intentions of others or “theory of mind” (ToM) deficit may also lead to the development of persecutory delusions in psychosis (Brüne, 2005; Corcoran & Frith, 1996; Corcoran, Cahill & Frith, 1997; Corcoran, Mercer & Frith, 1995). Corcoran et al., (1997) have demonstrated that schizophrenic participants with persecutory delusions found vignettes, which required ToM ability, significantly harder to understand compared to vignettes which did not require ToM ability.

There are a number of studies however which have failed to support this relationship between deficits in ToM and persecutory delusions, and consequently there remains debate regarding the causal role of ToM in paranoia (Drury, Robinson & Birchwood, 1998; Freeman, 2007; Langdon, Corner, McLaren, Coltheart, & Ward, 2006).

In line with the increased relevance of emotional processes in psychosis, cognitive models of persecutory delusions now argue emotional factors are salient in the genesis and maintenance of delusions (Freeman, Garety, Kuipers, Fowler & Bebbington, 2002). Delusions are thought to arise directly from beliefs the individual has about their position in the world (i.e. low social rank) (Green & Phillips, 2004; Freeman et al., 2002). Due to cognition and emotion being reciprocally linked, cognitive models of delusions therefore give primacy to common emotional factors arising from these beliefs. Consequently, delusions may not therefore always necessarily serve the aforementioned defensive function born from low self-esteem (Bentall, 1990; Bentall et al., 1994).

Freeman et al., (2002) pay close attention to the role of anxiety, and how this is on-line in the anticipation of threat. In their cognitive model, they argue that anxiety and persecution reflect the same underlying fear about present or impending danger in the environment. As such, the expression of a persecutory idea is directly driven by anxiety. Indeed, people with higher anxiety and depression report increased persecutory ideas (Martin & Penn, 2001). Anxiety also independently predicts increases in, and the maintenance of, persecutory thinking (Freeman,
Freeman et al., (2002) also argue that the explanation the individual gives to justify the persecutory belief is likely to be mediated by important environmental factors (e.g. availability of social support).

Deservedness of Persecution

Trower and Chadwick (1995) have also proposed two types of paranoid thinking which can be differentiated in terms of core emotional experience: Poor Me (PM) and Bad Me (BM). They argue that BM paranoia is characterised by severe negative affect (e.g. depression, anxiety, shame) and low social rank, whilst PM individuals have relatively higher levels of self-esteem and less distress. Coupled with this difference in emotional experience is also the degree to which persecution is judged to be deserved by the individual. BM persecution is argued to be high in deservedness: Trower and Chadwick (1995) report that these people “...tend to blame and see themselves as bad, and view others as justifiably punishing them”. Conversely, PM types are low in deservedness: “they tend to blame others, to see others as bad, and to see themselves as victims” (Trower & Chadwick, 1995).

The utility of deservedness of persecution as an explanatory model of symptoms within psychosis is still not fully understood. Previous studies which have assessed it would seem to suggest that most people with persecutory delusions are low in deservedness and that BM persecution is a relatively rare phenomenon within psychosis (Bentall, Rouse, Kinderman, Blackwood, Howard, & Moore et al., 2008; Chadwick, Trower, Juusti-Butler & Maguire, 2005; Fornells-Ambrojo & Garety, 2005, 2009; Green et al., 2006; Melo & Bentall, 2010; Melo et al., 2006; Merrin, Kinderman, & Bentall, 2007; Peters & Garety, 2006; Thewissen et al., 2011). Debate has also centralised on whether BM/PM represent taxonomic classes of persecution, or if deservedness is a continuous variable which can show individual variability over time. For
example, Chadwick et al., (2005) report that the BM group was characterised by significantly higher depression, negative self-evaluations and low self-esteem. They therefore argue that BM and PM represent taxonomic categories. Melo et al., (2006) have however opposed this discrete classification, and have shown that perceived deservedness varies over time - with one third of psychotic individuals shifting between PM and BM over the course of two weeks. Consequently, they argue that deservedness within psychosis may be better represented on a continuum. The nature of PM and BM persecution, and its relationship with psychotic symptoms, is the focus for chapter six of the current thesis.

Auditory Hallucinations

**Inner Speech & Source Monitoring**

The development of auditory hallucinations in psychosis remains poorly understood. Inner speech accounts of auditory hallucinations argue that defective source-monitoring (SM) leads to the false attribution of inner speech to external or “alien” sources (Bentall et al., 1991; Frith, 1996; McGuire, Silbersweig, Murray, David, Frackowiak & Frith, 1996). For instance, verbal tasks that block inner speech also inhibit auditory hallucinations (Gallagher, Dinan & Baker, 1994; Margo, Hemsley & Slade, 1981). Broadly, SM is intrinsic to self-agency and perceptions of reality; the complex ability to distinguish internally-generated actions, memories and thoughts from external sources (Bentall, 1990; Garrett & Silva, 2003; Johns, Rossell, Frith, Ahmad, Hemsley & Kuipers et al., 2001; Johnson, Hashtroudi & Lindsay, 1993; Kircher & Leube, 2003). For example, Johns et al., (2001) report that hallucinators showed a significant tendency to misattribute their own speech to external sources when a distorted version of it was played back to them. Furthermore, Keefe, Arnold, Bayen, McEvoy and Wilson (2002) used multinomial modelling to illustrate that voice hearers with schizophrenia presented with significantly more difficulty in monitoring the source of self-information (e.g. self-generated words) compared to
controls. Further, within the patient group, this deficit was more pronounced for people with auditory hallucinations. This bias toward faulty SM has also recently been replicated in a sample of participants with an at risk mental state for psychosis (Johns, Allen, Valli, Winton-Brown, Broome & Woolley et al., 2010). It is of note that failures in SM are more pronounced for emotional material compared to neutral (Morrison & Haddock, 1997). As such, it has been argued that hallucinations represent the anxiolytic externalisation of ego-dystonic, intrusive thoughts (Bentall, 1990; Morrison, Haddock & Tarrier, 1995). Morrison et al., (1995) thus argue that meta-cognitive beliefs about the nature of the intrusive thought (i.e. the controllability and acceptability of negative cognition) results in it being externally attributed as an hallucination in order to reduce cognitive dissonance. Subsequently, it is the behaviour and feelings that arise from the appraisal of the resulting hallucination that is involved in their maintenance.

**Socio-Cognitive Models of Voices**

Once thoughts and inner monologues become misinterpreted as external “voices”, theorists such as Morrison et al., (1995) argue that the appraisal the individual makes is crucial in determining outcomes. Socio-cognitive models expand this concept by giving primacy to appraisals or beliefs (i.e. in the intent and meaning of voices). As such, individual variability in beliefs are viewed as critical determinants of the occurrence and persistence of symptoms, over and above factors such as content (e.g. what it says) or topography (e.g. loudness) (Chadwick & Birchwood, 1995). In this context, auditory hallucinations are seen as “activating events” akin to Beck’s (1967, 1976) and Ellis’s (1994) models of cognitive therapy, which arouse intrinsic beliefs about the self and others, along with emotional and behavioural reactions (e.g. safety behaviours) (Beck & Rector, 2003). Importantly, life events and formative experiences (e.g. childhood trauma) are believed to be key in moulding these
beliefs about ourselves, and therefore contribute to cognitive vulnerability at an individual-based level. Consequently, adult attachment schema are key components of socio-cognitive models of auditory hallucinations (Bowlby, 1969, 1977, 1988).

Garety, Kuipers, Fowler, Freeman and Bebbington (2001) argue that emotional changes directly arising from voices then subsequently feedback into their conscious processing, which then directly moderates their occurrence and phenomenology. Freeman and Garety (2003) have expanded on this by arguing that natural emotional processes operate in a dose-response relationship with the expression of hallucinations (i.e. as emotional dysfunction increases, psychotic symptoms also worsen). As such, it is now recognised that extreme negative views about the self (e.g. "I am weak and useless") are significantly associated with the content of positive symptoms (Smith, Fowler, Freeman, Bebbington, Bashforth, & Garety et al., 2006). For example, Smith et al. (2006) report that depression and low self-esteem significantly related to an increase in the severity and negative content of hallucinations. Krabbendam and Van Os (2005) have also illustrated that baseline levels of self-esteem predicted severity of auditory hallucinations at a three year follow.

This contemporary acknowledgement of the relevance of emotion and self-evaluative thinking opens the door for theories that would have previously been excluded by traditional psychiatric lore, as having utility for explanation of psychotic symptoms. A pertinent example of this is social ranking theory, which argues emotional processes known to be implemented in delusions and hallucinations (e.g. self-esteem) come from our evolved need to compare ourselves with others (Price, 1967; Gilbert, 1989, 1992). This process of social comparison (i.e. dominance vs. subordination), facilitated by innate psychological schema, is the fundamental appraisal which is argued to underpin the expression and maintenance of distressing delusions and hallucinations, and represents the key locus of exploration for the current thesis.
The Cognitive Model of Voices

The ABC model (Activating event - Beliefs - Consequences) or “cognitive model of voices” hereafter, is the most important current model that applies social ranking theory to the study of auditory hallucinations. It argues that beliefs in the nature of the voices (i.e., “My voice is powerful”) are defined by evolved mental mechanisms which are involved in organisation of our social world. In this framework, relationships with hallucinations reflect a mirror of our everyday, general social relationships. As opposed to recruiting “pathological” psychological processes, the cognitive model of voices thus empathises that maintenance of hallucinations is underpinned by our innate and evolved mentalities that orientate us toward social comparison and attachment seeking (Bowlby, 1969; Birchwood & Chadwick, 1997; Gilbert, 1989).

Figure 1.1 – The Cognitive Model of Voices (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994)
In their original formulation of the model, Chadwick & Birchwood (1994) applied the framework of social ranking theory to the study of hallucinatory relationships in psychosis and sought to identify the power, identity and purposes of voices. They reported that voice hearers were able to appraise their voices across the domains of omnipotence, malevolence and benevolence. Omnipotence refers to power of the voice, and the ability of the voice to shame, put-down and control the individual; thus representative of a dominant aggressor within a social hierarchy. Malevolence commonly pertains to the persecutory intent or “evilness” of the powerful voices (e.g. an evil god), whilst benevolence reflects the kind and good nature of a hallucination (e.g. a guardian angel). As opposed to voice content or topography, it was these beliefs regarding the relationship the individual had with his/her voice (s) which were able to reliably differentiate behavioural and affective responses to the voices. For instance, Chadwick and Birchwood (1994) report that omnipotent and malevolent voices were reported as being resisted in 89.3% of the sample (“My voice frightens me, I tell it to leave me alone”) whilst benevolent voices were engaged and affiliated with (“My voice wants to help me, I seek the advice of my voice”). There is a growing evidence base for the explanatory ability for the cognitive model par excellence over and above traditional views of distress and behaviour in relation to voices: it is now well established that beliefs in malevolent and omnipotent voices are strongly associated and independently predictive of distress, resistance and anxiety (Andrew, Gray & Snowden, 2008; Birchwood & Chadwick, 1997; Chadwick, Sambrooke, Rasch, & Davies, 2000; Lucas & Wade, 2001; Soppitt & Birchwood, 1997; Van der Gaag, Hageman, & Birchwood, 2003). For example, Peters, Williams, Cooke and Kuipers (2011) have recently reported that omnipotence beliefs were the strongest predictors of depression and anxiety in 46 voice hearers. Voice severity, frequency and intensity showed no relationship with distress when these beliefs were controlled for. Beliefs in voice benevolence also predict engagement
and lower levels of distress and anxiety (Lucas & Wade, 2001; Peters et al., 2011; Sanjuan, Gonzalez, Aguilar, Leal & Van Os, 2004; Simms, McCormack, Anderson & Mulholland, 2007). Critically for the current thesis, omnipotent voice beliefs have also been associated with increased feelings of entrapment and shame (Gilbert, Birchwood, Gilbert, Trower, Hay & Murray et al., 2001; Hacker, Birchwood, Tudway, Meaden & Amphlett, 2008). These appraisals and behaviour (e.g. resistance) are argued to be representative of the operation of a wider evolutionary mechanism, which will be further described in chapter two of the current thesis and then attempted to be assessed in chapters four and five.

**Treatment**

**Early Intervention**

Modern advances in psychosis research have led to formation of symptom-based “early intervention” service(s) (EI; Birchwood, 1995; Birchwood, Todd, & Jackson, 1998; Birchwood, McGorry & Jackson, 1997). EI are progressive services, which are based on multi-disciplinary treatment of the main psychotic symptoms the individual is experiencing. The rationale for early intervention is moulded by the “critical period hypothesis” (e.g. Birchwood et al., 1998). The critical period hypothesis argues that the initial phase of psychosis sees rapid and progressive deterioration in symptoms and functioning. The level of function and symptoms evident at the end of this critical period (e.g. around 2 – 5 years) then endures into the long-term (Birchwood & Fiorillo, 2000). This hypothesis has been partly supported by longitudinal studies indicating symptomatic stabilisation after the critical period (Carpenter & Strauss, 1991; Eaton, Thara, Federman, Melton & Liang, 1995). Consequently, informed by a clinical staging framework, EI aims to treat and ameliorate early symptoms less invasively (i.e. psychoeducation, omega-3-fatty-acids) before high-risk individuals progress to more severe stages (e.g. an acute first episode of psychosis) (McGorry, Nelson, Goldstone & Yung, 2010;
McGorry, Purcell, Hickie, Yung, Pantelis, & Jackson, 2007; McGorry, Hickie, Yung, Pantelis, & Jackson, 2006).

Medication

Current pharmacological treatment for voices and delusions commonly centres on prescribing second-generation antipsychotic medication (e.g. Risperidone, Olanzapine, Clozapine) (Marder & Meibach, 1994; Tran, Hamilton, Kuntz, Potvin, Andersen & Beasley Jr et al., 1997; Sanger, Lieberman, Tohen, Grundy, Beasley Jr & Tollefson, 1999). These medications are also commonly combined with anticonvulsants (e.g. Topiramate) and other mood stabilisers in around 50% of patients (Citrome, Jaffe, Levine & Allingham, 2002). Medication is still considered the first line of treatment for psychotic symptoms, evidenced by the $8.5 billion expenditure for the year 2005 in the USA - representing a hugely profitable market for major pharmacological firms, who largely continue to promulgate the view of symptoms arising from biochemical abnormalities devoid of any psychosocial context (Mosher, Gosden & Beder, 2004; Read, 2008; Maggon, 2005). Developed from the initial “typical” antipsychotics (e.g. Chlorpromazine), these drugs generally exert their mechanism of action through functioning as dopamine receptor antagonists, although may also bind with serotonin (5-HT), histamine and norepinephrine (Schotte, Janssen, Gommeren, Luyten, Gompel & Lesage et al., 1996; Stahl, 2002). Over the last decades, the efficacy of medication for psychotic symptoms has increased rapidly from their initial development. Today, proponents of medication argue for significant reductions in voices and delusions, with Clozapine in particular being regarded as the “gold-standard” for treatment-refractory patients (Kane, 1992; Kane, Honigfeld, Singer, & Meltzer, 1988; Mortimer, Singh, Shepherd & Puthiyackal, 2010). As an example, in a large sample of people with treatment-refractory schizophrenia, Clozapine administration resulted in significant decreases in total Positive and Negative Syndrome Scale scores (PANSS; Kay, Fiszbein & Opler, 1987) after one year (Lewis, Barnes, Davies, Murray, Dunn & Hayhurst et al.,
Significant reductions in suicidal and violent behaviour have also been observed following Clozapine treatment (Meltzer & Okayli, 1995; Meltzer, Alphs, Green, Altamura, Anand & Bertoldi et al., 2003; Swanson, Swartz, Van Dorn, Volavka, Monahan & Stroup et al., 2008). For example, Meltzer and Okayli (1995) report that compared to controls, Clozapine reduced suicide attempts and ideation by up to 86% in patients with schizophrenia.

Whilst these studies indicate medication is undoubtedly efficacious in improving outcomes for a number of people, unfortunately up to 70% of patients with positive symptoms will fail to respond to Clozapine (Chakos, Lieberman, Hoffman, Bradford & Sheitman, 2001; Conley & Buchanan, 1997; Kane, 1996; Meltzer, Burnett, Bastani & Ramirez, 1990; Williams, Newton, Roberts, Finlayson & Brabbins, 2002). Moreover, it is thought up to 50% of patients will stop taking medication after one year of treatment, with this rate rising to 75% after two years (Kane, 1983; Perkins, 1999; Weiden, Dixon, Frances, Appelbaum, Haas, & Rapkin, 1991). Clozapine has a number of severe side-effects, having long been known to cause agranulocytosis (i.e. severely reduced white blood cell count) along with seizures, diabetes, weight gain and myocarditis (Alvir, Lieberman, Safferman, Schwimmer & Schaaf, 1993; Henderson, Caglierio, Gray, Nasrallah, Hayden & Schoenfeld et al., 2000; Sernyak, Leslie, Alarcon, Losonczy, & Rosenhack, 2002). This results in routine blood monitoring being mandatory, at significant costs to both the individual and their health service(s) (Rosenheck, Cramer, Xu, Thomas, Henderson, & Frisman et al., 1999; Zhang, Owen, Pope & Smith, 1996). Continuing to develop viable, adjunctive psychological interventions to the “pharmalogical shotgun” of atypical antipsychotics is therefore critical (Kapur & Remington, 2001). This thesis is based on the need to further refine and develop existing psychological treatments for positive symptoms, which will now be further discussed.
Cognitive Behavioural Therapy for Psychosis

As highlighted, distressing positive symptoms will often prevail despite treatment with medication. Consequently, it is now acknowledged that medication alone is insufficient in ameliorating psychosis, along with the distress and behaviours associated with the experience of symptoms. Indeed, the now recognised salient role of affective dysfunction in psychosis makes it far more amenable to adjunctive and stand-alone psychological interventions than traditionally upheld (Birchwood & Trower, 2006; Pinto, La Pia, Mennella, Giorgio & DeSimone, 1999). As such, recent years have seen the rapid expansion and successful application of cognitive behavioural therapy to psychosis (CBTp; Birchwood & Trower, 2006; Dickerson, 2004; Morrison & Barratt, 2010; Tarrier, Yusupoff, Kinney, McCarthy, Gledhill, & Haddock et al., 1998; Trower, Birchwood, Meaden, Byrne, Nelson & Ross, 2004; Turkington, Kingdon, & Turner, 2002; Velligan, 2009). As an example, meta-analytical studies of randomised control trials (RCT) indicate an effect size of around 0.4 for CBTp in amelioration of positive symptoms (Wykes, Steel, Everitt & Tarrier, 2008; Zimmerman, Favrod, Trieu & Pomini, 2005). Indeed, the National Institute of Clinical Excellence (NICE) now recommends health services “offer cognitive behaviour therapy to all people with schizophrenia” (NICE, 2009, pp 21-22).

CBTp has also been shown to be successful for preventing psychotic relapse and remission (Benyon, Woolacott, Duffy & Geddes, 2008; Garety, Fowler, Freeman, Bebbington, Dunn & Kuipers, 2008; Gumley, O’Grady, McNay, Reilly, Power & Norrie, 2003). Gumley et al., (2003) report that in people with schizophrenia CBTp resulted in a significantly lower (18.1%) rate of relapse compared to the treatment as usual group (34.7%). CBTp has also been effective in reducing transition to full-blown psychosis in young people with an at-risk mental state, without the need for antipsychotic medication (McGorry, Yung, Phillips, Yuen, Francey, & Cosgrave et al., 2002; Morrison, French, Walford, Lewis, Kilcommons, & Green et al., 2004). For instance, the Early Detection and Intervention Evaluation (EDIE) of Morrison and colleagues
(2004) has demonstrated that CBTp significantly reduced the likelihood of meeting the criteria for diagnosis of a psychotic disorder at twelve month follow-up in ultra-high risk participants.

Of relevance to the current thesis is the nascent evidence base for the efficacy of CBTp informed by social ranking theory. This specialised type of CBTp does not aim to “remove” the psychotic symptoms, but instead operates more akin to therapy for non-psychotic emotional disorders; it functions to modify core schema/beliefs arising from social comparison (i.e. "My voice is very powerful") which in turn may reduce distress and deleterious behaviours (e.g. compliance with the voice). As such, if evaluating this type of CBTp on outcomes such as positive symptom scores (i.e. PANSS) then minimal main effects may be observed (e.g. voices are still experienced post-therapy). What represents a favourable outcome therefore varies for CBTp vs. antipsychotic medication, resulting in attempts to compare the two in terms of direct efficacy somewhat erroneous. Preliminary work based on the cognitive model of voices has shown that targeted reductions in the belief of the power and omnipotence of voices is useful (Birchwood & Trower, 2006; Byrne, Trower, Birchwood, Meaden & Nelson, 2003; Chadwick et al., 2000; Trower et al., 2004). For instance, in a sample of voice hearers with command hallucinations, Trower et al., (2004) demonstrated that CBTp resulted in significant reductions in voice compliance, power and distress, independent of any change in voice activity. Chadwick et al., (2000) also report that eight sessions of group CBTp were able to reduce beliefs in voice omnipotence, although depression and anxiety did not show significant reductions.

However, there are criticisms of CBTp and it is by no means a silver bullet for psychotic symptoms. Its complex nature means there is likely to be significant variability in application across different psychological services and therapists. Criticisms have also been levied at the methodological inadequacies (e.g. no controls or blinding) of the pertinent studies demonstrating a main effect on psychotic symptoms, along with some studies showing little effectiveness compared to treatment as usual (Turkington & McKenna, 2003). Further, its
reduction in the severity of positive symptoms has been shown to disappear when participants are re-assessed two years later (Startup, Jackson, Evans & Bendix, 2005). A recent meta-analysis has also indicated that targeted CBTp is no more efficacious than supportive therapy (Lynch, Laws & McKenna, 2009). Consequently detractors such as Turkington and McKenna (2003) argue that “If CBT were a drug, these studies would have been sufficient to consign it to history.” (p478). The continual refinement and validation of CBTp in line with empirical findings is therefore a critical necessity for primarily improving patient outcomes and, additionally, satiating the critics of psychological therapy for psychosis.

This thesis is informed by the specific need for expansion of social ranking theory based CBTp; the development of which is still in its infancy and has produced mixed results. For instance, the work reported by Chadwick et al., (2000) demonstrated that negative affect fails to be significantly reduced following targeted reductions of voice omnipotence, whilst Trower et al., (2004) did find significant reductions in distress. Moreover, the cognitive model of voices predicates that the processes of social comparison made during daily life are critical in defining the power and omnipotence of voices. There remains a paucity of attempts to assess these cognitive and behavioural elements operational during daily life, and how they may moderate the same beliefs targeted during sessions of CBTp.
Chapter 2

Section I

Darwin & Psychopathology: Natural Selection, Social Rank & Attachment

Charles Darwin (1809-1882) was a British naturalist who, when voyaging on HMS Beagle to the Galapagos Islands, noted that each of the different islands were inhabited by Finches - each with adaptations of their beaks unique to the ecology of their respective island. This genetic phenomenon came to be later conceptualised as “adaptive radiation”, which is characterised by the evolution of ecological and phenotypic diversity within a rapidly multiplying lineage (Lack, 1947; Seehausen, 2004). Upon returning to Britain, Darwin formulated the observed phenotypic adaptation into his book *Origin of the Species*, informed by discourse with the Biologist Alfred Russell Wallace (Darwin, 1859; Wallace, 1858, 1889). Origin of the Species is a seminal text, being regarded by many as the most powerful piece of scientific literature ever published (Dawkins, 2006; Gould, 1977). Whilst exploration of the full foundations and ramifications of evolutionary theory are beyond the scope of the current thesis, it is important to highlight that Darwin was able to succinctly summarise the main points of evolution into a useful working account: his theory of *Natural Selection*. The basic tenets of natural selection are as follows:
1. Any species in an ecology will be genetically driven to reproduce greater numbers than the resources of the environment can afford;

2. *Intraspecies competition* for these valuable resources will occur;

3. The winners of these competitions for resources are more likely to have phenotypes suited to their ecology;

4. The individuals with these desirable traits will therefore produce more offspring. Thus the lineage evolves with these desirable characteristics.

Following from natural selection, Darwin also formulated the theory of sexual selection (Darwin, 1874). Sexual selection can be thought of natural selection applied to the context of intraspecies mating (Andersson & Iwasa, 1996). Darwin noted that a lot of the males in any species had conspicuous characteristics which may have reduced survival (e.g. the classic example is the giant coloured tail on the Peacock). The tail is huge, reduces the mobility of the bird and greatly increases conspicuousness to possible predators. It would therefore rationally follow that the process of evolution would have eradicated such a deleterious trait from the lineage. Instead the tail has remained in the species, as it is a marker of parasitic infection and mate quality (Hamilton & Zuk, 1982). The eminent evolutionist Richard Dawkins has also argued that the absence of the penis bone in humans has evolved through sexual selection – resulting in healthy erections strongly depending on good cardiovascular functioning (Dawkins, 1989; Gaskill, 1971). Failure to achieve erection therefore may indicate to potential partners underlying physiopathology such as diabetes mellitus, hypertension and cardiac ischemia (Burchardt, Burchardt, Baer, Kiss, Pawar, & Shabsigh et al., 2000; Conti, Pepine, & Sweeney, 1999; Rubin & Babbott, 1958; Tikkanen, Jackson, Tammela, Assmann, Palomaki, Kupari, & Olsson, 2007). As such, the seemingly paradoxical development of these traits has led sexual selection to be deemed the “Evolution of Conspicuousness” (Guilford & Stamp-Dawkins, 1991).
As in natural selection, it is the outward and socially communicative nature of these displays that are salient, and critical to the current thesis.

**Formation of Social Hierarchies**

In pursuing access to limited resources, individuals will inevitably encounter others with the same goals as themselves (Bailey, 1987; Buss, 1991). These processes of natural and sexual selection therefore drive competition by social interaction and the ubiquitous formation and distribution of social hierarchies within groups (Festinger, 1954; Fournier, Moskowitz, & Zuroff, 2002; Gilbert, 1989; West-Eberhard, 1979). Indeed, there are many ecological reports of groups of humans, without initial structure, spontaneously forming hierarchies of their own volition (Savin-Williams, 1979; Strayer & Strayer, 1976, 1978). The key outcome from these competitions is defeat; one individual will win access to resources, the other will lose. Whilst actual violent encounters will undoubtedly occur within social hierarchies, it should be noted that social rank is often maintained by both verbal and non-verbal ritualised agnostic displays which will precede actual violence (Bernstein, 1980; Sapolsky, 1990). These displays serve to signal the fighting capacity, or the resource-holding potential of the individual (RHP; Parker, 1974, 1984). Differences in RHP results in a mismatched relationship between two competitors which can be broadly viewed as one of dominance vs. subordinance. Dominant rank occupies the top of the social hierarchy, with the greatest access to resources and reproductive success compared to subordinates (Altmann, Alberts, Haines, Dubach, Muruth, & Coote et al., 1996).

In modern society, it is also important to note that these dominance/subordinance hierarchies are largely based on competition for resources that are socially attractive (Gilbert, 1992, 1997). Social attractiveness pertains to things we value in modern day life (i.e wealth, health, education). As opposed to more primitive ritual agnostic displays of RHP, social rank in humans is therefore linked with displays of the individual’s potential value to bestow us with
socially attractive qualities; or Social Attention Holding Power (SAHP; Gilbert, 1989, 1992; Stevens & Price, 1996). SAHP allows for social rank to be governed within groups, by qualities specific to that group or culture (i.e. the ability to generate sales within a business is a different attribute compared to physical beauty in a group of aspiring models, yet both infer high social rank).

**Social Mentalities**

As humans, natural selection over millions of years has produced a network of cognitive, behavioural and affective systems which help to guide and orientate us through these competitive and potentially threatening social hierarchies (Buss, 2003; Liotti & Gilbert, 2011; Nesse, 2001). Gilbert (1989, 2000a, 2005) has conceptualised these proclivities as “social mentalities”. Gilbert (1989) argues that a mentality: “provides instruction about what to attend to in self and the other, and what to exhibit or display in order to fulfil a particular goal” (p. 315). In the evolutionary framework, there are a variety of these goals that mentalities steer us towards - such as social comparison within hierarchies, care seeking, sexual behaviour and formation of alliances (Bowlby, 1969; Gilbert, 1989, 2000a; Wood, 1989). Human evolution has also produced a number of higher-order cognitive competencies, such as theory of mind, that are greatly advantageous for navigating through our social world. These cognitive mechanisms allow us to think reflectively about ourselves and others – and are referred to collectively as “mentalisation” (Byrne, 1995; Liotti & Gilbert, 2011). For instance, the ability to think abstractly about the cognitive and emotional motivations of a dominant aggressor is useful for planning defensive actions.

In the context of group hierarchies, social ranking mentalities allow us to appraise our position relative to others (social comparison). Social comparisons may be made to people above us (“up-rank”) or to those below us (“down-rank”), with the latter often serving to maintain self-
esteem (Collins, 1996; Festinger, 1954; Wheeler, 1991; Wheeler & Miyake, 1992; Wills, 1981). Ranking mentalities, through facilitating up-rank social comparisons, also allow us to appraise the costs and benefits of competing against dominant individuals. This is useful, as without a mentality attuned to the strengths and weakness of attacking a potential opponent, an inferior individual may continue to blindly attack and be seriously injured in the process. Mentalities therefore help us to decode and respond to signals and information within hierarchies, especially markers of power, threat and safety. Indeed, there is now support for distinct neural pathways (e.g. inferior parietal lobe, dorsolateral and ventrolateral prefrontal cortices) being involved in the recognition of social hierarchies, independently localised from other forms of social cognition (Chiao, 2010; Chiao, Bordeaux & Ambady, 2004; Chiao, Adams, Tse, Lowenthal, Richeson, & Ambady, 2008; Chiao, Mathur, Harada, & Lipke, 2009).

**Attachment**

Social mentalities also gear us toward seeking and eliciting care from others (Gilbert, 2005). Care-giving and receiving was one the main adaptations of Homo sapiens that defined our evolution from the mammalian ancestry, and represents a uniquely human quality (Bell, 2001). Social mentalities are inherently linked with the wider behavioural-affective attachment system (Bowlby, 1969, 1977, 1988; Sloman, 2008). Attachment can be broadly viewed as the propensity to form emotional bonds with certain individuals, which are relied upon in times of distress and threat. These secure bonds therefore represent a caring platform from which safe and independent exploration of the wider environment can take place (Ainsworth, Blehar, Waters, & Wall, 1978). The affiliation associated with these bonds also regulates distress and promotes positive affect, in times when a sense of safety has been compromised (Gerhardt, 2004). As such, separation of the infant from its secure base (i.e. parent) is typically met with increased anxiety, anger and a decrease in positive affect, which is typically abated upon
reunion (Ainsworth et al., 1978; Schore, 1994). It is the failure of insecure attachment bonds to regulate affect which is argued explain a significant proportion of the observed association between insecure attachment and psychopathologies including depression, anxiety and psychosis (Berry, Barrowclough & Wearden, 2007; Bradley, 2000; Cassidy, 1994; Sroufe, 1996). Attachment bonds are represented psychologically as “working models” which are the schema for behaviour of the self in relation to others, and mould the expectations we have of the nature and outcome of close relationships (Bowlby, 1988; Mikulincer & Nachshon, 1991). As we progress into adulthood, working models defined from childhood experience are relatively stable and define the paradigm for our interpersonal relationships, although may be subject to change following significant life experiences (e.g. the death of a secure attachment figure) (Hamilton, 2000; Scharfe & Bartholomew, 1994). We may also have multiple attachment bonds (Trinke & Bartholomew, 1997). Individual differences in internal working models are now considered as being characterised by two dimensions of attachment Anxiety and Avoidance (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Fraley & Waller, 1998). Attachment anxiety pertains to the self, and how we evaluate our self-worth in terms of acceptance and rejection from others. Attachment avoidance relates to our view of others: the emotional and behavioural degree to which we seek, or indeed avoid, intimacy and closeness with other people. Figure 2.1 illustrates the four attachment categories stipulated by Bartholomew (1990) which are underpinned by anxiety (model of self) and avoidance (model of others):
A secure attachment style is associated with both low anxiety and low avoidance. These individuals therefore have high self-worth and believe that other people will be responsive and receptive to their need for intimacy and closeness. If and when these children become parents themselves, they will be more likely to respond consistently and sensitively to a range of their infant’s emotional states (Ainsworth et al., 1978; Belsky, Rovine & Taylor, 1984). Preoccupied attachment is underpinned by high anxiety and low avoidance. As such, these individuals have low self-worth which is moderated by their degree of closeness and acceptance from others. People with a preoccupied style may vary in their responses to infants, resulting in the infant having little emotional support and thus relying on anger and protest in order to maintain closeness with the care-giver (Cassidy, 1994). People with a dismissing attachment style have low anxiety and high avoidance. As such, they have high self-worth and view interpersonal relationships as punitive and non-essential. As parents these people are likely to be less attentive to negative emotional states of the infant, resulting in the infant gaining and valuing autonomy from the parent (avoidance). Fearful attachment styles are characterised by both
high avoidance and anxiety. These individuals have low self-worth, will view others as untrustworthy and will have high apprehension regarding intimate relationships. As parents, these individuals may be neglectful to the needs of the infant, with children of these parents reporting them as malevolent and punitive (Levy, Blatt, & Shaver, 1998).

The Interplay between Attachment & Social Rank – Safeness vs. Defence Systems

Probably the first time we appraise our social rank and SAHP is through relationships with our parents: these formative care-giving experiences mould our expectations for how dominant and powerful individuals (i.e. parents) treat us. Consequently, the attachment and social rank systems are interconnected (Hilburn-Cobb, 2004; Sloman & Atkinson, 2000; Sloman, Gilbert & Hasey, 2003). A secure attachment base which is consistently responsive to infant distress and their experience of threat will promote the safeness system, which neurochemically (e.g. oxytocin, endorphins) stimulates positive affect, soothing and affiliation (Carter, 1998; Panksepp, 1998; Wang, 2005). As adults, in what Gilbert (2009) has termed the “human warmth syndrome”, these securely attached individuals are more likely to have greater self-compassion, give help to others, and are less focused on threats to social rank and competition. Due to this, their reflective mentalisation ability is intact and allowed to operate freely (Fonagy, Gergely, Jurist, & Target, 2002; Liotti & Gilbert, 2011; MacBeth, Gumley, Schwannauer, & Fisher, 2011). Equally, these individuals are likely to see others as benevolent and have more secure and prosocial relationships; which can help to buffer the effects of defeating (i.e socially competitive) experiences through regulation of affect (Blain, Thompson, & Whiffen, 1993; Mikulincer, Birnbaum, Woddis, & Nachmias, 2000; Sloman et al., 2003). For example, John, who has just lost his job, is able to go home to his family who provide emotional and physical support. This stimulates positive affect and allows him to more easily accept the defeat and his new social rank.
Conversely, an insecure attachment base experienced during childhood means vigilance to threat and rejection in the environment is more necessary – the social rank orientated defence system. As such, these children have an understandable predominance of threat-based social mentalities which continue to pervade into their social world as they enter adulthood (Gilbert, 1989, 2005). Their higher-order mentalisation ability is likely to be disrupted in favour of more basic concerns regarding defence and safety (Fonagy & Target, 1997; Liotti & Gilbert, 2011). Indeed, for these individuals the mere act of thinking about dominant figures (e.g. caregivers) is likely to become associated with threat (i.e. thinking about the motivations of abusive parents). As such, their attenuation in reflective capability represents an initial defensive adaptation to a threatening environment. This adaptation however ultimately has unwelcome consequences, as it serves to exacerbate the secondary outcomes of their reliance on threat-based mentalities (i.e impaired theory of mind maintaining paranoia) (Frith, 1992). They will tend to see themselves as subordinate when with other people, who are often experienced as shaming and threatening. Crucially to models of positive symptoms in psychosis, these individuals may also be more attuned to internally generated sources of attack and threat (e.g. shame and self-criticism: “You are bloody useless - you fail at absolutely everything” (Birchwood et al., 2000, 2004; Gilbert et al., 2000; Gilbert, McEwan, Irons, Bhundia, Christie, Broomhead, & Rockliff, 2010; Sturman & Mongrain, 2005). As their life progresses, they will tend to have less secure, supporting and meaningful relationships; resulting in negative affect following defeat remaining unregulated (e.g. John goes home alone to an empty house, maintains feelings of shame, inferiority and defeat). Indeed, these individuals may then attempt to regulate these feelings and promote social rank by unsuitable means (e.g. continued striving for unobtainable resources). This may be one of many outcomes evidenced in the life of the insecurely attached individual who is overly reliant on the defence system,
and the next section of the current chapter discusses the behavioural and cognitive concomitants of this in greater detail.
Section II
Darwin & Psychopathology: The Involuntary Defeat Strategy

Evolutionary psychology is based on the *a priori* assumption that our current psychological constructs must somehow have been adaptive for natural and sexual selection (i.e. if they were not, then evolution would have eradicated them from the lineage). The current thesis argues that biological evolution lags behind advances in society and culture, therefore resulting in humans having innate mechanisms that, although once adaptive, often appear mismatched to the dynamics of modern life. In this sense, evolutionary psychology emphasises the *vestigiality* of many of our current day psychological traits (Buss, 1999; Nesse, 2000). For example, possessing the “dark triad” of trait narcissism, Machiavellianism, and subclinical psychopathology would seem undesirable for building successful relationships in modern day life (Morf & Rhodewalt, 2001). These traits are however advantageous for short term mating: in our ancestry, these individuals would have shown increased ability in mate poaching and therefore increased their potential for reproduction (Jonason, Li, & Buss, 2010; Jonason, Li, Webster, & Schmitt, 2009; Schmitt & Buss, 2001).

The appraisal of social rank and its interaction with working models of attachment has important consequences for both dominant and subordinate individuals - winners and losers have different behavioural, cognitive and affective requirements (Price, 1972; Taylor & Lobel, 1989). Key to this is the concept of *strategies*: there exists a subset of automatic and innate behavioural strategies which are argued to function after competitive encounters. Without this, the subordinated and defeated animal may simply keep fighting until they are killed.
Conversely, it is in the survival interests of the dominant individual to keep the loser subordinated through exertion of control and power. The following section aims to outline the phemonology of these evolutionary strategies arising from social competition.

**Animal Models of Social Defeat**

The modern theories of evolutionary psychology have been largely moulded by studies of rank and defeat processes found in the comparative literature. The post-conflict period following defeat is a crucial time for the defeated individual, as another attack from an aggressor is significantly more likely (Aureli & van Schaik, 1991; Silk, Cheney & Seyfarth, 1996). Rodents subjected to social defeat paradigms (e.g. the introduction of an aggressive conspecific) have been shown to demonstrate significant weight loss (Adams & Boice, 1983; Meerlo, Overkamp, Daan, van den Hoofdakker & Koolhaas, 1996) and will significantly increase self-administration of cocaine (Tidey & Miczek, 1997). Daily exposure to social defeat over five weeks reduces exploratory behaviour, food intake, and increases immobility in subordinates (Rygula, Abumaria, Flugge, Fuchs, Ruther & Havemann-Reinecke, 2005). These effects are exacerbated when subordinated rats are isolated post-conflict and lessened when they are housed together with familiar conspecifics (Ruis, Brake, Buwalda, De Boer, Meerlo & Korte, 1999). These reported effects of defeat are not transient: Meerlo and colleagues (1996) report that a single experience of social defeat still had appreciable behavioural and biological effects one week post-conflict.

Physiologically, defeat involves the parasympathetic nervous system: the hypothalamic-pituitary-adrenal-cortex axis (HPA) is crucial (Levitan et al., 2000; Toates, 1995). Broadly, activation of the HPA axis is a crucial stage in a negative feedback loop, which ultimately results in the production of the steroidal stress hormone cortisol. Cortisol increases metabolism of carbohydrates, proteins and fats, suppresses the immune system and increases
blood pressure (Fraser, Ingram, Anderson, Morrison, Davies & Connell, 1999; Maule, Schreck, & Kaattari, 1987; Slusher, 1966). As such, it prepares the body for transient defensive behaviour in the form of *fight vs. flight*. Importantly, HPA axis activity and increased cortisol have been strongly associated with low social rank in baboons and cynomolgus monkeys (Chiao, 2010; Czoty, Gould & Nader, 2009; Sapolsky, 1982, 1983, 1990). Further, immune function has been shown to be significantly reduced post-defeat in low ranking hamsters, rats and monkeys (Cohen, Line, Manuck, Rabin, Heise, & Kaplan, 1997; Jasnow, Drazen, Huhman, Nelson, & Demas, 2001; Fleschner, Laudenslager, Simons & Maier, 1989; Stefanski, 2001). The monoamine neurotransmitter serotonin or 5-hydroxytryptamine (5-HT) also plays a pervasive role in animal models of defeat. High serum levels of 5-HT have been associated with dominant behaviours and high social rank in rhesus monkeys and fish (Higley, King, Hasert, Champoux, Suomi & Linnoila, 1996; Overli, Harris, & Winberg, 1999). Primates with high levels of 5-HT are also more likely to engage in affiliative and positive social interactions (Higley, Suomi & Linnoila 1996). Equally, subordinate status and low social rank has been associated with significantly lower levels of 5-HT in rats and mice (Rodgers & Shepherd, 1989). Indeed, a significant body of work has demonstrated aggressive behavioural displays being reduced by increases in 5-HT (Bell & Hobson, 1994; Blanchard, Rodgers, Hori & Hendrie, 1988; Bonson, Johnson, Fiorella, Rabin & Winter, 1994; Di Chiara, Camba, & Spano, 1971; de Boer, Lesourd, Mozaer, & Koolhaus, 1999; Fish, Faccidomo, & Miczek, 1999; Joppa, Rowe, & Meisel, 1997; Olivier, Blom, Arentsen, & Homberg, 2010).

It is important to note that heightened synaptic levels of the neurotransmitter *Dopamine* have also been reported in subordinated cynomolgous monkeys and rodents (Cabib & Puglisi-Allegra, 1996; Grant, Shively, Nader, Ehrenkaufer, Line, & Morton et al., 1998; Isovich, Engelmann, Landgraf, & Fuchs, 2001; Razzoli, Andreoli, Michelin, Quarta & Sokal, 2011). For example, Tidey and Miczek (1997) report that social defeat raised cortex levels of dopamine by up to
160% from baseline levels in rats. Cumulatively therefore, the animal models of defeat point to significant reductions in exploration, mobility, food intake and weight post-defeat. These behaviours are likely mediated by neurochemical changes in cortisol, dopamine and 5-HT. It is now aimed to highlight how these findings have been applied to human psychopathology, with the aim of framing the pertinent mechanism which is the focus of exploration for chapters four and five of the current thesis.

Social Competition Hypothesis of Depression

The role of evolutionary selection pressures and associated defeat following competitive encounters has led to the formation of the social competition hypothesis of depression (Gardner, 1982; Gilbert, 1992; Price, 1967; Sloman, Berridge, Homatidis, Hunter & Duck, 1982). Broadly, the theory argues that depression is an adaptive and protective response to defeat in social competition which has remained in the human phenotype over the course of millions of years of evolution. Prior to this, it is important to note that depression and anxiety were viewed within traditional medical lore as organic or reactionary disease states, largely removed from having any adaptive origin (Kraepelin, 1919; Schneider, 1959). Price (1967) was the first to note the outlined behavioural responses to defeat within animal hierarchies, and subsequently apply them to human mental health. For example, Price and Sloman (1987) report the defeated posture and lack of motivation apparent in subordinated hens. The key tenet is that losing strategies maintain hierarchical stability, and are thus evolutionarily advantageous. For instance, a hierarchy with continual attacks and displays of RHP from inferiors would quickly descend into disarray. Depression is therefore the yielding subroutine of ritualised conflict; signalling that loss has occurred and the inferior individual will cease to attack and give up whatever resources they are fighting for (Price & Sloman, 1987; Sloman & Price, 1987). Indeed, Price (1967) argues that: “states of depression...are the emotional
components of behaviour patterns which are necessary for the maintenance of dominance hierarchies in social groups” (p.244)

The social competition hypothesis of depression gains validity from research indicating that the neurochemical markers of defeat (cortisol, 5-HT, dopamine) found in animals are also evident in defeated humans. For instance, although controversial, certain types of clinical depression are associated with dysfunction in 5-HT regulation, and respond to treatment with selective serotonin reuptake inhibitors (SSRIs) (Arroll, Elley, Fishman, Goodyear-Smith, Kenealy & Blashki et al., 2009; Asberg, Thoren, Traskman, Bertilsson, & Ringberger, 1976; Baudry, Richard, Schneider, Launay, & Kellerman, 2010; Coppen, 1967; Coppen, Swade, & Wood, 1978; Healy, 1985). Depression has also been linked to changes in levels of cortisol, along with associated immune system dysfunction (Dantzer, O’Connor, Freund, Johnson, & Kelley, 2008; Denman, 1986; Dinan, 1994; Porter, Gallacher, Watson, & Young, 2004; Kiecolt-Glaser & Glaser, 1992; Peeters, Nicolson, & Berkhof, 2003; Strickland, Deakin, Percival, Dixon, Garter & Goldberg, 2002). Mesolimbic dopamine, and its main metabolite (homovanillic acid), have also been found to be dysregulated in depressed adults (McLean, Rubinsztein, Robbins, & Sahakian, 2004; Meyer, McNeely, Sagrati, Boovariwala, Martin, & Verhoeff et al., 2006; Nestler & Carlezon, 2006; Willner, 1997). Due to our social worlds being more complexly governed by SAHP, over and above the more primitive characteristics of animal hierarchies (e.g. physical prowess), the human potential for engagement of a losing strategy is wide-ranging. Critically, it is the subjective perception of defeat which is crucial. As such, Gilbert (2000b) documents the three main sources of human defeat:
(a) Failure to attain, or loss of valued resources (e.g. SAHP);

(b) Social put-downs and external attacks from others (e.g. being discriminated and marginalised)

(c) Internal sources of attack (e.g. self-criticism, unfavourable social comparisons and unrealistic goal setting)

The Involuntary Defeat Strategy

The social competition hypothesis has been through two major refinements – in 1994 it was operationalised as the Involuntary Subordination Strategy (ISS; Price, Sloman, Gardner, Gilbert, & Rhode, 1994). The ISS was formed in order to provide a more parsimonious empirical concept of a genetically programmed (therefore involuntary), adaptive mechanism with cognitive, behavioural and emotional components. The adaptive nature of the response has been likened to vomiting and diarrhoea: both being transiently unpleasant, yet serve to further the chance of longer-term survival by removing toxins from the body (Nesse, 1998). The second refinement to the theory came when Sloman (2000) renamed the ISS the Involuntary Defeat Strategy (IDS). The semantic shift from subordinate to defeat was made, as “subordinate” strategies may be associated with a variety of behaviours and emotions which may not necessarily result in distress. For instance, subordination can in some instances be associated with voluntary strategies, which can facilitate alliance formation and prosocial interaction (Chapais, 1992; de Waal, 1998; Gilbert, 2000b). Indeed, a voluntary subordinate response is likely to magnanimously pre-empt the IDS before it becomes fully escalated.

Conversely, “defeat” implies a stricter struggle to meet goals and the concept of failure - which is more closely tied with depression. As such, the IDS represents a more acute refinement of the ISS - more orientated toward decreases in the positive affect system after defeat, that
attenuates social engagement and explorative behaviours (Gilbert, Allan, Brough, Melley, & Miles, 2002).

Critically, the association between the IDS and distress is more likely to be mediated by the extent to which the IDS remains active. An effective IDS will terminate and allow the individual to be pursuant of new activities after the defeat. As such, distress and continued subordination are underpinned by an unregulated and therefore maladaptive IDS (Sloman, 2008). The extent to which the IDS ultimately becomes maladaptive is also contingent on the attachment system. As discussed, the human warmth system will facilitate acceptance of defeat and new social rank, and therefore provide a delimiting context for IDS attenuation (see figure 2.2). The IDS framework also emphasises the cognitive components of the IDS which have been conceptualised as the perception of the self as involuntarily subordinate which are outlined below.

![Figure 2.2 –Interaction between the IDS and Attachment taken from Sloman (2008)](image_url)
Cognitive Components of the IDS

Defeat and Entrapment

The psychological perception of entrapment following defeat is a pervasive facilitator of an active IDS. Subordinates may wish to escape and flee but are blocked from doing so (Dixon, 1998; Dixon & Fisch, 1998). In humans, entrapment can come from noxious life events (e.g. being unable to escape an abusive marriage) (Brown & Harris, 1978; Brown, Harris & Hepworth, 1995). Critical to the perception of entrapment is therefore the individual’s perception of circumstances as uncontrollable and inescapable. Gilbert and Allan (1998) have delineated entrapment into two types: internal and external. Internal entrapment pertains to the individuals’ own mental state and being trapped by our own thoughts (i.e. “I want to get away from myself”). External entrapment relates to the perception of external people or events (i.e. “I feel trapped by my obligations”). As would be predicted by the social competition hypothesis, feelings of entrapment and defeat have been highly correlated, and in some cases independently predictive of, distress and suicidal ideation in both non-clinical and clinically depressed samples (Allan & Gilbert, 2002; Brown et al., 1995; Clare & Singh, 1994; Gilbert & Allan, 1998; Gilbert et al., 2002; Gilbert, Cheung, Irons, & McEwan, 2005; Goldstein & Willner, 2002; Martin, Gilbert, McEwan & Irons, 2006; Troop & Baker, 2008; Sturman & Mongrain, 2005, 2008a, 2008b; Taylor, Gooding, Wood, Johnson, Pratt & Tarrier, 2010; Yoon, 2003). Recent work has however argued defeat and entrapment are better represented by a single factor (Johnson, Gooding & Tarrier, 2008; Taylor, Wood, Gooding, Johnson & Tarrier, 2009). For example, Taylor et al., (2009) conducted an exploratory factor analysis in undergraduate students and found that defeat and entrapment strongly loaded onto a single factor. As such, how best to conceptually involuntary subordination remains a subject of ongoing debate. Indeed, some researchers argue that entrapment is an external maintainer of
the IDS, and should not be included as a core component of the IDS (Taylor, Gooding, Wood & Tarrier, 2011). Conversely, other theorists have included it as an intrinsic component of involuntary subordination (Sturman, 2011; Sturman & Mongrain, 2008a,b).

**Social Rank**

As highlighted, the process of formation and appraisal of our social rank is one of the main human proclivities that has resulted from millions of years of evolution (e.g. natural selection). Perceptions of inferiority and low social rank define the context for IDS activation (Sloman et al., 2003). The hypothesised function of the IDS is to maintain social rank, by reducing further attacks to it. The validity of this is supported by the demonstration that negative social comparison (i.e. up-rank), and the associated feelings of low self-esteem and inferiority, have long been associated with depression (Allan & Gilbert, 1995; Buunk & Brenninkmeyer, 2000; Gibbons, 1986; Lyubomirsky & Ross, 1997; Swallow & Kuiper, 1992; Wyatt & Gilbert, 1998). For instance, Allan and Gilbert (1995) report that self-reported low social rank (e.g. “I feel inferior to other people”) was significantly associated with interpersonal sensitivity, hostility and depression in both student and clinically depressed samples.

**Shame**

As an evolutionary-based affect, shame is heavily associated with negative social comparison and self-evaluation (Andrews & Hunter, 1997; Gilbert & McGuire, 1998; Gilbert, Allan & Goss, 1996; Tangney, 1993, 1995). The core facet of the experience of shame is not simply a falling short of standards, but pertains to having an intrinsic quality that is socially unattractive and could lead to potential rejection by others. Consequently, the root of the expression of shame is grounded in the social rank orientated defence system which seeks to protect against threats to social rank (Gilbert, 1989; Gilbert & McGuire, 1998). Feelings of shame therefore signal to the self that threats to social rank and desirability have occurred, and must be
defended against (Gilbert & Andrews, 1998). The experience of shame is thus a pervasive component in automatic activation of the IDS.

Shame is also argued to have both internal and external components (Gilbert, 2007). Internal shame relates to how we see ourselves, and our own failures to meet standards we set for ourselves (e.g. “I’m ashamed of speeding”). These views can be negative and potentially hostile. External shame pertains to stigma consciousness; how internal behaviours and attributes may be rejected or shamed if they became public (Gilbert, 2000b; Pinel, 1999, 2002) (e.g. “I think other people will see me as inadequate and unattractive because of my speeding”). As such, external shame pertains to the fear of disclosure of socially unattractive and stigmatised information that is appraised as being deleterious to our SAHP. Both internal (e.g. self put-downs) and external shame (e.g. social put-downs) can therefore operate as pervasive facilitators of the IDS. It should be noted that, whilst conceptually distinct, internal and external shame tend to be highly correlated when assessed with self-report methodologies (i.e. if you personally think something is bad, chances are you will expect others to see it as bad as well) (Allan, Gilbert & Goss, 1994).

Individual differences in the proneness to shame are also pertinent: people will vary along a continuum on their ability to be shamed by others (Lewis, 1971, 1992; Tangney, Wagner & Gramzow, 1992). People who are highly shame-prone are likely to be self-ruminative and generally feel worthless and disgraced (Lewis, 1971; Mills, 2005). Importantly for the current thesis, shame proneness has been significantly associated with elements of involuntary subordination: defeat, entrapment and low social rank (Gilbert, 2000b; Gilbert et al., 2002; Gilbert & Miles, 2000; Gilbert et al., 2005). Shame-proneness has also been shown to be significantly greater in individuals with insecure models (i.e. fearful, preoccupied) of adult attachment (Gross & Hansen, 2000; Lopez, Gover, Leskela, Sauer, Schirmer & Wyssmann, 1997). Individuals high in shame-proneness also report lower parental caring and more
traumatic life events (Gilbert et al., 1996; Platt & Freyd, 2011). Further, a recent meta-analysis conducted on 108 studies by Kim, Thibodeau and Jorgensen (2011) indicates that the experience of shame, particularly external shame, is also strongly associated with clinical depression in both adolescents and adults. People with anxiety disorders (e.g. social anxiety) also report higher proneness to shame (Fergus, Valentiner, McGrath & Jencius, 2010; Gilbert, 2000b). Consequently, shame and social anxiety in particular would appear to share many core similarities and overlap (e.g. avoidance of being put down and humiliated) (Gilbert et al., 2002).

Darwin (1872) described the behavioural displays of shame as “...downward cast eyes, slack posture and lowered head”. Displays of shame are argued to function as an appeasement and defence against attack and therefore share much in common with the IDS (e.g. gaze aversion, defeated posture) (Gilbert & McGuire, 1998; Keltner, 1995). For instance, congenitally blind individuals from different cultures show the same shame displays (e.g. slumped posture) after a defeat in the 2004 Paralympics (Tracy & Matsumoto, 2008). This would indicate an innate mechanism, as opposed to a learned behaviour. It is important to note that Sloman (2000) highlights that shame would appear to be more associated with social attraction (i.e. displays of SAHP). As such, shame may not be as heavily associated with the IDS in areas where bestowal of rank is not primarily governed by SAHP (e.g. success in combat sports is more reliant on physical attributes, as opposed to other personal qualities such as education or beauty).
The Behavioural IDS

Submissive Strategies

The non-verbal elements of post-defeat responses may be generally referred to as submissive behavioural strategies (Gilbert, 2000b; Price, 1967; Sloman, 2000). The term submissive behaviour may be viewed as an umbrella term, which includes the core components of a maladaptive IDS (e.g. arrested flight), but also other strategies such as affiliative-submissive behaviour. These more affiliative strategies may be used proximally before arrested flight is fully manifest (i.e. reparative grooming of the dominant competitor by the subordinate) (Aureli 1992; Baker & Aureli, 1997; de Waal & van Roosmalen, 1979). In the IDS literature, submissive behaviour has largely been operationalised as self-reported appraisals on the Submissive Behaviour Scale (SBS; Allan & Gilbert, 1995; Gilbert & Allan, 1994). The SBS pertains to common submissive behaviours used in social environments (e.g. “At meetings and gatherings, I let others monopolise the situation” “I would walk out of a shop without questioning, knowing that I had been short changed”). The empirical support for the role of submissive behaviour in the IDS comes from high scores on the SBS in non-clinical and clinically depressed samples, being significantly associated with the main cognitive foundations of involuntary subordination:

- Entrapment and defeat (Allan & Gilbert, 2002; Gilbert et al., 2002; Wyatt & Gilbert, 1998; Sturman, 2011),

- Low social rank (Cheung, Gilbert & Irons, 2004; Connan, Troop, Landau, Campbell & Treasure, 2007; Gilbert et al., 2002; Troop, Allan, Treasure & Katzman, 2003; Sturman, 2011),
Shame (Gilbert & McGuire, 1998; Gilbert et al., 2002; Gilbert, McEwan, Bellew, Mills & Gale, 2009; Gilbert et al., 2010; Troop et al., 2003)

Distress (Cheung et al., 2003; Gilbert & Allan, 1997, 1998; Gilbert, Allan & Trent, 1995; Schneider, Rodebaugh, Blanco, Lewin & Liebowitz, 2011).

These studies employing the SBS are useful in that they indicate people who are involuntarily subordinate (e.g. those who have increased feelings of defeat, entrapment and inferiority) also rate themselves as behaving submissively in common social contexts; thus confirming a significant association between cognition and behaviour predicated by IDS theory (Beck, 1967; Price, 1967; Sloman et al., 2003). It can be argued however that self-reporting submissive behaviour for these involuntarily subordinate people is unreliable. For example, distressed individuals have a tendency to self-rate their social behaviour more severely than objective raters, along with overestimating its salience (Clark & Wells, 1995; Norton & Hope, 2001; Rapee & Lim, 1992; Stopa & Clark, 1993; Trower & Gilbert, 1989). Further, the current thesis argues that the apex of IDS activation represents a time when these submissive strategies have failed or have been blocked, and more powerful behaviours, which arise from this entrapment, come to characterise the IDS (e.g. arrested flight). As such, studies using the SBS have an inherent lack of ecological validity for analysis of assessment of an escalated IDS. This is a salient knowledge gap, and objective assessments of the behavioural correlates of involuntary subordination in everyday life are therefore vital.

Arrested Flight

The primary instinctual behaviour in response to dominant aggression is flight (Gray, 1987; Marks, 1987). Flight will allow the individual to escape the noxious situation, and therefore create the potential for physiological de-escalation, acceptance of defeat and thus curtailment of the IDS. However, if entrapment (e.g. blocked escape) persists then the specific subroutine
of arrested flight strategies will be employed by the subordinate (Dixon, Fisch, Huber & Walser, 1989). Gilbert (2000b) argues the primary aim of arrested flight behaviour is to make the dominant aggressor lose interest by reducing social output, social interaction and signalling “out of action”. Dixon (1998) notes that the salient behavioural aspects of arrested flight strategies in distressed humans are similar to the observed post-defeat routines within animal models:

- **Cut-off to reduce input from the dominant stimulus** (e.g. gaze aversion)
- **Suppression of explorative behaviour** (e.g. demobilisation, hiding in a corner)
- **Submissive postures** (e.g. closed, slumped down posture)

Support for the role of these behaviours in arrested flight comes from human interview paradigms (Dixon et al., 1989; Dixon & Fisch, 1998; Dixon, 1998). For example, in the “challenge interview paradigm”, participants were engaged in neutral conversation after which they were subject to a “shame challenge”. This required participants to talk about previously or current shameful experiences. Dixon and Fisch (1998) report that in a small sample of students this shame challenge resulted in significantly more cut-off: eye gaze looking down and away more often and mild social withdrawal (e.g. nodding and shaking the head, instead of verbally saying yes/no). Dixon and Fisch (1998) therefore argue that arrested flight strategies represent a last resort when all attempts to escape have been blocked. Additionally, Sturman (2011) has recently attempted to assess IDS behaviour within a non-clinical sample using the challenge interview paradigm. He reports that elements of arrested flight behaviour (e.g. lack of eye contact and looking down at the ground), were significantly associated with increased involuntary subordination (e.g. self-reported defeat, entrapment, submissive behaviours and social comparison). This association was only observed in men however, losing significance within the group of female participants. Further, the study used an unstandardised
behavioural coding procedure, which raises questions regarding the wider applicability of the results. Whilst these studies have attempted to assess IDS behaviour, they have also precluded assessment of the attachment styles of the participants. This is a salient theoretical omission when considering how the interplay between the safety vs. defence system contributes to IDS proliferation. The following chapter outlines the rationale for applying this social ranking theory approach to psychosis, along with current knowledge gaps regarding the relevance of an active IDS underpinning the expression of positive symptoms.
Chapter 3

Section I

The Rationale for Assessment of the Involuntary Defeat Strategy in Psychosis

The chances of developing psychosis are largely placed within the framework of an interaction between genetic and environmental factors (GxE; Van Os, Rutten & Poulton, 2008). Within genetics, the heritability of schizophrenia has been quoted as high as 80%, with a ten-fold increase in risk coming from having a first-degree relative with the illness (Cardno & Gottesman, 2000; Owen, O’Donovan, & Gottesman, 2003). For example, studies using monozygotic twins have illustrated concordance rates of schizophrenia up to 91% (Cardno & Gottesman, 2000; Weinberger, Harrison, Riley, & Kendler, 2011). With regard to specific genes, there remains no mapping of a single “gene for schizophrenia” and a number of alleles are likely to play a part (Wang et al., 2005). Molecular studies have been characterised by unequivocal findings and have been subject to methodological caveats due to the heterogeneity of the illness (Harrison & Weinberger, 2005; O’Donovan, Craddock & Owen, 2008; Van Os et al., 2008). Indeed, many of the genes that infer risk for schizophrenia (e.g. disrupted in schizophrenia 1 “DISC1”, neuregulin 1 “NRG1”) are also implemented in bipolar disorder, posing severe challenges to the krapelinian dichotomy (Craddock, O’Donovan & Owen, 2006).
Life Events

More promising avenues in the aetiology of psychosis have however come from studies examining the role of the environment. Observed changes in ventricular volume have been shown to be more strongly associated with variance in environmental, as opposed to genetic, factors (Baaře, Hulshoff, Boomsma, Posthuma, de Geus, & Schnack et al., 2001; Brans, van Haren, van Baal, Schnack, Kahn & Hulshoff, 2008). The stress-diathesis framework therefore argues that psychosocial stressors interact with an underlying genetic vulnerability to produce psychotic symptoms (Brown, 1959; Fowles, 1992; Katschnig, 1991; Zubin & Spring, 1977). As such, psychotic symptoms are argued to emerge when the individuals’ personal threshold is exceeded (Zubin, Magaziner & Steinhauer, 1983). The nature of this psychosocial stress may vary. For example, Bebbington, Wilkins, Jones, Foerster, Murray and Tonne et al., (1993) employed the life events and difficulties schedule (LEDS; Brown & Harris, 1978) in a sample of people who had a psychotic relapse. The LEDS is an extensive, standardised interview of psychosocial stress (e.g. death of a spouse) which is scored by independent raters. Bebbington and colleagues (1993) reported a significant number of negative life events in the three months preceding relapse, compared to controls. Hirsch, Bowen, Enami, Cramer, Jolley and Haw et al., (1996) also report that, over one year, up to 41% of the risk in relapse was attributable to LEDS-assessed life event exposure in patients with schizophrenia. Life events have also been implemented in the prodromal stages of the illness. For instance, Miller, Lawrie, Hodges, Clafferty, Cosway and Johnstone (2001) report a dose-response relationship between the severity of psychotic symptoms and exposure to life events in a large sample of at risk adolescents.
Childhood Trauma

The experience of childhood abuse has also been forwarded as a potentially causal risk factor for development of psychosis and schizophrenia (Read, van Os, Morrison & Ross, 2005). Bebbington, Bhugra, Brugha, Singleton, Farrell, & Jenkins et al., (2004) report data from the British National Survey of Psychiatric Morbidity. They indicate that those with a psychotic disorder were over fifteen times more likely to have been sexually abused in their life. Moreover, Whitfield, Dube, Felitti and Anda (2005) report that, in a population-based study, people with hallucinations were significantly more likely to have been both sexually and physically abused. Bebbington, Jonas, Kuipers, King, Cooper and Brugha et al., (2011) recently replicated the significant association between self-reported incidences of childhood abuse (e.g. non-consensual sexual intercourse) and psychosis. Importantly for the current thesis, they report that the association was partially mediated by levels of anxiety and depression; inferring an active role in affective processes, arising from the experience of social threat and danger, contributing to the maintenance of psychotic symptoms. Further, childhood abuse may also lead to the development of core, negative schemas regarding threats to the self (i.e. “The world is a dangerous place - I must protect myself”).

Social Defeat

Significantly higher rates of schizophrenia have also been observed in ethnic minorities and immigrant populations (Bresnahan, Begg, Brown, Schaefer, Sohler & Insel et al., 2007; Boydell, van Os, McKenzie, Allardyce, Goel and McGreadie et al., 2001; Morgan & Hutchinson, 2010; Veling, Selten, Veen, Blom & Hoek, 2006; Veling, Hoek, Wiersma & Mackenbach, 2010). Within the UK, this has been demonstrated in the significantly higher rates of schizophrenia in Black Africans and Afro-Caribbeans reported by the “Aetiology and Ethnicity in Schizophrenia and Other Psychoses” (AESOP) study group (Fearon, Jones, Dazzan, Morgan, Morgan, & Lloyd
et al., 2006; Kirkbride, Fearon, Morgan, Dazzan, Morgan & Murray et al., 2007). Indeed, Fearon et al., (2006) report that the incidences of schizophrenia in these ethnic minorities were up to six times greater than white British people. Urbanisation (e.g. living in a large city) is also associated with increased incidences of schizophrenia (Hare, 1956; Krabbendam & van Os, 2005; Sundquist, Frank & Stindquist, 2004; van Os, Hanssen, Bijl, & Vollebergh, 2001; van Os, Hanssen, de Graaf, & Vollebergh, 2002). In the UK, Hare (1956) was perhaps the first to illustrate this association. More recently, Sundquist et al., (2004) report that living in densely populated areas was associated with up to a 77% increase in risk for developing psychosis. City living paradoxically goes hand in hand with social isolation, as Mark Twain (1897) argued when describing New York City “…it is a splendid desert—a domed and steepled solitude, where the stranger is lonely in the midst of a million of his race.” Indeed, rurality is associated with significantly greater social support networks, with families living closer together and a more closely bound sense of community (Romans-Clarkson, Walton, Herbison, & Mullen, 1990).

The experience of discrimination (e.g. racism) has also been implemented in the aetiology of psychosis (Brohan, Elgie, Sartorius, & Thornicroft, 2010; Chakraborty & MacKenzie, 2002; Karlsen, Nazroo, McKenzie, Bhui & Weich, 2005; Janssen, Hanssen, Bak, Bijl, de Graaf, & Volleburgh et al., 2003; Berg, Melle, Rossberg, Romm, Larsson, & Lagerberg et al., 2011). As an example, Berg et al., (2011) recently report that perceived discrimination acted as a partial mediator for severity of psychotic symptoms in first-generation immigrants with psychosis. Critics of the social defeat hypothesis have however argued that the associations are accounted for by “urban drift” (i.e. people may decrease in socio-economic status after becoming ill) (Van Os, Kenis & Rutten, 2010). This is however countered by research demonstrating early changes in exposure to urbanicity are significantly associated with changes in risk for schizophrenic development later in life (i.e. a dose-response relationship) (Marcelis, Takei, & van Os, 1999; Pedersen & Mortensen, 2001, 2006). Further, people with
parental low socio-economic status, along with urban birth, are eight times more likely to
develop schizophrenia (Harrison, Gunnell, Glazebrook, Page & Kwiecinski, 2001; Haukka,

Cumulatively therefore, the broad experience of social defeat has been forwarded as a risk
factor for schizophrenia (Selten & Cantor-Graae, 2005, 2007, 2010). These defeats can come in
many forms (e.g. abuse or discrimination) but all are argued to share a common pathway:
promotion of the HPA axis. Social defeat is also likely to orientate the individual toward
reliance on the defence system for organising social rank; factors such as abuse promoting
core, dysfunctional schema which maintain a hyper-vigilance to social danger and threat. As
highlighted in chapter two, it is the HPA axis and defence system which form the key cognitive
and physiological basis of IDS activation and escalation. Consequently, the social defeat
hypothesis infers that an active IDS may contribute to the development of psychotic
symptoms. Indeed, psychosis is associated with reductions in hippocampal volume, which is a
crucial constrainer of HPA activity (Steen, Mull, McClure, Hamer & Lieberman, 2001).
Significantly higher levels of cortisol have routinely been observed in people with
schizophrenia relative to controls (Joseph, Kulhara & Dash, 1987; Ryan, Sharifi, Condren, &
Thakore, 2004; Sharma, Pandey, Janicak, Peterson, Comaty & Davies, 1988; Steen, Methlie,
Lorentzen, Hope, Barrett & Larsson et al., 2011; Walker & Diforio, 1997; Walsh, Spelman,
Sharifi & Thakore, 2005). For example, Ryan et al., (2004) illustrated that HPA axis activity (e.g.
basal levels of cortisol) was significantly increased compared to healthy controls in drug-free
participants with schizophrenia. Moreover, the experience of defeat is also argued to disrupt
neural dopamine function. Broadly, abnormal levels of cortical dopamine have long been
established as affecting both the prevalence and severity of psychotic symptoms (e.g.
Moncrieff, 2009; Meltzer & Stahl, 1976; Seeman, 1987). Within a social defeat framework,
dopamine has been shown to be significantly dysregulated in sexually abused girls vs. non-abused controls (Heim, Newport, Heit, Graham, Wilcox & Bonsall et al., 2000). Consequently, Corcoran, Walker, Huot, Mittal, Tessner, & Kestler et al., (2003) go as far as to argue that HPA function is the mediator for the expression of psychotic symptoms in people with underlying vulnerability.

**The IDS, Distress and Relapse in Psychosis**

The IDS is not only involved in the aetiology of psychotic symptoms, but is also thought to increase the severity of distress and chances of relapse once frank psychotic symptoms are evident. As highlighted in chapter one, emotional distress is now commonplace in non-affective psychosis; contrary to historical nosology (Kraepelin, 1919; Birchwood, 2003). Psychosis disrupts the normative transitions witnessed in early adulthood (i.e. living independently, seeking employment) and thus impacts greatly on the individuals sense of personal autonomy (Seltzer, Greenberg, Krauss, & Hong, 1997). In this context, becoming psychotic is seen as a catastrophic, negative life event which down-ranks and defeats the individual (i.e. “psychosis” becomes personified as the dominant aggressor) (Birchwood, 2003; Birchwood et al., 2000). As such, the diagnosis of psychosis has the ability to potentially further escalate the IDS. For instance, Birchwood, Mason, MacMillan, & Healy (1993) demonstrated that lack of control over the illness was the strongest discriminator between depressed and non-depressed groups. Using the same group of patients, Rooke and Birchwood (1998) additionally reported that distress was associated with a greater sense of entrapment and loss of valued social role (e.g. unemployment). Indeed, entrapment has also been shown significantly relate to depression in psychosis when positive symptoms are controlled for (Clare & Singh, 1994; White, McCleery, Gumley & Mulholland, 2007). Further, Birchwood et al., (2000) also report that, within a large sample of people with schizophrenia, incidences of PPD and relapse were predicted by the appraisal of low social rank, entrapment and loss associated
with the illness. This association between relapse and involuntary subordination has also been replicated by Gumley, O’Grady, McNay, Reily, Power and Norrie (2006). They have demonstrated, over a period of twelve months, people who relapsed showed greater perceptions of loss, entrapment, shame and humiliation compared to people who stayed well.

As one participant in a qualitative study reported by Hirschfeld, Smith, Trower, & Griffin (2005) notes “…it’s just everything falls down into a big pit, and you can’t get out” (p249).

Consequently, it would appear that an active IDS, in particular feelings of involuntary subordination, play a significant role in contributing to both distress and relapse within psychosis.

The IDS and Social Anxiety in psychosis

The DSM-IV characterises social anxiety as a “marked and persistent fear of one or more social or performance situations...the individuals believes they will act in a way that is (or show anxiety symptoms) that will be humiliating or embarrassing”. Social anxiety is now recognised to be a significant issue for people with psychosis and is associated with impaired quality of life (Michail & Birchwood, 2009; Pallanti, Quercioli & Hollander, 2004). An IDS framework has also been applied to the study of social anxiety within psychosis (Birchwood, Trower, Brunet, Gilbert, Iqbal, & Jackson, 2007; Michail & Birchwood, 2009; Trower & Gilbert, 1989). Namely, in their ‘stigma processing’ model, Birchwood et al., (2007) argue that submissive behavioural strategies (e.g. arrested flight) function as safety behaviours which aim to prevent disclosure or “give away” the patient’s diagnosis to others, thereby maintaining their social status in the face of shame and social put-down. For instance, a sub-group of socially anxious patients with a first episode of psychosis appraised their illness as significantly more entrapping and uncontrollable, along with having higher levels of shame and lower social rank vs. first-episode patients without social anxiety. In this context, it is increased awareness regarding the shame of psychosis, appraised by the defence system, which drives socially anxious behaviour and
distress. These social signals that are heavily associated with arrested flight and the IDS (e.g. gaze avoidance), actually serve to increase distress and may consciously prevent belief disconfirmation (i.e. “The only reason I wasn’t put-down is because I seemed to be looking away and didn’t really want to talk about my illness”). This relationship has also been supported by Gumley, O’Grady, Power & Schwannauer (2004) who report that, compared to people with psychosis without social anxiety, the socially anxious subgroup had significantly higher perceptions of shame, loss, humiliation, and entrapment regarding their illness. In line with what would be expected from an escalated IDS, individuals with psychosis who experience SaD also show greater anticipation of threat and harm compared to those without SaD (Michail & Birchwood, 2009).

The IDS and Suicide in psychosis

Around one quarter of people with psychosis will express concurrent suicidal ideation, and approximately 50% of people will have attempted suicide (Nordentoft, Jeppesen, Abel, Kassow, Petersen, & Thorup et al., 2002; Palmer et al., 2005; Tarrier, Barrowclough, Andrews & Gregg, 2004). Cognitive elements of involuntary subordination (e.g. defeat, entrapment) have been linked to suicide in psychosis (Taylor et al., 2011; Taylor, Wood, Gooding, & Tarrier, 2010; Johnson, Gooding & Tarrier, 2008). The “cry of pain” model of suicidal ideation argues that suicide is a reaction against the continued experience of entrapment and arrested flight (COP; Williams, 1997; Williams, Crane, Barnhofer, & Duggan, 2005). As such, this prominent model of suicidal ideation in psychosis is directly informed by social ranking theory (Gilbert & Allan, 1998; Sloman et al., 2003). The appraisal of the experience as defeating and deleterious to social rank is also central to the COP model, along with the perception of available social support (i.e. secure attachment relations) (Johnson, Gooding, & Tarrier, 2008; Williams, 1997). For example, Taylor et al., (2010) report that perceptions of defeat and entrapment accounted for 31% of the variance in suicidal behaviour in people with schizophrenia spectrum disorders.
This relationship has also been recently supported longitudinally: Taylor, Gooding, Wood, Johnson and Tarrier (2011) report that participants higher in defeat at baseline became more suicidal over the subsequent year. Further, Rasmussen, Fraser, Gotz, MacHale, Mackie and Masterton et al., (2010) report that the relationship between defeat and suicidal ideation was mediated by perceptions of entrapment in self-harming inpatients.

Research has also specifically implemented the HPA axis as contributing to suicidal behaviour in individuals with psychotic symptoms. A small number of studies have reported associations between level of cortisol and suicide attempts in people with a diagnosis of schizophrenia (Jones, Stein, Stanley, Guido, Winchel & Stanley, 1994; Plocka-Lewandowska, Araszkiewicz, & Rybakowski, 2001). Recently, De Luca, Tharmalingam, Zai, Potapova and Strauss (2010) tested six genes involved in the HPA axis, through the action of corticotrophin-releasing hormone (CRH), in patients with schizophrenia. They report a significant interaction between genes involved in CRH (i.e. CRH receptor type 1, CRH binding protein) and the severity of suicidal behaviour. As such, the role of the IDS would also appear to be significant in contributing to suicidal behaviour within psychosis.

The IDS and Auditory Hallucinations in psychosis

The most significant application, and a main focus of the current thesis, is the role of the IDS within the cognitive model of voices. Through illustrating how internal relationships with voices can be actualised in the form of dominant vs. subordinate hierarchies, the cognitive model of voices thus emphasises the importance of social ranking processes (i.e. the IDS) underpinning relationships with hallucinations. As discussed in chapter two, insecurely attached individuals who have to rely on the threat-defence system will perceive greater threat to social rank (e.g. social attractiveness, group fit) and are more likely to see themselves as inferior compared to others. As such, the cognitive model of voices emphasises that these
subordinate mentalities are online when voices are appraised as malevolent and omnipotent. Conversely, securely attached individuals, thought to be more reliant on the soothing, safety system, will see themselves as less vulnerable, others as less threatening and shameful and are therefore more likely to have benevolent relationships with voices (Birchwood, Meaden, Trower, Gilbert & Plaistow, 2000; Birchwood, Gilbert, Gilbert, Trower, Meaden & Hay et al., 2004). For example, Birchwood et al., (2000) report that, independent of mood, appraisals of social power and rank (e.g. “Compared to others I feel inferior”) were the significant predictors of the power differential between the individual and his/her voice (e.g. “Compared to my voice I feel inferior”) in people with schizophrenia. This was further supported by Birchwood et al., (2004) who employed structural equation modelling (SEM) to demonstrate that distress and power of voices was significantly underpinned by appraisals of social rank and power in voice hearers (standardized path coefficient=0.60).

If voice relationships do truly operate as proto social hierarchies, the organisation of which is underpinned by social mentalities, then an active IDS should be a salient mechanism within the lives of subordinated voice hearers. To date, this direct relationship has received little empirical attention (i.e. explicit assessment of the IDS in voice hearers). However, Gilbert et al., (2001) attempted to operationalise the cognitive elements of the IDS by developing a scale to measure flight vs. fight in relation to voice activity (e.g. “I think about how to escape from my voice” “I want to get revenge against my voice”), along with entrapment from voices (e.g. “I can see no way of getting away from my voices”). They reported that voice hearers with omnipotent and malevolent voices were able to highly identify with these cognitive elements of involuntary subordination, and were strongly associated with measures of voice power and distress. As highlighted, internal sources of attack have the ability to potentiate the IDS (Gilbert, 2000). Gilbert et al., (2001) therefore critically argue that they were assessing an IDS which was escalated in direct response to the appraisals of voice power and omnipotence. As
opposed to any external, objective aggressor, the IDS for these individuals is escalated by their own subordinate mentalities which have become inwardly recruited for construal of beliefs about misattributed mental phenomena (i.e. inner speech). This framework broadly sees the voice hearer engaged in a battle within themselves - with both the perceived source of attack and subsequent defensive response psychologically co-existing in a pernicious negative cycle.

The study of Gilbert et al., (2001) represented an initial and important attempt at conceptualising the IDS within voice hearers, but contained appreciable methodological issues which were explicitly acknowledged by the authors. Firstly, the IDS assessment was constricted to self-reporting of fight, flight and entrapment and precluded any concurrent analysis of the behavioural elements (e.g. arrested flight) of the IDS. These behaviours are crucial facets of the IDS which are tantamount to the cognitive components of involuntary subordination, and failure to assess them is a salient omission. To date therefore, the cognitive model of voices is currently constrained by this lack of ecological validity for the inclusion of these evolutionary mechanisms into the construal of voice relationships. Consequently, there remains no independent method for assessing the IDS within the actual day to day behaviour of the individual and his/her relationship with voices. Moreover, the scales employed were also unstandardised - which raises questions regarding the validity of the results, and does not allow for generalisation to the extant IDS literature. Globally therefore, IDS activation would seem to play a critical role in underpinning the power and distress associated with voices in psychosis, but this warrants more objective and valid empirical investigation.
Section II
Social Behaviour in Psychosis

Overview

It is now acknowledged that deficits in social functioning are a core feature of both the prodromal and acute phases of schizophrenia (Addington, Penn, Woods, Addington & Perkins, 2008; Barrowclough & Tarrier, 1990; Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990; Blanchard, Mueser & Bellack, 1998; Bellack, Morrison, Mueser, Wixted & Mueser, 1990; Shim, Kang, Chung, Yoo, Shin & Kwon, 2008; Wiersma, Wanderling, Dragomirecka, Ganev, Harrison & Der Heiden et al., 2000). For example, Addington et al., (2008) report that young people with an at risk mental state were significantly impaired on social functioning compared to non-psychiatric controls. Further, Wiersma et al., (2000) report that 24% of patients still had social disabilities fifteen years following onset of psychosis. Within the literature, analysis of social functioning has largely been based on questionnaire-based assessments of areas ranging from sexual performance through to interactions with work colleagues. For example, scores on the widely used Social Functioning Scale (SFS; Birchwood et al., 1990) pertain to seven wide ranging areas completed by relatives of the patient: withdrawal/social engagement, interpersonal communication, independence–performance, independence–competence, recreation, prosocial and employment/occupation. In line with this broad assessment strategy, there remains little consensus about what the rubric of ‘social functioning’ specifically pertains to within psychosis, and disabilities are likely to arise due to a range of factors such as negative symptoms and cognitive deficits (see Burns & Patrick, 2007 for a review).
Consequently, it is important to differentiate between these global assessments of social functioning that have been made within psychosis, and that of the highly specified “ethological” functioning that is engrained in the ontogeny of social ranking theory. Broadly speaking, the term Ethology, derived from the Greek “ethos” and “logos”, refers to “the study of human behaviour and social organisation from a biological perspective” (Oxford English Dictionary, June, 2011). Ethological methods therefore pertain to analysis of the causation, ontogeny and survival value of human behaviour (Lorenz, 1950, 1981; Tinbergen, 1963). Through this, congruency between individual differences in the evolution of the brain, and individual differences in the evolution of behaviour can be observed. Ethological analysis in psychology is not a new concept: Rumke (1941) argued that schizophrenia could be intuitively recognised by the social behaviour associated with it or “praecox feeling”. It was however subsequently subdued for many years when behaviourism was at its peak (Boakes, 1984; Skinner, 1938, 1963; Watson, 1930). Recent years have seen the reawakening of ethology, in tandem with the increasing utility of evolutionary psychology at providing explanatory models of psychopathology (Eibl-Eibesfeldt, 1979; Geerts & Brüne, 2009; Hargie, 2006; Hinde, 1974; Sullivan, 1939). Ethological methods are still rare - it is important to note that their negation may be due to their more laborious nature (i.e. the detailed coding of patient behaviour is time-consuming when compared to self-report questionnaires.)

Due to the vast and diverse nature of behaviour, ethological studies are largely based on the use of ethograms. Ethograms are finite catalogues of coded behaviours (e.g. looking down), which can also be grouped into larger categories (e.g. flight). The majority of ethograms applied within psychology are based on the observations of Grant (1963, 1968). One related ethogram which has been employed within psychopathology is the Ethological Coding System for Clinical Interview (ECSI; Troisi, 1999). The ECSI is a thirty seven behaviour ethogram, abridged from Grant (1968). Usefully, Troisi (1999) documents that the ECSI contains
categories which appear valid for IDS assessment i.e. “submission” (used to appease and to prevent or inhibit hostile responses) and “flight” (patterns which serve to cut off incoming social stimuli).

When applied to the analysis of non-verbal behaviour associated with clinical depression, Troisi, Pasini, Bersani, Grispini and Ciani (1989) report that scores in specific behavioural categories of the ECSI (i.e assertion, affiliation) were able to reliably predict responders to amitriptyline treatment vs. non-responders in unipolar depression. Further, Troisi and Moles (1999) report that depressed participants scored significantly lower than normal controls on the ECSI categories of “look at/eye contact” “affiliation” “relaxation” and “gesture”. Sgoifo, Braglia, Costoli, Musso, Meerlo & Ceresini et al., (2003) also introduced a novel assessment of autonomic reactivity (e.g. heart rate) into ECSI assessment of behaviour in university undergraduates. As previously highlighted, physiological arousal accompanies social defeat, ergo potential IDS escalation, in both animals and humans (Chiao, 2010; Levitan et al., 2003; Gonzalez-Bono, Salvador, Serrano, & Ricarte, 1999; Wirth, Welsh, & Schultheiss, 2006). Importantly, Sgoifo et al., (2003) report that increased heart rate before, and following, a stressful interview was significantly correlated with increased scores on the “submission” category of the ECSI.

The ECSI has also been applied to the observation of behaviour in people with psychosis. For example, Troisi, Pasini, Bersani, Di Mauro and Ciani (1991) applied the ECSI to a sample with schizophreniform disorder. They report that, when compared to good prognosis patients, poor prognosis patients presented with significantly less eye contact during a clinical interview. Further, Troisi, Spalletta and Pasini (1998) also report that unmedicated participants with schizophrenia had significantly lower scores on the ECSI categories of “prosocial” “gesture” and “displacement” when compared to a normal control group. Troisi, Pompili, Binello, and Sterpone (2007) also report that scores on the ECSI category of “prosocial” (e.g. facially
expressive behaviours) were significantly predictive of scores on questionnaire measures of social and work disability in participants with acute schizophrenia. Brüne, Sonntag, Abdel-Hamid, Lehmkämper, Juckel, and Troisi (2008) also employed the ECSI in a sample of people with schizophrenia spectrum disorders. They found that the patients presented with significantly lower scores in the “relaxation” “flight” “prosocial” and “affiliation” categories during a clinical interview, compared to normal controls. Additionally, Brüne, Abdel-Hamid, Sonntag, Lehmkämper and Langdon (2009) have demonstrated low scores in the ECSI “prosocial” category were significantly related to low scores on the Social Behaviour Scale (SBS; Wykes & Sturt, 1986) and poorer performance on tasks which required mentalisation (i.e false-belief tasks) in participants with schizophrenia. Recently, Dimic, Wildgrube, McCabe, Hassan, Barnes and Priebe (2010) employed a modification of the ECSI in patients with schizophrenia and depression. When comparing groups on ECSI scores, they found that participants with schizophrenia presented with a significant increase in the “flight” category during a clinical interview. This observed increase in flight behaviour is indicative of an escalated IDS, along with the work of Sgoifo et al., (2010) who report that increased heart rate was significantly associated with the submission category of the ECSI during exposure to social stress. Whilst these studies have, by virtue of using the ECSI, assessed the main behavioural markers of the IDS (i.e. submission, arrested flight), they have precluded contextualisation of these behaviours in relation to the evolutionary, cognitive components of involuntary subordination (e.g. social inferiority, shame, entrapment).

Symptoms, Medication & ECSI Behaviour

It may be that the ethological profiles observed in the existing literature are purely explained by symptom levels (e.g. blunted affect and/or neuroleptic medication). In this framework, an IDS explanation for the observed ethological profiles of psychotic participants may not be needed. For instance, it is now well acknowledged that antipsychotic medications (e.g
Risperidone) depress motor behaviour and have appreciable extra-pyramidal side-effects (Eberhard, Lindstrom & Levander, 2006; Geddes, Freemantle, Harrison & Bebbington, 2000; Rummel-Kluge, Komossa, Schwartz, Hunger, Schmid & Kissling et al., 2010; Schneider, Ellgring, Friedrich, Fus, Beyer & Heinman et al., 1992). Zupper, Ramseyer, Hoffmann, Kalbermatten & Tschacher (2010) recently used Motion energy analysis (MEA) in paranoid schizophrenic participants. Broadly, MEA involves calculating changes in the frames of a video in regions of interest, which then gives an overall maker of movement (Grammer, Honda, Schmitt, & Jütte, 1999). When using MEA to analyse patient behaviour during videotaped role-playing scenes, they found that general reductions in movement parameters (i.e. percentage of time in movement and speed of movement) were reliably correlated with severity of reported negative symptoms (e.g. anhedonia). Further, in the Dimic et al., (2010) study, low scores on the ECSI assertion and high scores on the flight categories were also related to higher positive symptom levels.

It is however unlikely that the observed ethological profiles of people with psychosis are solely accounted for by symptomology and medication. For instance, deficits in social behaviour do not improve following symptomatic treatment with antipsychotic medication, and are evident in childhood long before the emergence of acute symptoms (Bellack, Schooler, Marder, Kane, Brown & Yang Ye, 2004; Walker, Grimes, Davis, & Smith, 1993). Both medication dose and symptom levels have also shown no significant relationship with ECSI categories (Brüne et al., 2008; Troisi et al., 1998). As such, the current thesis argues that a significant portion of non-verbal behaviour may be independently governed by the IDS.
Chapter 4

Empirical Study 1

Assessment of Involuntary Defeat Strategy Behaviour using the Ethological Coding System for Interview: An Analogue Study

Introduction

The review in the previous chapter indicated that the IDS may play a significant role in the maintenance of distressing and subordinate voice relationships in psychosis (Birchwood et al., 2000, 2004, 2007; Gilbert et al., 2000). The IDS is argued to be a dynamic mechanism, which shows appreciable behavioural enactment/escalation throughout the daily life of the individual (Fournier et al., 2002). Consequently, assessment of the IDS in both normal and clinical populations has suffered from a lack of ecological validity, with self-reported measures of submissive behaviour (e.g. the Social Behaviour Scale) predominating (Gilbert, 2000; Gilbert et al., 2000; Gilbert & Allan, 1998).

The previous chapter also indicated that the Ethological Coding System for Interview may be well suited to the purposes of IDS assessment; having previously been used to good effect with people with psychotic symptoms (ECSI; Troisi, 1999). However, at the time of writing, no prior application of the ECSI within the explicitly stated parameters of social ranking theory has been documented in the literature. The primary aim of the current study was therefore to use the ECSI in order to assess its reliability and validity in assessing the behavioural components of an...
active IDS in a non-clinical sample. Assessment of the IDS in non-clinical populations is still of relevance to psychosis, as the IDS is argued to be an innate neural mechanism in all humans; governed by neurochemical interactions between the prefrontal cortex, striatum and limbic system (Levitan et al., 2000). Consequently, the experiential quality of the IDS is no different across normal and clinical populations.

Through assessing the IDS in a non-clinical sample, the knowledge gaps with regard to the cognitive underpinnings of IDS activation may also be addressed. Namely, in both psychosis and the normal population, continued escalation of the IDS is argued to be driven by the underlying perception of feeling defeated/trapped, shamed and lower in social rank compared to others. These cognitive components have been grouped under the umbrella term involuntary subordination (Gilbert, 2000; Gilbert & Allan, 1998; Gilbert et al., 2000; Sloman & Gilbert, 2003; Sturman, 2011). Further, working models of insecure attachment are argued to contribute to an escalated and maladaptive IDS by providing a failure to self-sooth and regulate affect following defeat, along with creating a bias toward threat and rejection in the everyday environment (Bowlby, 1969; MacBeth, Schwannauer & Gumley, 2008). There remains however a paucity of objective behavioural support for these schema driving the IDS at times when escalations in its enactment would be expected during daily life (i.e. during social interactions) (Sturman, 2011; Zuroff et al., 2007).

Consequently, to provide ecologically valid support for these associations, it is necessary to create a psychosocial context whereby IDS escalation would be expected. Gilbert (1997) argues that social attractiveness has replaced aggression as the primary basis for organising social rank in modern societies (having attributes others find attractive i.e. intelligence, wealth, health, sense of humour) and that social damage limitation strategies (e.g. the IDS) are therefore linked to attempts to gain and maintain this attractiveness in the eyes of others (e.g. SAHP). Furthermore, in this context, affective responses, such as shame and social anxiety, are
argued to arise as a direct result of the appraisal of potential loss of social attractiveness – with IDS/social anxiety/shame behaviours overlapping considerably; all being characterised by the desire to escape, submit and prevent further attacks to rank (Beer & Keltner, 2004; Keltner, 1995; Gilbert, 2000b). For instance, many people are familiar with the phrase “to hang your head in shame”.

Within this social attractiveness framework, the experience of shame, often cited as the “affect of inferiority”, is therefore argued to be a particularly unique and pervasive governor of the IDS (Gilbert, 2000). Indeed, to be shamed is to be seen as weak, bad and of low rank, with the uniquely human dimensions of pride vs. shame being analogous to dominance vs. subordinance in animal hierarchies (Gilbert & McGuire, 1998; Sloman et al., 2003; Weisfeld & Wendorf, 2000). Internal shame refers to self-generated feelings about the individual’s own attributes and behaviours (Gilbert et al., 2000). Alternatively, external shame uniquely pertains to evaluations of social attractiveness; how personal attributes and behaviours may be rejected if they became public – stigma consciousness (Allan et al., 1994; Gilbert et al., 2000; Pinel, 1999, 2002). It is this proneness to external shame that is thought to be significantly associated with escalation of behavioural strategies in both normal and clinical samples (Birchwood et al., 2007; Sloman, 2000; Sturman, 2011).

Therefore, in order to best provide a “snapshot” of an active IDS, the current study employed the challenge interview paradigm (Dixon & Fisch, 1998). As highlighted in the last chapter, this involves participants being interviewed regarding a neutral topic, after which they are “challenged” to talk about shameful events and experiences to a relative stranger (researcher). Non-verbal behaviour is then subsequently coded for both interview conditions. Through targeting social attractiveness and shame, previous research has reported that the paradigm is able to bias the participant toward IDS congruent behaviour, for example flight, during the challenge condition (Dixon & Fisch, 1998; Gilbert & McGuire, 1998). As such, the shame
challenge was included as the core manipulation in the current study in order to provide a valid context for ECSI-based assessment of IDS behaviour and its hypothesised cognitive antecedents. To summarise, the main aims of the current study are:

**Primary Aim**
1. To assess the reliability and validity of the ECSI for assessment of IDS behaviour

**Secondary Aims**
2. To assess if greater entrapment, defeat, low social rank and external shame (involuntary subordination) is significantly associated with IDS behaviour when shameful experiences are disclosed. IDS behaviour scores are also expected to positively relate to depression.
3. To assess if the predicted escalation in IDS behaviour when disclosing shame is greater in people with higher levels of:
   - Entrapment, defeat and low social rank
   - External shame/shame sensitivity
   - Insecure attachment schemata
Measures

**Ethological Coding System for Interview (ECSI; Troisi, 1999)**

The ECSI is a 37-item behavioural ethogram based on evolutionary based behaviour first noted by Grant (1968). Nine behavioural categories are derived: LOOK AT, AFFILIATION, ASSERTION, GESTURE, SUBMISSION, FLIGHT, DISPLACEMENT, RELAXATION and PROSOCIAL (see appendix 1 for full ethogram).

**Shame Interview Adapted from the Experience of Shame Scale: (ESS, Andrews, Qian & Valentine 2002) and Challenge Interview Paradigm (Dixon & Fisch, 1998)**

Questions taken from the ESS (Andrews et al., 2002) were used to tap participant’s shame cognition, in line with the challenge condition detailed by Dixon & Fisch (1998). The interview assessed 6 areas drawn from the ESS and included shame pertaining to; (1) personal habits (2) manner with others (3) the sort of person you are (4) personal ability (5) bodily shame and (6) shame regarding eating and drinking. For each of these domains, the experiential (e), externalised cognitive (c) and behavioural components (b) were evaluated; e.g. “(e) Have you ever felt ashamed of any part of your body?”, “(c) Have you worried what other people think of your body?” “(b) Have you tried to cover up and conceal any part of your body?” The neutral component of the interview was adapted depending if the participant was a member of the general or student population. For students, they were asked questions pertaining to their psychology degree; i.e. “What is your lecture routine?” “What type of statistics have you been doing in research methods?”. For the general population, participants were engaged about their daily routine; “What do you have for breakfast?” “Do you have any hobbies?”. The order of the condition was counterbalanced. A minimum length of 4 minutes was set for each condition, corresponding to 32 15s sampling intervals in total. The full interview schedule can be found in appendix 1.
**Defeat Scale (DS: Gilbert & Allan, 1998)**

The DS is a 16-item scale which aims to assess the perception of a failed struggle and low social rank. Examples of the items include “*I feel defeated by life*”. Psychometrically, the defeat scale presents with good reliability (α=0.88) and has been widely used as a key component of involuntary subordination in non-clinical samples (Gilbert & Allan, 1998; Sturman, 2011). A copy of the scale can be found in appendix 1.

**Social Comparison Scale (SCS: Allan & Gilbert, 1995)**

The SCS is a 6-item measure aimed to assess appraisal of social rank. The scale uses a semantic differential methodology whereby participants rate where they lie between two polarities using numbers from 1-10 i.e. “Compared to others I feel .... Inferior 1 2 3 4 5 6 7 8 9 10 Superior”. The 6 item version comprises of two subscales; group fit and rank. The SCS presents with good internal consistency; α = 0.58 (Hedley & Young, 2006). A copy of the scale can be found in appendix 1.

**Revised Adult Attachment Scale (RAAS; Collins, 1996)**

The RAAS contains 18 items assessing dimensions of attachment style in adulthood. These pertain to three underlying factors; close, depend and anxiety. Close refers to comfort with closeness and intimate relationships. Depend refers to the ability to depend on other people, with the belief that people will be there when needed. The anxiety subscale measures interpersonally based feelings of being rejected or unloved. The four attachment categories stipulated by Bartholomew (1990) may also be computed from scores on the three subscales. The RAAS has been shown to present with good internal consistency and has been widely employed in both clinical and non-clinical samples (Collins, 1999; Tait et al., 2004). A copy of the scale and its scoring instructions can be found in appendix 1.
**Entrapment Scale (ES; Gilbert & Allan, 1998)**

The entrapment scale is a 16 item measure which assesses both internal and external entrapment cognition. Examples of the 6 internal entrapment items include “I feel powerless to change myself”. Examples of the 10 external entrapment items include “I am in a situation I feel trapped in”. The entrapment scale presents with good internal consistency (α = 0.93). The ES is a core contributor to the cognitive representation of involuntary subordination (Gilbert & Allan, 1998; Sturman, 2011). A copy of the entrapment scale can be found in appendix 1.

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

The HADS is an extremely well used and brief measure of depressive and anxious symptomology. It has two subscales; anxiety and depression, each with 7 items. Mild cases are defined as scores between 8-10, moderate 11-15, and severe > 16 on each of the two subscales (Zigmond & Snaith, 1994). Psychometrically, the HADS presents with high reliability; 0.83 (Golden, Conroy, & Dwyer, 2000). A copy of the HADS can be found in appendix 1.

**The Other as Shamer Scale (OAS; Goss, Gilbert & Allan, 1994)**

The OAS is a measure of external shame, and the ability of others to shame the individual. The scale consists of 18 items rated on a five-point scale according to the frequency of evaluations about how others judge the self, (0 = Never to 4 = Almost always). Items include: ‘I feel other people look down on me’, ‘other people see me as somehow defective as a person’ and ‘other people always remember my mistakes’. The scale presents with high internal consistency: α = .92 (Goss et al., 1994). A copy of the measure can be found in appendix 1.
Procedure

Participants were greeted by the experimenter and, after being informed about the study, written consent was obtained. The battery of assessments was then administered, with participants being free to complete them at their own pace. On completion of the assessments, the interview was conducted. Participants were engaged in conversation pertaining to a neutral topic (psychology or everyday life), after which they were challenged regarding previous shame experiences. The order was counterbalanced. Interviews were recorded on a Sony MiniDV © Camcorder which was positioned so the trunk and face of the participant were in full view. After the interview, participants were debriefed and were free to leave. Study information and consent forms can be found in appendix 3.

Results

Sample

N=26 participants (8 male, 18 female), ten from the general population, and sixteen from the University of Birmingham initially took part in the study. One person discontinued in the research during the paradigm so their data could not be used. The final sample was therefore N=25. The mean age of the sample was 20 years (SD=3.7). Members of the public were responders to an advert placed on a popular classifieds website and received £10 for taking part. Undergraduate students received course participation credits, necessary for their degree.
Primary Aim

Methodology of the ECSI

In line with Troisi (1999), ECSI variables were initially square-root transformed in order to stabilise variance. Taped interviews were extracted from the digital videocamera using a IEEE 1394 interface and Microsoft Windows Movie Maker © software package and were subsequently coded in line with the one-zero time sampling methodology (Troisi, 1999). This derives a composite measure of the amount of behaviour, and is highly correlated with measures of both frequency and duration (Martin & Bateson, 1986). The current study employed a 15s sample interval, whereby at the end of the interval behaviours were scored as having occurred or not. 4 minutes of behaviour in each condition was coded; corresponding to 16 sample intervals. The total score for each behaviour was therefore expressed as the proportion of intervals in which it occurred divided by the total number of intervals in the condition. The behavioural category scores were derived by calculating the mean percentage of the behaviours contained within them. Videos were first independently viewed by a graduate psychologist who supplied the coder with details of what sections to code. As such, the coder was blind to which condition was being scored. Inter-rater reliability was assessed by a random sample of 12 videos rated by a separate independent psychologist trained in the system. Where Kolmogorov-Smirnov tests indicated that the ECSI variables were still not normally distributed, wilcoxon tests were used to compute the differences between conditions. Paired samples t-tests were used for the normally distributed variables.
Table 4.1 – ECSI scores in Neutral & Challenge Conditions

<table>
<thead>
<tr>
<th>ECSI Category</th>
<th>Neutral</th>
<th>Shame</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look At</td>
<td>10 ± 0</td>
<td>9.94 ± 1.49</td>
<td>( Z = -1.34; p = .18, \text{n.s} )</td>
</tr>
<tr>
<td>Gesture</td>
<td>4.87 ± 4.89</td>
<td>5.55 ± 2.56</td>
<td>( t = -1.24; p = .28, \text{n.s} )</td>
</tr>
<tr>
<td>Affiliation</td>
<td>4.26 ± 3.16</td>
<td>4.15 ± 2.75</td>
<td>( t = 0.38; p = .70, \text{n.s} )</td>
</tr>
<tr>
<td>Prosocial</td>
<td>4.04 ± 2.88</td>
<td>3.94 ± 2.56</td>
<td>( t = 0.38; p = .70, \text{n.s} )</td>
</tr>
<tr>
<td>Submission</td>
<td>3.83 ± 3.42</td>
<td>4.00 ± 3.01</td>
<td>( t = -0.56; p = .57, \text{n.s} )</td>
</tr>
<tr>
<td>Flight</td>
<td>4.75 ± 2.53</td>
<td>5.29 ± 2.47</td>
<td>( t = -3.57 ** )</td>
</tr>
<tr>
<td>Displacement</td>
<td>3.45 ± 2.55</td>
<td>3.56 ± 2.67</td>
<td>( t = -0.45; p = .65, \text{n.s} )</td>
</tr>
<tr>
<td>Relaxation</td>
<td>5.21 ± 4.02</td>
<td>4.91 ± 2.57</td>
<td>( t = 2.7 * )</td>
</tr>
<tr>
<td>Assertion</td>
<td>2.81 ± 3.16</td>
<td>2.86 ± 2.35</td>
<td>( t = -0.25; p = .80 )</td>
</tr>
</tbody>
</table>

\* \( p < .05 \) ** \( p < .01 \)

Table 4.2 – Inter-rater reliability of the ECSI

<table>
<thead>
<tr>
<th>ECSI Category</th>
<th>Reliability (ICC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look At</td>
<td>1.00</td>
</tr>
<tr>
<td>Gesture</td>
<td>0.98</td>
</tr>
<tr>
<td>Affiliation</td>
<td>0.93</td>
</tr>
<tr>
<td>Prosocial</td>
<td>0.91</td>
</tr>
<tr>
<td>Submission</td>
<td>0.95</td>
</tr>
<tr>
<td>Flight</td>
<td>0.86</td>
</tr>
<tr>
<td>Displacement</td>
<td>0.94</td>
</tr>
<tr>
<td>Relaxation</td>
<td>0.96</td>
</tr>
<tr>
<td>Assertion</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Table 4.2 – Inter-rater reliability of the ECSI
Table 4.1 gives the mean ECSI percentage scores after square-root transformations. It is clear that categories with construct validity pertaining to IDS behaviour were able to be derived from the ECSI and that inter-rater reliability was high (Shrout & Fleiss, 1979). The relaxation category significantly decreased when shame challenged \( (t = 2.7; p < .05) \) whilst a significant increase in arrested flight behaviour was observed \( (t = -3.57; p < .01) \).

1.2 Exploratory Adaptation of ECSI scoring methodology

One zero sampling has been criticised on the basis that it is likely to underestimate frequency of behaviour and therefore miss important variations in behaviour (Dunkerton, 1981). Table 4.3 reports the results of an exploratory extension of the ECSI scoring method; with the intensity of each category being assessed. In this methodology, the ECSI behavioural category is assigned a score for every interval. For instance, if an ECSI category comprises 3 behaviours (i.e. submission) then the presence of all three in one 15s interval would yield a score of 100% in that interval. The presence of 2 behaviours would be scored as 66.6%. Accordingly, if only one behaviour was observed the score would be 33%. If dividing the total score for this method by the total number of intervals, then this method derives scores equivalent to traditional one-zero sampling. However, if dividing by only the number of intervals in which the behaviours occurred, then this method gives a measure of the relative “intensity” of the ECSI category. Table 4.3 illustrates that these square-root transformed intensity variables are correlated with the ECSI categories, the only exception being the displacement category. Moreover, lookat and gesture categories only consist of one behaviour, which therefore results in a failure to compute the intensity for these categories. Consequently, at present this exploratory scoring method does not represent an improvement over the traditional one-zero sampling. Interestingly, Dimic et al., (2010) recently detailed a new scoring system whereby the behaviour is marked as having occurred more than once during the sample interval. This may be useful modification that requires further empirical application.
Table 4.3 – ECSI intensity scores, standard deviations and correlations with one-zero sampling ECSI categories

<table>
<thead>
<tr>
<th>ECSI Intensity</th>
<th>Correlation with ECSI score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look At</td>
<td>10 ± 0</td>
</tr>
<tr>
<td>Gesture</td>
<td>8.89 ± 6.44</td>
</tr>
<tr>
<td>Affiliation</td>
<td>5.80 ± 3.09</td>
</tr>
<tr>
<td>Prosocial</td>
<td>9.02 ± 4.66</td>
</tr>
<tr>
<td>Submission</td>
<td>6.73 ± 4.35</td>
</tr>
<tr>
<td>Flight</td>
<td>5.19 ± 2.66</td>
</tr>
<tr>
<td>Displacement</td>
<td>4.69 ± 3.39</td>
</tr>
<tr>
<td>Relaxation</td>
<td>5.20 ± 2.68</td>
</tr>
<tr>
<td>Assertion</td>
<td>4.79 ± 3.58</td>
</tr>
</tbody>
</table>

* p < .05 ** p < .01

1.3 ECSI Validity for Assessment of the IDS

Exploratory Computation of IDS from ECSI categories

Multiple categories of the ECSI would appear to have face validity for assessment of the IDS; each potentially tapping unique behavioural aspects which, when combined, paint a behavioural picture congruent with popularised descriptions of the mechanism in the literature. As highlighted, the core aim of the IDS is to promote flight/fight, and submission behaviours in contexts of perceived defeat and failure. Therefore, the ECSI categories with the most face validity for assessment of the IDS were flight, submission and displacement. Analysis revealed that flight and submission were significantly intercorrelated during the challenge condition (r = .40; p < .05), along with flight and displacement (r = .54; p < .01). Displacement and submission categories were also significantly inter-correlated (r = .57; p < .01).

Consequently, scores on these categories were combined to compute a variable entitled “IDS BEHAVIOUR (IDSb)”. In line with the computational guidelines of the traditional ECSI categories, this was achieved by adding percentage scores on the individual behaviours (nod,
lips in, mouth corners back, look down, look away, eyes closed, chin in, slumped posture, frozen movement) to achieve a composite category. The mean for this category was also square-root transformed in order to stabilise variance. The IDSb category pertains to behaviours the IDS is argued to automatically and involuntarily promote and can be viewed as the positive dimension of the construct. Table 4.4 indicates that the IDSb variable did increase when shame challenged, but failed to reach significance.

<table>
<thead>
<tr>
<th>Neutral</th>
<th>Shame</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDSb</td>
<td>6.94 ± 3.90</td>
<td>7.19 ± 3.74</td>
</tr>
</tbody>
</table>

Table 4.4 – Mean Change and Standard Deviation in IDS behaviour when Shame Challenged

Secondary Aims

Relationship between IDS behaviour and Involuntary Subordination in Challenge Condition

To address the secondary aims, the following section details a correlational analysis of the self-report measures and IDS behaviour during the challenge condition of the interview for the sample as a whole (N=25). Kolmogoroff-smirnoff tests indicated that distribution of the entrapment, defeat, SCS, OAS and HADS scales met the assumptions of normality, along with skewness and kurtosis being within acceptable ranges. Due to the exploratory nature of the current study, table 4.6 first reports the relationship between the cognitive measures and each of the individual ECSI categories. In line with more valid assessment of the IDS, table 4.7 reports pearson’s product moment correlations between the measures of involuntary subordination and the IDSb variable. Both HADS anxiety and depression subscales did not reach criteria for caseness (table 4.5). Therefore, HADS subscales were not included in the correlational analysis with the IDSb variable.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrapment Scale (ES)</td>
<td>17.64 ± 15.61</td>
</tr>
<tr>
<td>Defeat Scale (DS)</td>
<td>15.24 ± 10.10</td>
</tr>
<tr>
<td>Social Comparison Scale (SCS)</td>
<td>32.84 ± 8.36</td>
</tr>
</tbody>
</table>
| Hospital Anxiety & Depression Scale - Depression (HADS-D) | 3.2 ± 2.98  | 0 Cases
| Hospital Anxiety & Depression Scale – Anxiety (HADS-A) | 7.36 ± 3.84  | 0 Cases
| Other As Shamer Scale (OAS)                  | 22.20 ± 15   |

Table 4.5 – Mean Scores and Standard Deviations for Involuntary Subordination Measures
<table>
<thead>
<tr>
<th>Measure</th>
<th>IDSb (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrapment Scale</td>
<td>.08</td>
</tr>
<tr>
<td>Defeat Scale</td>
<td>.08</td>
</tr>
<tr>
<td>Social Comparison Scale</td>
<td>-.44*</td>
</tr>
<tr>
<td>Other as Shamer Scale</td>
<td>.40*</td>
</tr>
</tbody>
</table>

* p < .05

**Table 4.6 – Association between IS measures and ECSI Categories when Shamed**

* p < .05 ** p < .01 ~ spearmans rho

SU = Submission, AF = Affiliation, FL = Flight, AS = Assertion, DI = Displacement, RE = Relax, PR = Prosocial, LO = Lookat, GE = Gesture

<table>
<thead>
<tr>
<th>Measure</th>
<th>IDSb (r)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrapment Scale</td>
<td>.08</td>
</tr>
<tr>
<td>Defeat Scale</td>
<td>.08</td>
</tr>
<tr>
<td>Social Comparison Scale</td>
<td>-.44*</td>
</tr>
<tr>
<td>Other as Shamer Scale</td>
<td>.40*</td>
</tr>
</tbody>
</table>

* p < .05

**Table 4.7 – Pearson’s Product Moment Coefficients between Involuntary Defeat Behaviour & ES, DS, SCS, and OAS Scales**
3. IDS Escalation in relation to Entrapment, Defeat, Social Rank & Shame

In order to assess how the cognitive components of involuntary subordination related to any observed escalation in IDS behaviour during disclosure of shame, change scores for IDSb from neutral to shame were calculated (IDSb shame score - IDSb neutral score). Table 4.8 reports the pearson’s product moment correlations between IDSb change and the ES, DS, SCS, and OAS scales. SCS and IDSb change revealed a significant negative association ($r = -.41; p < .05$). Table 4.9 also reports the mean IDSb change scores for attachment groupings. Within the sample, N=13 reported an insecure attachment style according to the RAAS criteria (see appendix 1 for scoring instructions), with N=12 reporting secure attachment (Collins, 1996). A between-groups ANOVA comparing the mean change in the IDSb across secure and insecurely attached groups revealed a non-significant trend for IDSb decrease in securely attached participants, and an IDSb increase in insecurely attached participants ($F = 3.66; p = .07$)

<table>
<thead>
<tr>
<th>Entapment Scale</th>
<th>.17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defeat Scale</td>
<td>.06</td>
</tr>
<tr>
<td>Social Comparison Scale</td>
<td>-.41*</td>
</tr>
<tr>
<td>Other as Shamer Scale</td>
<td>.19</td>
</tr>
</tbody>
</table>

* $p < .05$

Table 4.8 – Pearson’s Product Moment Correlations between Involuntary Defeat Strategy Behaviour Change and ES, DS, SCS and OAS Scales
Table 4.9  – Mean IDSb change and Standard Deviation in Secure & Insecure Attachment Groups

| Revised Adult Attachment Scale Secure (N=12) | -3.02 ± 3.72 |
| Revised Adult Attachment Scale Insecure (N=13) | 3.62 ± 3.51 |

Discussion

ECSI Reliability

The primary aim of the current study was to assess the reliability and validity of the ECSI for assessment of IDS behaviour. ECSI behavioural categories were scored for neutral and shame conditions of the challenge interview paradigm, a manipulation that is designed to provoke IDS escalation. In line with previous applications of the ethogram, the results indicated that a high level of inter-rater reliability was achieved (Brune et al., 2008; Trosi, 1999; Troisi et al., 2000). Furthermore, an explorative adaptation of the ECSI scoring was also undertaken. Whilst this coding variation certainly explores the possibilities of modifying the ECSI scoring system, it is concluded that the traditional one-zero sampling methodology is still the most appropriate for the instrument. Generally, the strength of the ECSI is that it is a relatively non-complicated and accessible ethogram that can be applied reliably without the need for extensive training and re-analysis of data.
ECSI Validity

As observed in the preceding chapter, evolutionary psychology has consistently pointed to automatic promotion of submission and arrested flight behaviours as being the core function of the IDS (Gilbert, 2000b; Price, 1967; Price & Sloman, 1987; Sloman, 2000, 2008; Sturman & Mongrain, 2005). Indeed Sloman et al., (2003) argue that “Thus the function of the IDS is to stimulate fight/flight, submission following a defeat or failure” (pp110-111). The aim of the current research was to aim to capture a behavioural snapshot of these active components of within the social context of shame, and their relationship with underlying involuntary subordination and attachment schema. The results confirmed that the ECSI was able to statistically replicate a significant increase in flight behaviour when participants disclosed shameful information, thereby indicating its categories may be valid for assessing evolutionary behavioural strategies (Dixon & Fisch, 1998; Gilbert, 2000b; Sloman & Gilbert, 2000).

To increase the construct validity of the ECSI for IDS assessment, the current study introduced an exploratory modification of the ECSI. Namely, the flight, submission and displacement categories were combined to form the ‘IDSb’ variable. These categories were selected as they were significantly inter-correlated, and were judged to have the greatest construct validity for IDS assessment. This method is not without fault, and the limitations of this are discussed in chapter 7 of the thesis. Interestingly, this variable increased during the shame challenge (a time when the IDS would be expected to be most active) although did not reach statistical significance. Consequently, the IDSb variable may represent a valid measure of non-verbal behaviour routinely described in the literature as the IDS, although is by no means a complete behavioural measure of the construct (Sloman et al., 2003; Sloman & Gilbert, 2003; Sturman, 2011). The lack of relationship between defeat and entrapment measures, and the categories of the IDSb variable, is also salient and discussed further in chapter 7.
Secondary Aims

In testing the reliability and validity of the ECSI, the study also allowed for secondary aims to be assessed regarding the relationship between the cognitive components of involuntary subordination (i.e. entrapment, defeat, social rank and shame) and elements of IDS behaviour. This was important as these relationships have previously been limited to self-reported assessments which have lacked ecological validity (Gilbert, 2000; Gilbert et al., 2000; Gilbert & Allan, 1998; Troop, Allan, Treasure, & Katzman, 2003; Zuroff et al., 2007). The results demonstrated that the IDSb variable (i.e. flight, submission and displacement behaviours), significantly correlated with low social rank and shame proneness. Consequently, this provides initial ecological support for the role of perceptions of social inferiority and shame underpinning active elements of IDS behaviour, when loss of social rank is anticipated during social contexts (Sloman, 2008). This finding also provides behavioural corroboration of the association between perceptions of low social rank and shame proneness underpinning wider submissive behaviour which has much in common with the IDS (e.g. social anxiety) in non-clinical samples, which has previously been limited to questionnaire-based assessment with measures such as the Social Behaviour Scale (Gilbert, 2000).

Due to the IDS being an active and dynamic strategy, with considerable variability during everyday social contexts, the current study also aimed to assess how the cognitive components of involuntary subordination related to the degree of change or escalation of the elements of IDS behaviour when shame challenged. The findings indicated that perceived low social rank was significantly associated with greater increases in IDSb when shameful experiences were disclosed. Consequently, it can be argued that people who view themselves as subordinate are already primed, due to their low rank, to flee from potentially dangerous (e.g. social attractiveness/desirability at stake) situations, and thus enter these interactions with a bias toward increased flight behaviour.
Whilst these findings are undoubtedly useful, it is harder to contextualise the *adaptive* nature of the observed escalation in the IDSb variable. IDS escalation when challenged means shameful/socially unattractive topics are avoided or disclosed with very little detail by people low in social rank, but after leaving the interview the IDS may attenuate or return to levels observed in the neutral condition. Indeed, disclosure of shame was within a research context and consequently participants were free to discontinue and leave the situation at anytime, as did occur with one participant. It can be argued from the results however, that the individuals with lower social rank and higher shame proneness would continue to present with a more active and reactive IDS in the course of their daily life after leaving the paradigm. Promising support for this relationship comes from the use of longitudinal methodologies, which have indicated lower social rank predicts self-reported submissive behaviour in social contexts over an extended period of 20 days (Zuroff et al., 2007).

The current study also explored the role of adult attachment schema within the IDS model. The findings indicated that no significant behavioural differences during disclosure of shame were observed between secure and insecure groups. The securely attached group did however show a mean decrease in IDS behaviour when shamed, whilst the insecurely attached group’s IDS behaviour increased. As such, this would indicate that attachment schema may directly govern escalations in IDS behaviour during times when social attractiveness may be at stake (e.g. disclosing shameful information) (Gilbert, 2005; Sloman, 2008). It should be noted however that the difference in IDS escalation between attachment groups was a non-significant trend. Consequently, whilst this represents an initial and promising attempt at providing ecological validation for the theorised role of attachment in the IDS model, further objective behavioural support for the independent role of attachment is required. It may be that attachment schemata exert their influence on IDS behaviour and associated distress
through being mediated by appraisals of social rank and stigma consciousness, as opposed to a
direct relationship (Gilbert & Procter, 2006; Irons & Gilbert, 2005; Sloman, 2000).

**Methodological Issues**

Using the ECSI, the aim of the current section was to try to conceptualise the behavioural
components of the IDS within a non-clinical sample. It should be highlighted that this attempt
to operationalise the IDS within a non-clinical sample has a number of methodological caveats.
For instance, no participants reached caseness for anxiety and depression subscales on the
HADS. Consequently, this precluded analysis of the relationship between the IDSb variable and
clinical depression; which is a core association of the theory and therefore a significant
limitation of the current study. Further analysis of this relationship is warranted in a sample of
clinically depressed participants. Consequently, whilst the IDSb variable may tap an important
behavioural element of the IDS (i.e. flight behaviour), it remains to be statistically related to
clinical depression; which would represent a significant improvement in the validity of the IDSb
variable. Indeed, the depression subscale of the HADS did not show any significant correlation
with any of the IDSb categories; with only anxiety and flight behaviour being significantly
correlated. These data therefore indicate that the IDSb variable may more closely tap
escalations in behaviour driven by underlying anxiety, but perhaps not the down-regulation of
social behaviour more associated with depression and the IDS.

Further work is also needed to tailor the construct validity of the ECSI toward assessment of
the IDS described in the literature. For instance, the “prosocial” category is a composite of the
submission, and affiliation categories. It may be more parsimonious to avoid computing this
category as increased observations of submission behaviour results in an increase in prosocial
scores. In this context, submission operating as a prosocial and affiliative strategy would be
more associated with voluntary submissiveness or “hawk-dove strategies” which serve
affiliative and advantageous ends during social interaction (Gilbert, 2000b). Conversely, the IDS is argued to involuntarily promote submission; the aim being not to facilitate affiliation but instead reduce it. As such, inclusion of submission into the prosocial category is conceptually confusing for IDS assessment. Further, the current study precluded any assessment of personality variables, such as self-criticism, which previously been associated with the inability to accept defeat following socially competitive encounters (Sturman, 2011; Sturman & Mongrain, 2005). The input these factors make to the behavioural proliferation and escalation underpinned by shame and social rank observed in the current study is a promising area for future work.

Lastly, it should be highlighted that the displacement category was included as a factor in the IDSb variable, but showed no independent relationship with the measures of involuntary subordination. Displacement behaviours have been observed following defeat in subordinates, and have been reliably linked to anxiety, alexithymia and guilt in both normal and clinical populations (Aureli & Smucny, 2000; Baker & Aureli, 1997; Troisi, 2002). Indeed, Troisi (2002) argues that: “Displacement activities also appear in situations in which a goal-directed behaviour is thwarted by internal or external factors…” (pp47-54). Ostensibly, this category would therefore seem to have validity for the IDS, where defeat and goal-directed behaviour (e.g. “I must escape this situation”) may often be blocked; its inclusion in the composite IDSb variable therefore seems appropriate. However, it could also be argued that the assertion ECSI category would have also been a valid addition to the IDSb variable; with decreases in assertion argued to be an important element of an active IDS (Sloman, 2008). Generally therefore, whilst the IDSb variable may represent pertinent elements of the IDS (i.e. flight behaviour), it should not be taken as a methodologically infallible nor complete measure of the behavioural IDS.
Empirical Study 2

The Role of the Involuntary Defeat Strategy in the Cognitive Model of Voices in Psychosis

Introduction

Section I detailed the application of the ECSI to the assessment of IDS behaviour in an analogue sample. The analogue study indicated that a behavioural variable argued to represent important elements of an escalated IDS (IDSb) during social discourse was significantly associated with low social rank and perception of shame. Moreover, escalation of this variable from neutral levels when shame challenged was specifically associated with appraisal of low social rank. This finding has important ramifications for the cognitive model of voice relationships in psychosis: as perception of low social rank has been argued to significantly govern the maintenance and dynamics of highly distressing voices (Birchwood et al., 2000, 2004, 2007; Gilbert et al., 2001). In this context, reliance on the defence system orients dominant vs. subordinate ranking mentalities towards internally generated signals (e.g. voices) which results in social inferiority predicting subordination and distress in relationships with voices (Birchwood et al., 2004). A strong prediction of this model would therefore be that these subordinate voice hearers, due to their bias toward threat to social rank, will also present with an escalated IDS in everyday life. This relationship however remains to be behaviourally elucidated within psychosis.
It is also not well understood how individual differences in voice beliefs contribute to potential IDS escalation within the lives of people with psychosis. Within psychotic phenomenology itself, the cognitive model of voices argues that malevolent and omnipotent voices significantly escalate and prolong the IDS through continual shaming and social-rank related attacks on the individual. Indeed, Gilbert et al., (2001) report that people with powerful and omnipotent voices self-reported elements of an active IDS (e.g. entrapment and a desire to fight and escape from the voice). In this context, when the desired escape from the dominant and shaming aggressor is blocked and/or impossible (self-generated voices), the IDS remains unregulated and escalates - driving continued distress (Birchwood et al., 2000, 2004; Gilbert et al., 2001; Sloman, 2008). Conversely, people with benevolent voices are not subject to these powerful and shaming attacks, and would theoretically have less need for an escalated and powerful IDS (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1995). It is still unclear if this relationship between voice beliefs and the IDS can be supported behaviourally.

In order to assess these knowledge gaps, the challenge interview will again be employed as the core manipulation, this time pertaining to the person’s illness i.e. being asked to talk about hearing voices vs. talking about a neutral topic (everyday routine). Engaging individuals in discussion about their voices is anticipated to provoke discussion about their content which, as reviewed in previous chapters, are usually shame attacking and are likely to initiate defensive behaviours, including IDS activation; this is then anticipated to provide a snapshot of IDS activation congruent with appraisals of social attractiveness and status expected to be encountered in everyday life. The challenge to social attractiveness is an especially valid paradigm for assessment of the cognitive model of voices. As highlighted in chapter one, maintenance of distress and anxiety in psychosis is argued to be significantly driven by the individual’s *appraisal* of the shame, entrapment and loss of social status incurred from the
diagnosis (Birchwood, 2003; Birchwood et al., 2000; Birchwood et al., 2007; Rooke & Birchwood, 1998). The stigma processing model of social anxiety in psychosis argues that behavioural strategies such as the IDS may be significantly primed by the perceived threat of being ousted as belonging to a societally stigmatised, undesirable and marginalised group (Birchwood et al., 2007; Knight, Wykes, & Hayward, 2006; Michail & Birchwood, 2009). Consequently, it can be argued that the experience of being challenged to talk about the illness to a relative stranger (e.g. researcher) creates an ecologically valid context for IDS assessment. Indeed, people with psychosis often need to disclose socially undesirable and shaming details of their illness when, for example, searching for employment, and are argued to present with socially damaging and limiting safety behaviours (i.e. the IDS) when doing so (Birchwood et al., 2007). There does however remain a paucity of empirical support for the role of an active IDS in defining interpersonal interaction during these challenging environments that people with psychosis often find themselves in (Bassett, Lloyd, & Bassett, 2001).

The wider evolutionary model also argues that insecure attachment schemata significantly contribute to escalation of the IDS through creating a bias toward threat-based social mentalities and rejection sensitivity in the environment, along with an attenuation in affiliative and affect-regulatory behaviours (Bowlby, 1969; MacBeth et al., 2008; Schore, 2005). For instance, people with insecure attachment may be more attuned to potential rejection when social attractiveness is at stake; already bringing to the interaction a bias toward stigma consciousness and thus a more readily active IDS. The results of the analogue study indicated that it may be possible that behavioural escalations in the IDS vary as a function of attachment style, but it still unclear if this relationship can be operationalised ecologically in psychosis; where insecure attachment models and perceptions of environmental threat predominate
(Birchwood et al., 2007; Dozier, Stevenson, Lee & Velligan, 1992; Drayton, Birchwood & Trower, 1998).

**Study Aims**

1. To assess if IDS behaviour (flight, displacement and submission) increase when talking about hearing voices, compared to talking about everyday routine.

2. To assess if IDS behaviour during the voice condition increases with beliefs about malevolence and omnipotence, and is negatively related to benevolent voice beliefs. Depression and low social rank are also expected to be associated with greater IDSb when talking about voices.

3. To assess whether the predicted *escalation* in IDSb from neutral to shame condition is associated with:

   (a) Low social rank;

   (b) Malevolent and omnipotent voice beliefs;

   (c) Insecure adult attachment styles;
Methodology

Measures

The ECSI, SCS and RAAS, outlined in the analogue study, were also employed in the current study. The additional measures introduced for the clinical sample were:

**Psychotic Symptoms Rating Scales - Auditory Hallucinations Subscale (PSYRATS-AHS; Haddock, McCarron, Tarrier & Foragher, 1999).**

The PSYRATS is a widely used screening instrument for psychotic symptomology. The measure contains 17-items rated on 5-point ordinal scales which correspond to auditory hallucinations (AHS) and delusions. The current study used only the AHS subscale which contains items for voice frequency, duration, location, loudness, origin, content, distress, control, and disruption to life. Psychometrically, the PSYRATS has been shown to possess excellent inter-rater reliability (Haddock et al., 1999). A copy of the measure can be found in appendix 1.

**Calgary Depression Scale for Schizophrenia (CDSS: Addington, Addington, & Schissel, 1990)**

The CDSS is a 9-item observer-rated instrument which was explicitly designed for the assessment of depression in Schizophrenia independent of negative symptomology and extrapyramidal side-effects. Each item is scored by the interviewer on a 4-point ordinal scale (absent-mild-moderate-severe). The CDSS measures depression, hopelessness, self-depreciation, guilty ideas of reference, pathological guilt, morning depression, early wakening, suicidal ideation and interviewer-observed depression. The CDSS has been shown to posses good internal consistency ($\alpha=.8$) and re-test reliability, (intraclass correlation = .9) (Addington et al., 1990). A copy of the scale can be found in appendix 1.
Belief About voices Questionnaire –Revised (BAVQ-R; Chadwick, Lees & Birchwood, 2000)

The BAVQ is a 35-item measure assessing beliefs, emotional and behavioural outcomes regarding voices. All the items are rated on 4-point scales; (0) disagree (1) unsure (2) agree slightly (3) agree strongly. The measure has five subscales: belief in voice malevolence (M) “My voice is punishing me for something I have done”, benevolence (B) “My voice wants to help me” and omnipotence (O) “My voice seems to know everything about me”. The two remaining subscales are emotional and behavioural resistance (R) “I Tell it to leave me alone” “My voice frightens me” and emotional and behavioural engagement (E) “My voice makes me feel confident” “I listen to it because I want to”. Chadwick et al., (2000) report a mean cronbach’s α of .86 for the whole scale. A copy of the scale can be found in appendix 1.

Challenge Interview (adapted from challenge interview paradigm, Dixon & Fisch, 1998)

An interview schedule was developed in line with the paradigm set out by Dixon & Fisch (1998). The interview contained two conditions: a neutral topic pertaining to everyday routines in daily life (e.g “What time do you have breakfast?”) and a topic of hearing voices (e.g “What do the voices say to you?”). A minimum length of 4 minutes was set for each condition, corresponding to 32 sampling intervals in total. For the full schedule please refer to appendix 1.

Procedure

The study was given full ethical approval by the NHS Black Country research ethics committee (see appendix 2). Inclusion criteria were aged 16-65 with a diagnosis of ICD-10/F.20 Schizophrenia or related disorder, with an experience of auditory hallucinations. Participants were recruited from community mental health and assertive outreach teams within Birmingham and Solihull Mental Health NHS Foundation Trust. Participants were interviewed
in their own home or local community mental health centre and were initially given a study information sheet and briefed on the nature of the study. After written consent was obtained, the PSYRATS, BAVQ-R, RAAS, SCS and CDSS were administered. After this, participants completed the challenge interview paradigm. Participants were asked about their everyday life, after which they were challenged to talk about the experience of hearing voices. The digital videocamera was placed so the full trunk and face of the patient could be recorded. No audio was recorded and the order of interview condition was counterbalanced. On completion of the interview, participants were debriefed and given contact details of the research staff and patient advisory service.

All analyses were completed on a personal computer at the University of Birmingham using the statistics package SPSS 17. Patient videos were extracted from the digital videocamera onto a personal computer using an IEEE 1394 interface and edited with Microsoft Windows Movie Maker © software package.

Results

Sample
Table 4.10 reports the sample descriptives. N=50 were initially identified from clinical notes and referrals from mental health staff. N=10 of these did not meet study criteria (hearing voices, diagnosis of Schizophrenia or related disorder). Of the remaining forty, sixteen (40%) refused to participate, resulting in a final sample of (n=24). All were receiving antipsychotic treatment at the time of participation. Level of medication (chlorpromazine equivalents) and duration of illness showed no significant relationship with the behavioural and cognitive dependent variables.
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Schizophrenia ($n = 10$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Paranoid Schizophrenia ($n = 10$)</td>
</tr>
<tr>
<td></td>
<td>Schizoaffective disorder ($n = 4$)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (mean yrs &amp; standard deviation)</th>
<th>$(43.3 \pm 7.8)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male ($n = 19$)</td>
</tr>
<tr>
<td></td>
<td>Female ($n = 5$)</td>
</tr>
<tr>
<td>Illness Duration (mean yrs)</td>
<td>$15.43$</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Single ($n = 20$)</td>
</tr>
<tr>
<td></td>
<td>In a relationship/married ($n = 4$)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White British ($n = 17$)</td>
</tr>
<tr>
<td></td>
<td>Asian British ($n = 3$)</td>
</tr>
<tr>
<td></td>
<td>Black Caribbean ($n = 2$)</td>
</tr>
<tr>
<td></td>
<td>Mixed White &amp; Black Caribbean ($n = 2$)</td>
</tr>
<tr>
<td>Level of Education</td>
<td>No qualifications ($n = 15$)</td>
</tr>
<tr>
<td></td>
<td>GCSE/A-level ($n = 8$)</td>
</tr>
<tr>
<td></td>
<td>Degree level ($n = 1$)</td>
</tr>
<tr>
<td>Psychotic Symptom Rating Scale</td>
<td>$24.67 \pm 5.02$</td>
</tr>
<tr>
<td>Hallucinations (PSYRATS-AH)</td>
<td></td>
</tr>
<tr>
<td>Calgary Depression Scale for</td>
<td>$6.65 \pm 4.19$</td>
</tr>
<tr>
<td>Schizophrenia (CDSS)</td>
<td></td>
</tr>
<tr>
<td>Social Comparison Scale (SCS)</td>
<td>$27.5 \pm 10.33$</td>
</tr>
<tr>
<td>Belief About Voices Questionnaire-</td>
<td>Malevolence $7.92 \pm 3.88$</td>
</tr>
<tr>
<td>Revised (BAVQ-R)</td>
<td>Benevolence $5.70 \pm 4.54$</td>
</tr>
<tr>
<td></td>
<td>Omnipotence $8.83 \pm 4.83$</td>
</tr>
<tr>
<td></td>
<td>Resistance $16.75 \pm 7.21$</td>
</tr>
<tr>
<td></td>
<td>Engagement $8.41 \pm 5.58$</td>
</tr>
<tr>
<td>Chlorpromazine Equivalent Dose (mg)</td>
<td>$525 \pm 210$</td>
</tr>
</tbody>
</table>

Table 4.10 – Sample Demographic and Clinical Data
Aims

1. **IDS behaviour when talking about voices**

ECSI variables were initially square-root transformed in order to stabilise variance. In line with the recommendations discussed from the pilot application of the ECSI, the prosocial category was not computed. Where Kolmogorov-Smirnov tests indicated that the ECSI variables were still not normally distributed, Wilcoxon tests were used to compute the differences between neutral and shame conditions. Paired samples t-tests were used for the normally distributed ECSI categories. ECSI categories were scored using the one-zero sampling methodology. Interrater reliability for the ECSI categories was established by a random sample of 12 videos being coded by a research associate. Table 4.11 indicates that the voice condition was associated with a significant decrease in eye gaze ($Z = -2.21; \ p < .05$), gesture ($t = 2.50; \ p < .05$), assertion ($t = -2.21; \ p < .05$) and a significant increase in flight behaviour ($t = -2.85; \ p < .01$). For the sample as a whole, IDS behaviour increased significantly when talking about voices ($t = 2.55; \ p < .05$).
### Table 4.11 – Mean ECSI Scores and Standard Deviations for Neutral & Challenge Interview Conditions

<table>
<thead>
<tr>
<th>ECSI Category</th>
<th>Neutral</th>
<th>Voices</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look At</td>
<td>9.80 ± 3.03</td>
<td>9.50 ± 4.02</td>
<td>Z = -2.21; p &lt; .05</td>
</tr>
<tr>
<td>Gesture</td>
<td>6.56 ± 5.87</td>
<td>5.14 ± 4.98</td>
<td>t = 2.50; p &lt; .05</td>
</tr>
<tr>
<td>Affiliation</td>
<td>3.20 ± 2.83</td>
<td>2.66 ± 2.73</td>
<td>t = 1.55; p = .14, n.s</td>
</tr>
<tr>
<td>Submission</td>
<td>3.61 ± 3.18</td>
<td>4.12 ± 3.46</td>
<td>t = -1.76; p = .09, n.s</td>
</tr>
<tr>
<td>Flight</td>
<td>4.76 ± 2.83</td>
<td>5.55 ± 4.15</td>
<td>t = -2.85; p &lt; .01</td>
</tr>
<tr>
<td>Displacement</td>
<td>2.92 ± 2.85</td>
<td>2.91 ± 2.83</td>
<td>t = .08; p = .94, n.s</td>
</tr>
<tr>
<td>Relaxation</td>
<td>5.18 ± 4.12</td>
<td>5.68 ± 5.08</td>
<td>Z = -1.20; p = .23, n.s</td>
</tr>
<tr>
<td>Assertion</td>
<td>2.46 ± 2.23</td>
<td>2.82 ± 2.39</td>
<td>t = -2.21; p &lt; .05</td>
</tr>
</tbody>
</table>

Table 4.11 – Mean ECSI Scores and Standard Deviations for Neutral & Challenge Interview Conditions

<table>
<thead>
<tr>
<th>ECSI Category</th>
<th>Reliability (ICC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look At</td>
<td>1.00</td>
</tr>
<tr>
<td>Gesture</td>
<td>.92</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.85</td>
</tr>
<tr>
<td>Submission</td>
<td>.90</td>
</tr>
<tr>
<td>Flight</td>
<td>.88</td>
</tr>
<tr>
<td>Displacement</td>
<td>.92</td>
</tr>
<tr>
<td>Relaxation</td>
<td>.82</td>
</tr>
<tr>
<td>Assertion</td>
<td>.85</td>
</tr>
</tbody>
</table>

Table 4.12 – Inter-Rater Reliability Scores for ECSI Categories
2. Relationships between IDSb, Voice Beliefs, Depression & Social Rank

The relationship between voice topography and IDSb was initially assessed. This was necessary as individual differences in IDSb may be accounted for by factors such as voice content, frequency and duration. No significant relationships between PSYRATS variables and the IDSb variable were observed. Voice omnipotence was significantly correlated with social rank ($r = -.45; p < .01$) and depression ($r = .47; p < .01$). In line with the second aim of the current study, when talking about voices, the IDSb variable was significantly correlated with low social rank ($r = -.49; p < .05$) and voice omnipotence ($r = .66; p < .01$). The relationship between malevolence and IDSb was not significant ($r = .22; p = .45$). The relationship between depression and IDSb was also not significant ($r = .24; p = .40$).
<table>
<thead>
<tr>
<th>IDSb (r)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Malevolence</td>
<td>.22</td>
</tr>
<tr>
<td>Benevolence</td>
<td>.04</td>
</tr>
<tr>
<td>Omnipotence</td>
<td>.66**</td>
</tr>
<tr>
<td>Social Rank</td>
<td>-.49*</td>
</tr>
<tr>
<td>Depression</td>
<td>.24</td>
</tr>
</tbody>
</table>

*p < .05 **p < .01

Table 4.14 - Pearson’s Correlations between IDS Behaviour, Voice Beliefs, Social Rank & Depression in Shame Condition

3. Escalation in IDS Behaviour in relation to Voice Beliefs, Social Rank & Attachment Style

As in the analogue study, IDSb change scores were computed (IDSb shame – IDSb neutral).

Table 4.15 details Pearson’s product moment coefficients for IDSb change in relation to voice beliefs, depression and social rank. A main prediction of the study was partially supported: degree of change in IDSb from neutral to voice conditions was significantly associated with omnipotence (r = .67; p < .01) and social rank (r = -.49; p < .05) but not malevolence (r = .29; p = .38). In other words, participants with lower social rank and greater belief in omnipotent voices presented with a greater escalation in IDS behaviour from neutral to voice conditions. Table 4.16 details the mean scores in IDSb for secure and insecure attachment groups. Secure and insecure groups were computed according to their scores on the anxiety, close and dependency subscales of the RAAS (Collins, 1999). 79% (n=19) of the sample presented with an insecure attachment style and 21% (n=5) with a secure style. The securely attached group presented with a larger IDSb change, but this difference was not significant and rendered
underpowered by the small sample size in the secure attachment group: $F(1, 23) = .12; p = .72$.

<table>
<thead>
<tr>
<th>IDSb Change (r)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Malevolence</td>
<td>.29</td>
</tr>
<tr>
<td>Benevolence</td>
<td>-.26</td>
</tr>
<tr>
<td>Omnipotence</td>
<td>.67**</td>
</tr>
<tr>
<td>Social Rank</td>
<td>-.49*</td>
</tr>
<tr>
<td>Depression</td>
<td>.34</td>
</tr>
</tbody>
</table>

* $p < .05$  ** $p < .01$

Table 4.15 – Pearson’s Correlations between IDSb change, Voice beliefs, Social rank and Depression

<table>
<thead>
<tr>
<th>Mean IDSb Change</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure Attachment (n=5)</td>
<td>4.12 ± 3.92</td>
</tr>
<tr>
<td>Insecure Attachment (n=19)</td>
<td>3.60 ± 4.74</td>
</tr>
</tbody>
</table>

Table 4.16 – Mean IDSb Scores and Standard Deviations in Secure & Insecure Attachment Styles

Regression Analysis for IDSb Escalation

Multiple regression was carried out in order to assess the ability of omnipotence and social rank variables to predict IDSb change scores. The overall regression model was significant ($F = 8.6; p < .01$). Omnipotence beliefs emerged as the single best predictor of IDSb escalation (Adjusted $R^2 = .45$), therefore explaining 45% of the variance in IDSb escalation.
Table 4.17 – Linear Regression on IDSb Change

<table>
<thead>
<tr>
<th>IDSb Change</th>
<th>$\beta$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Omnipotence</td>
<td>2.9</td>
<td>.05</td>
</tr>
<tr>
<td>Social Rank</td>
<td>-.18</td>
<td>.67</td>
</tr>
</tbody>
</table>

Discussion

The aim of the current study was to attempt to assess important aspects of IDS behaviour in a sample of people with psychosis who experienced auditory hallucinations. Through this, it was aimed to assess if these pertinent components of IDS behaviour were significantly associated with individual differences in voice beliefs, attachment and social rank; these associations being a central tenet in the cognitive model of voices in psychosis (Chadwick & Birchwood, 1997; Birchwood et al., 2000, 2004; Gilbert et al., 2001). Non-verbal behaviour was assessed in the context of talking about hearing voices – an experience known to denigrate individuals’ social status and infer a sense of entrapment and loss for a significant number of people with psychosis (Birchwood et al., 2007; Gumley et al., 2006).

The current study was able to introduce a partial measure of IDS behaviour to the linkage between appraisals of social and voice relations (e.g. Birchwood et al., 2004). The findings indicate that low social rank was associated with an increase in the IDSb variable, and also with greater activation of the IDSb variable when talking about voices. This supports the significant association between low social rank and the IDSb variable observed in the analogue study, indicating perceived social status may be a core driver of flight behaviour (Gilbert et al., 2001; Sloman, 2008; Price, 1967). Applied to psychosis, the salient relational schemata activated when talking and thinking about voice relationships are likely to be these ‘normal’ threat-
based social mentalities which underpin a sense of social subordination and inferiority. These mentalities, orientated towards threats to low social rank, then contribute towards escalations in the IDS (e.g. flight behaviour) during interpersonal interaction; which we have observed in relation to the particular example of relationships with voices.

Omnipotent voices have also previously been related to self-reported elements of active IDS – (e.g. entrapment, desire to fight/flight against the voice) (Gilbert et al., 2000; Hacker et al., 2008). The current study therefore sought to extend this relationship in an ecologically valid manner, by introducing a partial and tentative assessment of IDS behaviour to the model. The findings indicate that omnipotence beliefs were the single best predictor of the observed increase in IDSb escalation when talking about voices. As such, this finding putatively builds on the cognitive model of voices by demonstrating that omnipotent voice beliefs may be significantly associated with activation of behavioural strategies (the IDS) designed to keep the individual safe following attacks from dominant aggressors (Birchwood et al., 2000, 2004; Gilbert et al., 2000; Price, 1972). One might speculate that the continual experience of shaming, attacking and dominant voices may significantly prime the IDS over time, whereby these beliefs drive a more ready escalation of the IDS when threat-based social mentalities are active (e.g. talking and thinking about omnipotent and powerful voices). It is important to consider however that the IDSb variable is not a totally valid and complete measure of the IDS, and therefore the introduction of the IDS to the cognitive model is still in its formative stages. The current work is argued to represent an important, but small, step in improving the ecological validity of the social evolutionary model within voice hearers.

It is important to highlight that, in regard to the existing literature pertaining to voice beliefs, mean BAVQ-R scores in the current study differed. As an example, Chadwick et al., (2000) employed a chronic sample of voice hearers similar to the current study in order to validate the BAVQ-R. The mean benevolence scores in the current study are notably higher than
Chadwick et al., and mean omnipotence scores lower. It should be noted however that benevolence scores were still considerably lower, and omnipotence higher, than in non-psychiatric voice hearers (e.g. Andrew et al., 2008). It is very likely that the nature of the study (e.g. being videotaped talking about voices) resulted in people with very omnipotent and shameful voices not wanting to participate. Consequently, it should be recognised that the nature of the sample employed (i.e. lower omnipotence), constrains the degree to which the results may be generalised to the extant literature that as applied social ranking theory to people with very omnipotent voices (e.g. Trower et al., 2004). Future attempts to assess the behavioural fluctuations of the IDS in individuals with scores around the top end of the omnipotence subscale of the BAVQ-R are needed. The pragmatics of achieving this in an ethical manner may present a considerable challenge.

The additional aim of the current study was to elucidate the relationship between attachment schema and IDS behaviour. At the time of writing, this represents the first attempt to address the knowledge gap with regard to the input of attachment schemata into the cognitive model of voice beliefs (Andrew et al., 2008; Birchwood et al., 2004; Berry et al., 2008). Contrary to predictions, it was the RAAS-defined securely attached group who presented with a larger positive increase in IDSb, although this difference was not significant. It should be noted that the clinical sample was heavily biased toward insecure attachment, which resulted in group comparisons being underpowered. Further, it may be that defining voice hearers by attachment schema alone are not sufficient grounds for differences in IDS proliferation to be observed. Indeed, the entwined nature of attachment schema, social mentalities and affect would infer a particularly pervasive governing role for attachment schema in IDS proliferation (Drayton et al., 1998; Sloman, 2008; Wearden, Peters, Berry, Barrowclough & Liversidge, 2008). Assessing IDS behaviour in relation to the more specific dimensions of attachment anxiety (perceived acceptability/rejection from others) and avoidance (desire to seek/avoid
intimacy), argued to be the main underlying dimensions of self-report measures, may be more valid (Ainsworth et al., 1978; Berry et al., 2007; Kurdek, 2002; MacBeth et al., 2008).

**Methodological Issues**

The sample size was small and the majority of the associations were based on correlation analyses which run the risk of type 1 errors and do not allow for causal models to be stipulated. It should also be noted that the IDSb variable showed no relationship with depression. It may be that, due to the relative chronicity of the sample, that the association between IDSb escalation witnessed in a very limited space of time (e.g. eight minutes) and distress is likely underpinned by the wider life experiences of the individual – such as frequency and degree of social defeat, employment and affect-regulatory behaviours such as substance use (Birchwood et al., 2000; Ventura, Nuechterlein, Subotnik, Green & Gitlin, 2004). Additionally, as in the analogue study, the IDSb variable may be more proximally aligned to fluctuations in behaviour driven by anxiety, as opposed to depression.

It should also be noted that inter-rater reliability was not first established for the CDSS. As such, the depression ratings used in the current study should be acknowledged as having no established rater reliability, which limits the generalisibility of the results beyond the current thesis. Further replication of the current work is therefore needed, with the inclusion of a more reliable rating of clinical depression within psychosis. Further, benevolence and IDSb showed no significant relationship. Although higher than may have been expected, benevolent beliefs were in the minority in the current sample, a result that has been commonly observed in the literature (Chadwick & Birchwood, 1994; Mawson, Cohen & Berry, 2010). It may be that future studies need to recruit solely participants with benevolent voices in order to assess any independent, inverse relationship between benevolence and IDS behaviour. It would also have been of interest to assess the wider socio-demographic context of the participants and their
specific experiences of social defeat; argued to be crucial facilitator of IDS formation (Price, 2006; Selten & Cantor-Graae, 2005). As such, future work may focus on the explicit nature and frequency of environmental risk factors such as discrimination and immigration, and their relationship with behavioural activation of the IDS within psychosis (Morgan & Hutchinson, 2010). Promising steps in this area come from non-clinical work which has illustrated ethnic groups with low socio-economic status (SeS) report increased appraisals of dominance and hostility in others (Gallo, Smith & Cox, 2006).

Summary

Here we sought to apply the ECSI to assess how behavioural elements of the IDS functioned in relation to voices in psychosis. This study demonstrated that voice hearers with low social rank and greater beliefs in the omnipotence of voices, present with a larger and more active IDSb variable. It is therefore concluded that elements of the IDS and the relational schema which underpin social and voice appraisals may be significantly entwined. This infers that if people try to reduce their IDS, they may also find a significant reduction in the omnipotence of voices, which may improve behavioural and affective outcomes (i.e reduced distress and compliance to voices). This is currently only a theoretical prediction and requires an intervention study to assess how this may work.

The current clinical study was cross-sectional: aimed at assessing a “snapshot” of engineered IDS activation in the context of concerns regarding externalised shame/stigma and social attractiveness. Whilst this represents an initial and much-needed attempt at ecologically assessing important aspects of the IDS in psychosis, it is not possible to say how the IDS functioned before or after the research paradigm (i.e. did the participants display an adaptive IDS in response to perceived threat which then attenuated after the interview, or was the observed significant increase indicative of a more generalised, reactionary IDS in everyday
life?) The significant relationships between IDSb escalation, low social rank and omnipotence would certainly infer the latter scenario seems likely. This prediction however needs testing longitudinally and ecologically. Consequently, the following chapter details an empirical study that aimed to assess the daily dynamics of the main components of the IDS over one week of everyday life in voice hearers.
Chapter 5

Empirical Study 3

The Daily Dynamics of the Involuntary Defeat Strategy and it’s Relationship within the Cognitive Model of Voices: an Experience Sampling study

Continuing Ecological Evaluation of the IDS

The observed relationship between beliefs in omnipotent voices and aspects of IDS behaviour during the shame paradigm, indicates that voice cognition and the IDS may not be independent. The challenge interview paradigm represented a manipulation designed to provide a snapshot of an escalation in the IDS in the context of a challenge to status and social attractiveness. However, it is unclear how the IDS functions in relation to voice experience in the day to day life of the individual. For instance, the IDS is argued to vary considerably depending on the psychosocial context the individual finds themselves in. Indeed, chapter 4 detailed significant behavioural changes in the specific and time-limited context of shame-related threats to social attractiveness. It is still unclear how feelings of involuntary subordination interact with voice, or other psychotic phemonology, and social context on a day to day basis. For example, it can be argued that voice hearers may generally avoid social contexts whereby high levels of stigma and shame would be anticipated; the challenge
manipulation may have represented the apex of IDS escalation, perhaps not witnessed in everyday transactions.

**The Experimental Sampling Method (ESM)**

With regard to longitudinal and ecological assessments within psychosis, promising steps have been made using a novel methodology called the Experimental Sampling Method (Fournier et al., 2007; Zuroff et al., 2007). Development of the Experimental/Experience Sampling Method (ESM) is credited to Reed Larson and Mihaly Csikszentmihalyi (1983, 1987) and has been largely refined and extensively implemented in recent years by researchers based at the University of Maastricht in the Netherlands (Myin-Germeys, Oorschot, Collip, Lataster, Delespaul & Van Os, 2009). The methodology involves participants completing assessments at random times throughout the course of their day, over a predefined timeframe (e.g. one week). Assessments are usually completed in pen and paper form in diaries, using open ended questions and/or Likert scales, which can be easily carried with the participant. The crux of ESM philosophy rests with reducing the reactivity of the participant to the method; with the aim of gathering observations that are naturalistic, brief and not over-construed. Participants are prompted to fill out the diary with the bleep of a basic, digital wristwatch which they carry with them over the course of the research. More recent technological advances have additionally seen the implementation of digital diaries/personal desktop assistants for ESM assessments, which have been used to comparable effect to the traditional pen and diary methods (Ben-Zeev, Morris, Swendsen, & Granholm, 2011; Granholm, Loh & Swendsen, 2008; Green, Rafaeli, Bolger, Shrout, & Reis, 2006; Kimhy, Delespaul, Corcoran, Ahn, Yale & Malaspina, 2006).

It should be noted that ESM is also often described in the literature as ecological momentary assessment (EMA) or ambulatory assessment (Fahrenberg, 1996; Granholm et al., 2008;
Moskowitz & Young, 2006; Shiffman, Stone & Hufford, 2008; Oorschot, Kwapis, Delespaul & Myin-Germeys, 2009). These terms are common in physiological studies which, for example, examine daily variations in autonomic arousal (Wilhelm, Pfaltz, & Grossman, 2006). The current thesis will use the term ESM hereafter, and considers these other methodologies under the same banner accordingly. Notably, ESM has a number of distinct advantages over traditional laboratory self-report methodologies, Myin-Germeys et al., (2009) summarise these as:

- *ESM is less-likely to be affected by recall bias*;
- *It is an assessment in the real-world, therefore having greater ecological validity*;
- *It yields assessment of context, making it highlight suited to studying interactions with contextual factors*;
- *Unconscious processes may be made explicit in the data*;
- *The longitudinal nature of ESM makes it useful for studying variation in dependent variables over time*;
- *ESM yields data that contain many observations, and can be analysed using sophisticated multilevel regression modelling techniques*. 


ESM Studies Assessing the IDS and Depression

The advantages of the ESM indicate it would appear to be highly valid for assessment of the individual and contextual variations of the IDS. Indeed, a number of related studies have assessed daily fluctuations in depression using ESM in both paediatric and adult samples (Axelson, Bertocci, Lewin, Trubnick, Birmaher, & Williamson et al., 2003; Barge-Schaapveld, Nicolson, van der Hoop, & deVries, 1995; Barge-Schaapveld, Nicolson, Berkhof, & deVries, 1999; Barge-Schaapveld & Nicolson, 2002; Peeters, Nicolson & Berkhof, 2004; Peeters, Nicolson, Berkhof, Delespaul, & deVries, 2003; Wang, Beck, Berglund, McKenas, Pronk, Simon & Kessler, 2004; Wenze & Miller, 2010; Whalen, Silk, Semel, Forbes, Ryan, & Axelson et al., 2001). ESM has yielded interesting data regarding the fluctuation of depression within daily life, and its interaction with environmental factors, that is supportive of IDS theory. For instance, Barge-Schaapveld et al., (1999) reported that depressed participants spent significantly more time doing nothing and less time working than controls. This decrease in goal-directed and physical behaviour is argued to be direct function of the IDS (Gilbert, 2000b).

Further, Peeters et al., (2004) report that depression was associated with blunted cortisol responses in response to daily negative events. This study in particular is an important verification of IDS theory: as highlighted in chapter two, it is HPA-axis mediated regulation of cortisol that is argued to function to attenuate the IDS following defeat in competitive encounters (Levitan et al., 2000). As such, the observed deficit in cortisol regulation observed in the Peeters et al., (2004) sample with major depressive disorder would indicate that these people may well have been experiencing an online IDS.

Whilst these studies are undoubtedly useful for understanding depression within the daily life of individuals who experience it, discussion of the results largely negates explicit contextualisation of depression within its evolutionary foundations (Gilbert, 1992; Price, 1967; Sloman, 1976). There are however a subset of studies that, informed by social ranking theory,
have begun to explicitly assess the cognitive and social correlates of the IDS in the general population using the ESM (Fournier et al., 2002; Zuroff, Moskowitz, & Cote, 1999; Zuroff et al., 2007). For instance, Zuroff et al., (1999) used the ESM in a sample of working participants who filled out assessments in their place of employment over a period of twenty days. They found that participants who were high in self-criticism displayed more quarrelsome and submissive behaviour with others. This was interpreted as support for these individuals being unable to accept their subordinate status, and therefore presenting with more quarrelsome behaviour and an active IDS. Support for this contention has recently come from Sturman and Mongrain (2008b): they found that self-criticism was significantly associated with an inability to accept defeat and involuntary subordination (e.g. classed in their study as social rank, dysphoria and internal entrapment). In related work, Fournier et al., (2002) applied the ESM methodology to assess the relationship between social rank appraisals and dominant-submissive interpersonal behaviour in the daily working environment, again over a period of twenty days. As would be predicted by IDS theory, the results indicated that individuals with lower social rank tended to subordinate more frequently to superiors. Moreover, perceptions of threat in the environment elicited appraisals of inferiority. However, the authors did not include any measure of depression, making it hard to assess if these inferior individuals who appraised threat also felt more depressed—which would be further support for their IDS being activated. In a study sympathetic to the rationale of the current work, Zuroff et al., (2007) again employed the ESM, this time making explicit the lack of ecological validity in contemporary models of the IDS. They found that, among more depressed participants, perceived inferiority/low social rank and partner dominance predicted submissive behaviour during social interactions.

This non-clinical work of Zuroff et al., (1999, 2007) and Fournier et al., (2002) has made important inroads into documenting the components of the IDS during life-as-lived, and in tandem illustrating the utility of the ESM for IDS assessment. Non-clinical studies of the IDS are
useful, as its cognitive and behavioural profile is argued to be tantamount to that found within psychopathology (Levitan et al., 2000; Sloman, 2000). By including daily assessments of social inferiority and depression, this work has been able to assess the some of the major tenets of IDS theory in an ecologically valid, cogent manner. However, cumulatively, these studies have precluded everyday assessment of the critical cognitive components of involuntary subordination which are the basis of IDS escalation: entrapment, defeat and shame (Cheung et al., 2004; Gilbert & Allan, 1998; Taylor et al., 2010, 2011).

ESM and Psychosis

The use of the ESM in non-clinical samples has therefore begun to partially confirm important associations between tenets of IDS behaviour and cognition within the wider social context of the individual. It is still unclear if these associations have been assessed using ESM with people who experience psychosis. To address this, table 5.1 reports the results of a literature review that was conducted using the Science Direct database from the years from 1992-2011. The keywords entered were ‘experience sampling method’ ‘momentary assessment’ ‘ambulatory assessment’ ‘schizophrenia’ and ‘psychosis’. Abstracts were selected if the study used participants with a standardised diagnosis of schizophrenia or related psychotic disorder and explicitly used the ESM with either paper and pen or computerised methods. The review produced 25 articles. The mean number of participants for the studies included in the review was (n = 50 ± 29).
<table>
<thead>
<tr>
<th>Authors</th>
<th>Diagnostic criteria</th>
<th>Sample</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delespaul, deVries &amp; Van Os (2002)</td>
<td>DSM-IV Schizophrenia spectrum</td>
<td>N=57</td>
<td>ESM (6 days)</td>
<td>Auditory hallucinations associated with higher anxiety at baseline</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Social withdrawal decreased auditory hallucination intensity</td>
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<td></td>
<td></td>
<td></td>
<td>Leisure activities increased intensity of auditory hallucinations</td>
</tr>
<tr>
<td>Kimhy, Delespaul, Corcoran, Ahn, Yale &amp; Malaspina (2006)</td>
<td>Schizophrenia</td>
<td>N = 10</td>
<td>ESM</td>
<td>Auditory hallucinations decreased over lunch and dinner times</td>
</tr>
<tr>
<td>Myin-Germey, Nicolson, &amp; Delespaul (2001)</td>
<td>Schizophrenia spectrum</td>
<td>N=34</td>
<td>ESM (6 days)</td>
<td>Delusional moments associated with significant increases in negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>feelings and inactivity</td>
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<td></td>
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<td></td>
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<td>Auditory hallucinations more intense during delusional moments</td>
</tr>
<tr>
<td>Myin-Germey, Krabbendam, Delespaul, &amp; Van Os (2003)</td>
<td>Schizophrenia in clinical remission</td>
<td>N=42</td>
<td>ESM (6 days)</td>
<td>Experience of life events modified emotional reactions (increased NA,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>decreased PA) to daily stressors</td>
</tr>
<tr>
<td>Study</td>
<td>Participants</td>
<td>Condition</td>
<td>Sample Size</td>
<td>Data Collection Period</td>
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<td>-------</td>
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<tr>
<td>Ben-Zeev, Morris, Swendsen, &amp; Granholm (2010)</td>
<td>Schizophrenia, Schizoaffective disorder</td>
<td>N=113</td>
<td>ESM (13 days)</td>
<td>Negative self-esteem predicted delusions, Reduced information gathering linked to delusions of control</td>
</tr>
<tr>
<td>Verdoux, Husky, Tournier, Sorbara, &amp; Swendsen (2003)</td>
<td>Undergraduate Students</td>
<td>N=79</td>
<td>ESM (6 days)</td>
<td>Participants at risk of psychosis showed increased unusual perceptions in unfamiliar social contexts</td>
</tr>
<tr>
<td>Myin-Germeys, Krabbendam, Delespaul, &amp; Van Os (2004)</td>
<td>Schizophrenia in clinical remission</td>
<td>N=42</td>
<td>ESM (6 days)</td>
<td>Women reported increased emotional reactivity (Increased NA, decreased PA) to daily life stress compared to men</td>
</tr>
<tr>
<td>Gard, Kring, Gard, Horan &amp; Green (2007)</td>
<td>Schizophrenia, Healthy Controls</td>
<td>N=15, N=12</td>
<td>ESM (7 days)</td>
<td>Compared to controls, patients presented with decrease in anticipatory pleasure in relation to goal-directed activities (i.e. working or studying)</td>
</tr>
<tr>
<td>Husky, Grondin, &amp; Swendsen (2004)</td>
<td>Undergraduate students with high at-risk of psychosis</td>
<td>N=79</td>
<td>ESM (7 days)</td>
<td>Psychosis-proneness associated with more time doing nothing and greater anxiety when with friends</td>
</tr>
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<td>Myin-Germeys, Delespaul &amp; deVries (2000)</td>
<td>Schizophrenia, Healthy controls</td>
<td>N=58, N=65</td>
<td>ESM (6 days)</td>
<td>Patients with schizophrenia showed more intense and variable negative emotional experiences compared to controls</td>
</tr>
<tr>
<td>Study</td>
<td>Diagnosis</td>
<td>Control Groups</td>
<td>N</td>
<td>Data Collection</td>
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<tr>
<td>Kimhy, Delespaul, Ahn, Cai, Shikhman, Lieberman, Malaspina &amp; Sloan (2010)</td>
<td>Psychosis</td>
<td>N=20</td>
<td>ESM &amp; autonomic ambulatory assessment (1.5 days)</td>
<td>Momentary increases in stress had inverse correlation with parasympathetic activity and positive correlation with sympathovagal balance</td>
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<td>Myin-Germeys, Krabbendam, Jolles, Delespaul, &amp; Van Os (2002)</td>
<td>Schizophrenia or related disorder</td>
<td>N=42</td>
<td>ESM (6 days)</td>
<td>Cognitive functioning did not alter emotional reaction to stress. However, some data indicated that greater emotional reactivity to stress was related to increased neuropsychological functioning</td>
</tr>
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<td>Henquet, Rosa, Delespaul, Papiol, Fananas, Van Os, &amp; Myin-Germeys (2009)</td>
<td>Psychotic disorder</td>
<td>N=31</td>
<td>ESM (6 days)</td>
<td>COMT Val158Met genotype moderates the association between cannabis and psychotic phenomena in the flow of daily life.</td>
</tr>
<tr>
<td>Lardinois, Lataster, Mengelers, Van Os, &amp; Myin-Germeys</td>
<td>Non-affective psychotic disorder</td>
<td>N=50</td>
<td>ESM (6 days)</td>
<td>Childhood trauma associated with increased emotional and psychotic reactivity to daily life stress</td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Condition</td>
<td>Controls</td>
<td>Sample Size</td>
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<tr>
<td>2011</td>
<td>Varese, Udachina, Myin-Germeys, Oorschot, &amp; Bentall (2011)</td>
<td>Schizophrenia spectrum Healthy controls</td>
<td>N=42</td>
<td>N=23</td>
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<td>Morrens, Krabbendam, Bak, Delespaul, Mengelers, Sabbe, Hulstijn, van Os, &amp; Myin-Germeys (2007)</td>
<td>Psychotic Illness Healthy controls</td>
<td>N=25</td>
<td></td>
<td>ESM (6 days)</td>
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<tr>
<td>Study Authors</td>
<td>Study Type</td>
<td>N</td>
<td>ESM Duration</td>
<td>Findings</td>
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<td>---------------------------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
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<td>Thewissen, Bentall, Oorschot, Campo, van Lierop, van Os, &amp; Myin-Germeys (2011)</td>
<td>Schizophrenia &amp; Schizoaffective Healthy Controls</td>
<td>N=82</td>
<td>ESM (6 days)</td>
<td>Increase in anxiety and a decrease in self-esteem predicted the onset of paranoid episodes</td>
</tr>
<tr>
<td>Palmier-Claus, Taylor, Gooding, Dunn &amp; Lewis (2011)</td>
<td>Ultra high risk for psychosis</td>
<td>N=27</td>
<td>ESM (6 days)</td>
<td>Variability of negative and positive affect predictive of the frequency of suicidal thoughts and behaviour</td>
</tr>
<tr>
<td>Myin-Germeys, Peeters, Havermans, Nicolson, deVries, Delespaul, Van Os (2003)</td>
<td>Psychosis, Bipolar Disorder, Major Depression Healthy Controls</td>
<td>N=42</td>
<td>ESM (6 days)</td>
<td>Psychotic participants presented with an increase in NA and decrease in PA compared to controls</td>
</tr>
<tr>
<td>Swendsen, Ben-Zeev, &amp; Granholm (2011)</td>
<td>Schizophrenia &amp; Schizoaffective disorder</td>
<td>N=145</td>
<td>ESM (7 days)</td>
<td>Associations were observed in both directions between substance use and negative psychological states or psychotic symptoms</td>
</tr>
<tr>
<td>Lardinois, Myin-Germeys, Bak, Mengelers, van Os &amp;</td>
<td>Psychosis</td>
<td>N=35</td>
<td>ESM (6 days)</td>
<td>Distress associated with more effective coping strategies (not going along with voices). Distress therefore argued to be result of conscious appraisal of illness</td>
</tr>
<tr>
<td>Henquet, van Os, Kuepper, Delespaul, Smits, Campo &amp; Myin-Germeys (2010)</td>
<td>Psychosis</td>
<td>N=42</td>
<td>ESM (6 days)</td>
<td>Daily life cannabis use within the psychosis group predicted increases in positive affect decreases in negative affect.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Healthy controls</td>
<td>N=38</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Peters, Lataster, Greenwood, Kuipers, Scott, Williams, Garety &amp; Myin-Germeys (2011)</td>
<td>Psychosis Outpatients</td>
<td>N=12</td>
<td>ESM (6 days)</td>
<td>Appraisals about power of voices predicted negative affect and symptom related distress.</td>
</tr>
</tbody>
</table>

Table 5.1 – ESM Studies within Psychosis
Synthesis of ESM Literature

Auditory Hallucinations

The review indicates that ESM has been usefully applied to the study of the dynamics of auditory hallucinations during the daily life of people with psychosis (Delespaul et al., 2002; Kimhy et al., 2006; Varese et al., 2011). Broadly, these studies indicate that hearing voices is not a fixed and stable experience, but instead fluctuates significantly in response to the environmental context of the voice hearer. For example, Kimhy et al., (2006) report that severity of hallucinations varied significantly over important times in the day (e.g. meal times). Moreover, the work of Delespaul et al., (2002) also indicates that affective components measured at baseline (e.g. anxiety) predicted increases in the intensity of auditory hallucinations in the subsequent week. Whilst they have not assessed the theoretical relationship between voices and the evolutionary constructs that are the subject of the current thesis, these studies are illuminative as they indicate that ESM is able to tap into fluctuations in the experience of voice hearing not currently afforded by traditional measures of hallucinatory activity. Moreover, the ability for the longitudinal ESM measures of voice activity to be statistically analysed with relation to standardised baseline assessments of mood and cognition is a useful paradigm.

Affect During Daily Life

The studies included in the review indicate that emotion plays an inherent part, and varies greatly in intensity, within the daily life of individuals with both affective and non-affective psychosis (Birchwood, 2003; c.f Kraepelin, 1919). Many of the studies focus on the subjective appraisal of the emotional impact of salient daily events (e.g. Myin-Germeys et al., 2000,
Largely, they are supportive of an aetiological affective pathway to psychosis, whereby enhanced sensitivity to stress represents a key and independent liability in the development of psychosis (Morrens et al., 2007; Myin-Germeys & Van Os, 2007; Myin-Germeys et al., 2002). This has also been supported by the ESM work indicating a significant familial correlation between people with psychosis and their relatives with regard to daily increases in stress-reactivity (Lataster et al., 2010). Furthermore, ESM work such as Lardinois et al., (2011) has reliably correlated the experience of childhood trauma with enhanced stress sensitivity during daily life, and suggests a pathway for the role of trauma in the development and maintenance of psychosis. As highlighted in chapter three, it follows that the IDS (i.e. a mechanism closely tied to affect and stress through the HPA axis) may be active in these individuals with psychosis who present with increased affective fluctuations during daily life. For example, Myin-Germeys et al., (2000) have illustrated that non-affective psychosis is associated with significant increases in negative affect, and decreases in positive affect in response to daily events compared to controls. Broadly, these important findings suggest that the participants may have been displaying the signs of an active IDS which down-regulated positive affect (i.e positive-reward system) and increased negative affect during daily life. Further, Myin-Germeys et al., (2003) also reported that emotional reactions to daily stressful contexts were significantly influenced by previous LEDS-assessed life events (e.g. family death, loss of employment). This finding is also potentially supportive of an IDS framework functioning within psychosis: whereby feelings of defeat, entrapment and shame are generated through the experience of aversive life events, which then more proximally govern daily levels of positive and negative affect (Sloman, 2008). The postulated role of these specific involuntarily subordinate responses moderating affect during the daily life of people with psychosis remains
to be specifically elucidated. Additionally, a strong prediction from IDS theory is that these individuals who have their affect governed closely by an escalated IDS would be more likely to be clinically depressed (Price, 1967; Sloman, 2008). Consequently, it remains to be evaluated how the elements of involuntary subordination, and their close regulation of affect, contribute to the now recognised presence of clinical depression within psychosis (e.g. Addington et al., 1998).

ESM and Cognitive Model of Voices

There remains a significant knowledge gap with regard to ecologically valid assessment of the key assumptions and relationships within the cognitive model of voices. Due to its ecological nature, ESM seems well placed as a methodology which is able to begin to address these salient knowledge gaps. Indeed, the ESM study recently undertaken by Peters et al., (2011) indicated that power appraisals made during daily life significantly predicted distress. This relationship between omnipotence and distress is a key tenet of the cognitive model, and the work of Peters et al., (2011) is thus an important step in improving its validity, and reiterating the importance of omnipotence beliefs as a target for clinical interventions which aim to reduce distress.

Outside the ESM literature, cross-sectional investigations informed by the cognitive model have therefore been precluded from offering this more fine-grained analysis of the relationship between person, voice and social environment. Indeed, in their recent review of the literature, Mawson et al., (2010) highlight a number of areas within the cognitive model which require further empirical elucidation:
• A salient area for expansion is the **current reliance on self-reported measures** such as the BAVQ-R (Chadwick et al., 2000) which have not been ecologically validated; it remains unclear if its subscales (e.g. omnipotence) relate to the same voice appraisals evidenced during daily life when voices are active. This is important as the cognitive model of voices places itself firmly within a social, interpersonal framework– which emphasises how voice omnipotence may vary as a function of everyday life schemata and experiences. Assessing the congruency between these baseline appraisals of omnipotence on the BAVQ-R, and voice omnipotence appraised during daily life is therefore crucial.

• There also continues to be a significant knowledge gap with regard to the **recruitment of social schema** within the model. For example, assessment of social schema/mentalities has at present been restricted to cross-sectional assessments, asking participants to “think” about their relations with others when completing questionnaires (e.g. Birchwood et al., 2004). It should be noted that these forms of assessment have distinct advantages (.e.g. brevity for the participant) and have advanced understanding of auditory hallucinations to a great degree. The natural progression of the model is however contingent on assessment of these same mentalities when they are actually active during the more unpredictable and turbulent contexts of daily life. With regard to the role of the IDS within the cognitive model, this relates to the need for an assessment of how both voice and social subordination co-exist (e.g. Birchwood et al., 2004), and their interplay with the IDS. For example, the results of the ethological study in chapter four have indicated that subordinate mentalities (.e.g. to others and voices) significantly related to escalations in salient behavioural displays argued to be representative of the
IDS. It would therefore be expected that the cognitive elements of the IDS may also be heightened in individuals with social mentalities orientated toward daily interactions which recruit schema of subordination and power.

**Research Questions**

1. Do baseline self-reported beliefs in the omnipotence of voices significantly predict daily, ‘real-time’ voice omnipotence (i.e. power, rank, and control) ?

2. (a) Does social and voice subordination experienced during daily life predict an increase in the cognitive elements of the IDS (i.e involuntary subordination)?

3. (a) Does involuntary subordination experienced during everyday life predict levels of positive and negative affect in psychosis?

    (b) Is the predicted relationship between affect and involuntary subordination greater in people who are depressed, compared to those who are not?
Methods

Measures

N.B. Previously described measures (PSYRATS, SCS, RAAS, BAVQ-R and CDSS) were also employed in this study.

**Experimental Sampling Method (ESM; Csikszentmihalyi & Larson, 1992)**

The experimental sampling method is a self-report time sampling methodology. Participants wear a watch which beeps at 10 random times between 7.30am and 10.30pm. Upon immediately hearing the beep, participants complete a set of questions in a small diary. Completed over 6 days, this corresponds to 60 sampling points per participant. A minimum sample of one third of the total points per participant is stipulated for inclusion (> 20 samples) and data collected over fifteen minutes from the beep are excluded, as reliability decreases considerably after this period (Delespaul, 1995). Previous research has indicated that ESM is a valid and reliable method for people with psychosis and achieves excellent compliance rates (Delespaul, 1995; Myin-Germeys & van Os, 2007; Myin-Germeys et al., 2009).

**ESM Item Selection**

The current study aimed to introduce an assessment of the pertinent elements of the IDS (i.e. cognitive involuntary subordination) into the ESM research paradigm. Consequently, 5 items (e.g. “I feel trapped inside myself”) from the widely used Entrapment Scale (Gilbert and Allan, 1998) were included, along with items for defeat (i.e. “I feel defeated”) and shame (i.e. “I feel ashamed”). There has been an acknowledged lack of assessment of the involuntary aspect of the IDS in the existing literature (Sturman, 2011). Consequently, a basic assessment of this was
included (i.e. “All these thoughts are out of my control”). A factor analysis (Harris-Kaiser rotation) conducted on the raw within-participant scores indicated that these IDS variables (i.e. shame, defeat and entrapment) loaded on one factor with an Eigenvalue greater than 1, accounting for 38% of the variance. Consequently, they were grouped to form one scale termed “Involuntary Subordination” (α = 0.80).

Voice power/rank was assessed with items drawn from the Voice Power Scale (VPD: Birchwood et al., 2000) (i.e. “My voice is powerful”) (“My voice is superior”) (“My voice is out of control”). Factor analysis on the raw scores for these items identified one factor with an eigenvalue greater than 1, accounting for 38% of the variance. One scale comprising these three items, termed “Voice Omnipotence”, was therefore created (α = 0.86). Social rank was assessed using items drawn from the Social Comparison Scale (SCS; Gilbert & Allan, 1995) and a previously employed ESM items of social stress (Myin-Germeys et al.,) (i.e. “I prefer being alone”) (“I like this company”) (“I feel inferior to these people”)(“I feel superior”) (“I feel left out”)(“I feel different”) (“I feel put down”). Factor analysis indicated that the items (“I prefer being alone”) (“I feel inferior”) (“I feel left out”) and (“I feel superior”) loaded on one factor with an eigenvalue greater than 1, accounting for 20% of the variance. These items were therefore grouped to form a scale titled “Social Rank” (α =0.74). Affect was assessed with items taken from existing ESM studies (e.g. Myin-Germeys et al., 2003) and included 4 items for positive affect (e.g. “I feel happy”) and 4 items for negative affect (e.g. “I feel low”). Table 5.2 gives a description of the all of the ESM assessments used in the current study. The social, voice, affect and IDS appraisals were made on likert scales numbered 1-7, which is the standardised format for ESM items (Myin-Germeys et al., 2009). Social context (e.g. location)
was assessed by allowing the participant to write a small number of words in the ESM booklet (e.g. “I am at the shop”). A full copy of one ESM page can be found in appendix 1.

<table>
<thead>
<tr>
<th>Dependent Variable (s)</th>
<th>Item (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Context (C)</strong></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>“Where am I?” (i.e. at home, at public place)</td>
</tr>
<tr>
<td>Persons Present</td>
<td>“Am I alone?” “If not, with whom?” “How many men/women/children?”</td>
</tr>
<tr>
<td><strong>Social Appraisal (only completed if &gt;1 persons present in social context) (R)</strong></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>“We are talking” “I like this company” “I feel different” “I feel put down”</td>
</tr>
<tr>
<td><strong>Social Rank (α = 0.74)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“I feel inferior to these people” “I feel superior to these people” “I feel left out” “I prefer being alone”</td>
</tr>
<tr>
<td><strong>Psychotic Symptoms (R)</strong></td>
<td></td>
</tr>
<tr>
<td>Hallucinations</td>
<td>“My voice(s) are present”</td>
</tr>
<tr>
<td><strong>Voice Omnipotence (α = 0.86)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>“My voice is out of my control” “My voice is superior” “My voice is powerful”</td>
</tr>
<tr>
<td><strong>Mood (R)</strong></td>
<td></td>
</tr>
<tr>
<td>Positive Affect (PA) (α = 0.74)</td>
<td>“I feel happy” “I feel in a good mood” “I feel relaxed”</td>
</tr>
<tr>
<td>Negative Affect (NA) (α = 0.81)</td>
<td>“I feel low” “I feel scared” “I feel guilty” “I feel anxious”</td>
</tr>
<tr>
<td><strong>IDS Involuntary Subordination (R) (α = 0.80)</strong></td>
<td></td>
</tr>
<tr>
<td>Entrapment</td>
<td>“I want to get away from myself” “I feel powerless to change myself” “I would like to escape” “I feel trapped inside myself” “I would like to start again” “I feel in a deep hole”</td>
</tr>
</tbody>
</table>
Involuntary Defeat

“*All these thoughts are out of my control” “I feel defeated*”

Shame

“I feel ashamed”

**ESM Reactivity (R)**

| Disruption | “This beep disturbed me” |

(R) Variables rated on 7-point likert scales by participant (1 not at all - 3 Moderate - 7 very)

(C) Open question completed in written form by participants - responses subsequently coded by researcher in line with ESM protocol

**Table 5.2 – ESM Assessments Completed at Each Sampling Point**

**Procedure**

The study received full ethical approval from the NHS Black Country Research Ethics Committee (see appendix 2). Inclusion criteria were aged 16 to 65 with a diagnosis of ICD-10 Schizophrenia or related disorder with current auditory hallucinations. 102 participants were initially identified from clinical care teams within Birmingham and Solihull Mental Health NHS trust, along with voice hearing groups run by mental health charities (Birmingham Mind). 57 refused to participate. 45 participants were consented and completed the study. 5 participants gave incomplete data (i.e. < 20 ESM observations), and their data were not included in the analysis. This final sample was therefore n=40. Demographic and clinical characteristics of the sample are reported in table 5.3. Participants initially completed the battery of self-report measures either in their place of residence or local CMHT. After this, they were briefed regarding the correct way to complete the diaries and had the opportunity both to try a sample page and to ask any questions regarding the method. The ESM was then completed for the subsequent six days, after
which the diaries were collected and the participant completed a debriefing session. Participant consent and information forms can be found in appendix 3.

Results

Statistics

The data were analysed in conjunction with Professor Inez Myin-Germeys at Maastricht University, who is the international leading expert in the application of ESM to psychosis. Analysis also received input from a doctoral research associate who had attended an ESM training course run at Maastricht University. All statistical analysis was completed on a personal computer using the statistical software STATA 10 (Statacore, 2010). ESM data are two-level and therefore hierarchical in nature: multiple observations are nested within subjects (Schwartz & Stone, 1998). In ESM, these within-subjects observations are more similar than between-subjects observations. Consequently, traditional regression techniques do not account for this variance at two different levels (Myin-Germeys et al., 2003). Data were therefore analysed using a multilevel linear regression model with the XTREG module in STATA. The beta ($\beta$) is the fixed regression coefficient of the predictor in the multilevel model, and can be interpreted identically to the estimate in a unilevel linear regression analysis.
Clinical characteristics and demographics

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>(34 ± 9.97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male (n=24)</td>
<td></td>
</tr>
<tr>
<td>Female (n=16)</td>
<td></td>
</tr>
<tr>
<td>Duration of Illness (months)</td>
<td>(173 ± 104)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single (n=30)</td>
<td></td>
</tr>
<tr>
<td>Married/In a relationship (n=10)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White British (n =20)</td>
<td></td>
</tr>
<tr>
<td>British Asian (n=14)</td>
<td></td>
</tr>
<tr>
<td>British Caribbean (n=3)</td>
<td></td>
</tr>
<tr>
<td>Mixed Black &amp; White British (n=3)</td>
<td></td>
</tr>
<tr>
<td>Psychotic Symptom Rating Scale (PSYRATS)</td>
<td>(25.86 ± 6.42)</td>
</tr>
<tr>
<td>Calgary Depression Scale for Schizophrenia (CDSS)</td>
<td>(7.63 ± 3.94)</td>
</tr>
</tbody>
</table>

Table 5.3 – Clinical and Socio-Demographic Characteristics of the Sample
## ESM Responses

<table>
<thead>
<tr>
<th>Variables</th>
<th>N Observations (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Context (Total Observations ( n = 1446 ))</strong></td>
<td></td>
</tr>
<tr>
<td>Alone ( n = 941 ) (65%)</td>
<td></td>
</tr>
<tr>
<td>Familiar Individual (e.g. friends, family) ( n = 492 ) (34%)</td>
<td></td>
</tr>
<tr>
<td>Strangers ( n = 13 ) (0.89%)</td>
<td></td>
</tr>
<tr>
<td><strong>Place ( n=1446 )</strong></td>
<td></td>
</tr>
<tr>
<td>Home ( n = 1128 ) (78%)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Healthcare setting ( n=104, 7.19% )</td>
</tr>
<tr>
<td></td>
<td>Social Network ( n=90, 6.22% )</td>
</tr>
<tr>
<td></td>
<td>Public Place Outside (e.g. Park) ( n=52, 3.60% )</td>
</tr>
<tr>
<td></td>
<td>Public Place Inside (e.g. Pub) ( n=36, 2.49% )</td>
</tr>
<tr>
<td></td>
<td>Work ( n=18, 1.24% )</td>
</tr>
<tr>
<td></td>
<td>Transport ( n=9, 0.62% ).</td>
</tr>
</tbody>
</table>

*Table 5.4 – ESM Location Responses*
1. Do baseline self-reported beliefs in the omnipotence of voices predict daily voice omnipotence?

The omnipotence subscale from the BAVQ-R taken at baseline was entered into a multilevel regression model with ESM voice omnipotence as the dependent variable. Age and gender were also entered. BAVQ-R omnipotence emerged as a significant predictor of ESM voice omnipotence (β=. 26; 95%CI .17-.35; p=.000). Therefore, self-reported beliefs in voice omnipotence at baseline were able to significantly predict appraisals of voice omnipotence over the subsequent week.

<table>
<thead>
<tr>
<th>ESM Latent Variables (N Observations)</th>
<th>Mean &amp; SD (range 1-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Rank (n = 511) *</td>
<td>2.52 ±1.38</td>
</tr>
<tr>
<td>Voice Omnipotence (n=1413)</td>
<td>3.57 ±1.78</td>
</tr>
<tr>
<td>Involuntary Subordination (n=1438)</td>
<td>2.92±1.85</td>
</tr>
<tr>
<td>Positive Affect (n=1433)</td>
<td>3.55±1.33</td>
</tr>
<tr>
<td>Negative Affect (n=1431)</td>
<td>2.52±1.40</td>
</tr>
</tbody>
</table>

*smaller n due to social rank only being recorded when with other people

Table 5.5 – ESM Latent Variable Observations and Mean Scores with Standard Deviations
Does social and voice subordination experienced during daily life predict the cognitive elements of the IDS (i.e involuntary subordination)?

The ESM social and voice rank variables were significantly correlated \( r = .80; p < .01 \) and were entered together as independent variables along with age and sex, with the latent involuntary subordination variable as the dependent variable.

\[
\text{Involuntary Subordination} = \beta_0 + \beta_1 \text{ Voice Omnipotence} + \beta_2 \text{ Social Rank}
\]

The latent voice omnipotence variable emerged as a significant predictor of involuntary subordination \( (\beta = .07; 95\% \text{ CI .05-.08; } p = .000) \), along with the social rank variable \( (\beta = .16; 95\% \text{ CI .10-.23; } p = .000) \). Therefore, both social and voice subordination predicted the cognitive elements of the IDS during daily life.

3. (a) Does involuntary subordination experienced during everyday life predict levels of positive and negative affect in psychosis?

To assess the role of involuntary subordination predicting affect, two separate regression models (i.e positive and negative affect) were fitted:

\[
\text{Daily NA/PA} = \beta_0 + \beta_1 \text{ involuntary subordination}.
\]

Age and gender were also entered. A significant main effect emerged for the role of involuntary subordination in predicting negative affect during daily life \( (\beta = 0.2; 95\% \text{ CI .17-.29, } p = .000) \). PA was also significantly moderated by involuntary subordination \( (\beta = -.11; 95\% \text{ CI .18-.} \)
Therefore, in line with expectations, involuntary subordination moderated levels of both negative and positive affect during the daily life of the participants.

(b) Is the relationship between daily affect and involuntary subordination greater in people who are more depressed?

ESM statistical analysis allows for individuals to be grouped according to scores on baseline standardised measures, and then differences in ESM responses to be assessed between the groups. As such, the sample was grouped into depressed \((n=25)\) and non-depressed \((n=15)\) on the basis of scores (>5) on the CDSS (Addington et al., 1998). Table 5.6 reports the means and standard deviations for NA, PA and involuntary subordination for each group, along with ANOVA statistics for group differences. A multilevel regression model was fitted for each group (i.e depressed vs. non-depressed) with NA and PA as the dependent variables respectively, and involuntary subordination entered as an independent predictor. The interaction term (depression group x involuntary subordination) was also included:

\[
PA/NA = \beta_0 + \beta_1 \text{involuntary subordination} + \beta_2 \text{depression group} + \beta_3 (\text{involuntary subordination} \times \text{group})
\]

Age and gender were entered as covariates. No significant main effect emerged for depression group on PA \((\beta =.20; p=.60)\) or NA \((\beta =.27; p=.35)\). Table 5.7 reports the regression coefficients for involuntary subordination and PA/NA for depressed vs. non-depressed group. A Wald test (Clayton & Hills, 1983) revealed the depression group x involuntary subordination interaction term was not significant in moderating the regression slopes between involuntary subordination and daily affect \((X^2 = .07; p = .78)\). Therefore, the main effect of involuntary subordination predicting daily affect did not significantly differ as a function of CDSS.
depression grouping. In other words, the significant relationship between involuntary subordination and affect was no *stronger* in participants with clinical depression.

<table>
<thead>
<tr>
<th>Group (Means &amp; SD)</th>
<th>Depressed</th>
<th>Not-depressed</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$(n=25)$</td>
<td>$(n=15)$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Independent Variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESM Involuntary Subordination</td>
<td>(2.47±.94)</td>
<td>(1.69±.66)</td>
<td>73.89</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Affect</td>
<td>(2.83±1.48)</td>
<td>(1.90±.94)</td>
<td>155</td>
<td>.000</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>(3.49±1.38)</td>
<td>(3.66±1.19)</td>
<td>5.70</td>
<td>.017</td>
</tr>
</tbody>
</table>

*Table 5.6 – Means and Standard Deviations for Involuntary Subordination and Affect for Depressed and Non-Depressed Groups*
### Table 5.7 – Multilevel regression coefficients for CDSS depression and ESM Involuntary Subordination

<table>
<thead>
<tr>
<th>Group</th>
<th>NA</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed (n=25)</td>
<td>$\beta=.14 \ (0.11-.17)$</td>
<td>$\beta=.09 \ (-0.13-.04)$</td>
</tr>
<tr>
<td></td>
<td>$p=.000$</td>
<td>$p=.000$</td>
</tr>
<tr>
<td>Not Depressed (n=15)</td>
<td>$\beta=.20 \ (0.16-.25)$</td>
<td>$\beta=.08 \ (-0.15-.01)$</td>
</tr>
<tr>
<td></td>
<td>$p=.000$</td>
<td>$p=.012$</td>
</tr>
</tbody>
</table>

**Discussion**

**Association between BAVQ-R Omnipotence and ESM Omnipotence**

The BAVQ-R has been used extensively in studies that have provided the foundation for the cognitive model and associated social rank protocols for CBTp (Bryne et al., 2006; Trower et al., 2004). Its omnipotence subscale has been repeatedly found to correlate with, and in some instances predict, distress, entrapment and safety behaviours in voice hearers (Gilbert et al., 2001; Hayward et al., 2008; Peters et al., 2011; Sophitt & Birchwood, 1997). It has however been criticised on the basis of its lack of validation (Mawson et al., 2011). The findings indicated that baseline appraisals of BAVQ-R voice omnipotence were able to significantly predict appraisals of voice omnipotence over the subsequent course of one week. This
indicates that the omnipotence subscale of the BAVQ-R is indeed ecologically valid. Future studies employing the BAVQ-R and its omnipotence subscale should make note of its ability to predict equivalent appraisals during the daily life of the individual. This finding is also important as BAVQ-R-assessed omnipotence beliefs are a current target for emerging CBTp interventions (e.g. Trower et al., 2004). Broadly, it suggests that interventions tailored specifically to reducing scores on the omnipotence subscale of the BAVQ-R will be associated with actual, reduced voice omnipotence during daily experience with voices.

**Social Rank, Voice Omnipotence and Involuntary Subordination**

The IDS has been implemented in governing social mentalities, which underpin the dynamics of our everyday relationships (e.g. Gilbert et al., 2001). The current findings are the first to ecologically demonstrate that both low social rank and voice omnipotence predict feelings of involuntary subordination over one week of everyday life. The components of involuntary subordination included in the current study are argued to be the key cognitive precursors and mediators of an escalated IDS (Allan & Gilbert, 1998; Sloman, 2008). As such, it can be said with relative certainty that the individuals in possession of these subordinate social mentalities were presenting with a larger IDS during daily life. This finding supports the clinical study detailed in chapter four, by indicating that salient elements of the IDS may be entwined with appraisals of voice and social subordination; the current study providing support for the role of the cognitive elements (e.g. defeat) in addition to the behavioural aspects (e.g. flight) already observed in chapter four.

It should be noted however that the current findings are unable to establish the causality of social and voice subordination escalating the IDS. Theoretically, it may that omnipotent voices
prime and escalate the IDS over time; this escalation in the IDS then only serves to exacerbate and reinforce the individual’s sense of subordination and powerlessness to others and voices. This framework broadly sees voice and social relationships co-existing with the IDS in a cyclical manner. It follows from this therefore that attenuation of the IDS may ‘break the chain’ and exert a remedial action on voice omnipotence and subordination, therefore reducing distress and compliance arising from voices. This therapeutic implication will be discussed in greater detail in chapter seven of the current thesis.

In a foundation study for the cognitive model of voices, Birchwood et al., (2004) demonstrated that social appraisals relating to subordination and power predict the equivalent appraisals in relation to voices. The current study expanded this relationship by indicating that these social rank appraisals made during actual social interactions (e.g. with friends, strangers, health professionals) were significantly associated with the power relationship with voices experienced during the same week. The ecological validity of this central association within the cognitive model of voices is therefore confirmed: it can now be said with increasing certainty that the social mentalities involved in construal of voice relationships are the same schemata functional during everyday, interpersonal encounters (Birchwood et al., 2000, 2004; Gilbert, 1989). As such, this represents a significant shift of the cognitive model out of the laboratory and places it firmly within the daily life of the individual; this is of great importance for a model that places social processes at its core.

The findings did however preclude any analysis of how social rank and voice omnipotence varied in responses to situational factors, instead focusing on the overall appraisals made across the week. Future work should now continue to specify and focus on these key
dynamics. For example, Delespaul et al., (2002) have already demonstrated how intensity of auditory hallucinations can vary across social contexts. Mapping how these critical appraisals of social rank fluctuate across these situational factors (e.g. being with strangers vs. being with friends), and how this moderates voice appraisals would therefore further advance the current understanding of the role of social mentalities within the cognitive model.

**Daily Affect and Involuntary Subordination**

The literature review indicated that a number of studies have used ESM to investigate positive and negative affect during daily life in people with, and at risk of, psychosis (Myin-Germeys et al., 2001, 2003; Palmier-Claus et al., 2011). As discussed in chapter three, the stress-diathesis framework argues that psychotic symptoms emerge when an individual’s personal limit for stress is exceeded (Myin-Germeys & Van Os, 2007; Zubin et al., 1983). ESM work has provided support for this affective pathway to psychotic experience, by indicating that individuals with psychosis present with increased stress-sensitivity during daily life. This stress-sensitivity has been conceptualised as significant changes in positive and negative affect in relation to daily events compared to controls (e.g. Myin-Germeys et al., 2000). Moreover, childhood trauma and the experience of negative life events have been shown to significantly increase this stress-sensitivity, again inferring that the individual’s relationship with the environment is key for development of psychotic experience (Myin-Germeys et al., 2003; Lardinois et al., 2011). A social ranking framework would argue that this experience of social stress, along with negative life events (e.g. loss of employment, trauma) would be likely to promote the IDS through the HPA-axis, which would then govern affect (e.g. down-regulation of the positive affect system).
The findings of the current study support this interpretation: involuntary subordination moderated levels of both negative and positive affect during daily life. It is therefore likely that an online IDS, mediated by changes in the HPA axis and cortisol following social defeat (i.e., negative life events) and stress, is able to account for a significant proportion of the variability in both positive and negative affect evidenced in the extant literature (Myin-Germeys et al., 2000, 2003). The current study represents the first attempt to explicitly operationalise the IDS, and its role in governing affect within the daily lives of people with psychosis. It should be noted however that no standardised assessment of life events or social stressors were included in the analysis, so it cannot be said with certainty that the involuntary subordination necessarily flowed from these experiences. Indeed, voice omnipotence and social rank were able to predict involuntary subordination over the course of the week. The current thesis does however argue that explicit recognition of the role of the IDS, and its neurobiological basis, in the affective pathway to psychosis is now needed. Future work based on the stress-diathesis model should now seek to explicitly assess the frequency of life events and social stressors, and how these moderate the relationship between the IDS and daily affect.

It is also important to note that participants who were depressed had significantly higher levels of involuntary subordination. To date, this finding represents initial ecological support for the predicated role of involuntary subordination in contributing to depression in psychosis (Birchwood et al., 2000; Gilbert & Allan, 1998; Price, 1967). It should be noted however that no main effect was observed for depression group in moderating the relationship between involuntary subordination and affect. As such, it may be that even at low levels, involuntary subordination may regulate affect to the same degree as people whose IDS has escalated into
full depression: the difference across depressed vs. non-depressed groups being that their involuntary subordination is lower due to a more adaptive IDS and possibly less experience of social defeat (i.e. negative life events). Whilst their involuntary subordination may be lower, the governance and strength of association of their IDS with affect is not qualitatively different. This interpretation is largely congruent with the notion of the IDS as a mechanism innate in all people; being able to down-regulate positive affect and facilitate acceptance of defeat before full blown psychopathology (i.e. depression) is necessarily actualised. It should also be noted that there are also other factors which may have altered affect during daily life (e.g. frequency of daily stressors, cannabis use) which were not assessed in the current study (Henquet et al., 2010; Myin-Germeys & van Os, 2007).

The current findings also have important implications for contemporary models of suicidal behaviour in psychosis. Recent research has indicated that variation and intensity of daily affect predicts frequency of suicidal behaviour in individuals with an at-risk mental state for psychosis (Palmier-Claus et al., 2011). As highlighted in outlining the rationale for the current thesis, models such as the ‘cry of pain’ framework contend that external stressors promote elements of the IDS (e.g. entrapment, helplessness), after which suicidal behaviour functions as a reactionary strategy to escape the situation (Baumeister, 1990; Johnson et al., 1998; Taylor et al., 2010). The current findings add to this body of research, illustrating that intensity of daily affect within psychosis is moderated by involuntary subordination. It is therefore likely suicidal ideation and behaviour operates as the distal endpoint of this daily interaction between the IDS and affect. The extent to which this endpoint is finally reached along the spiral of the IDS is likely to depend on a number of individual differences (e.g. agenic ability to attenuate the IDS, pre-existing suicide schema, social support) (Williams, 1997; Sloman, 2008).
Methodological Issues

The current study represents the first attempt to assess the IDS using ESM in people with psychosis. Indeed, ESM research in general within psychiatric populations is still in its formative stages, and therefore has potential for continued refinement through collaborative efforts and good scientific method. Although ecologically valid, ESM studies rely solely on participant self-report which is still prone to error. It is also impossible to control individual personality differences in the interpretation of items within participants: one person’s sense of high entrapment may not necessarily directly equal another’s; entrapment being associated with subjective appraisals as opposed to objectively measurable circumstances. Likert-scales are susceptible to responses bias: whereby individual responses are largely independent of the actual item being assessed (Paulhus, 1991). The nature of ESM also means assessments must be kept to a relative minimum in order to avoid overburdening the participant and potentially decreasing compliance.

The current study did however include a basic measure of the involuntary nature of defeat, along with assessing shame – these have been salient by their absence in previous investigations purporting to tap the IDS (Sturman, 2011; Sturman & Mongrain, 2008; Zurroff et al., 2007). Indicative of this, definitions of involuntary subordination continue to vary in the literature. The current study conceptualised entrapment as a key component, which is consistent with the salient efforts to assess the IDS in the existing literature (Sturman, 2011; Sturman & Mongrain, 2008). However, it may be argued that entrapment functions more as an external mediator of the relationship between defeat and depression, and
therefore should not be included as a core component of the IDS (e.g. Taylor et al., 2011). As such, continued refinement of the exact definition of involuntary subordination and the IDS, and how best to parsimoniously assess this within people with psychosis this remains a challenge. However, the utility of capturing these assessments during daily life likely offers some balance to the weight of these limitations. Again, as in the ethological study, it should be noted that inter-rater reliability for the CDSS was not first established. Consequently, the association between depression and involuntary subordination requires replication with improved inter-rater reliability of clinical depression within psychosis. It should thus be recognised that the current results do not unequivocally support the link between the measured aspects of the IDS and depression, and caution should be used when generalising the results to the wider literature – the majority of which will have employed more reliable ratings of clinical depression. Significant differences in involuntary subordination did however emerge between the CDSS depressed vs. non-depressed groups. This would suggest that ratings of depression may have been relatively accurate; although further replication is still needed.
Chapter 6

Empirical Study 4

Deservedness of Persecution and Relationships with Command Hallucinations in Psychosis

Introduction

Chapters four and five of the current thesis indicated that appraisals of social rank may play a unique role in underpinning IDS behaviour and involuntary subordination (both in everyday life and in relation to voices) in people with psychosis. As highlighted in chapter one, a significant majority of people with psychosis who hear voices will also present with persecutory and paranoid delusions which involve great distress and place severe constraints on quality of life (Castle, Phelan, Wessley & Murray, 1994). Persecutory delusions are highly common in psychosis, thought to occur in around 50% of patients (Sartorius et al., 1986). Within people with psychosis who experience persecutory delusions, individual differences in the “deservedness” of persecution are an important area for empirical attention (Trower & Chadwick, 1995). The aim of the current section is to give an overview of the relevance of
social ranking theory in underpinning paranoia in both non-clinical and psychosis samples, along with deservedness of persecution.

**Paranoia in the General Population**

Persecutory ideation is now considered to be best understood as representing a continuum ranging from minor paranoia common in the general population, to more severe persecutory ideation often found within various types of psychopathology including psychosis (Freeman, Pugh, Antley, Slater, Bebbington & Gittins et al., 2008; Freeman, McManus, Brugha, Meltzer, Jenkins & Bebbington, 2010; Lattuada, Serretti, Cusin, Gasperinni & Smeraldi, 1999; Rawlings & Freeman, 1996). As such, the phenomenology of paranoid and persecutory ideation in non-clinical populations is argued to be tantamount to that found in psychopathology (Freeman, 2007). The highly observed incidences of paranoid and persecutory ideation in both clinical and non-clinical samples would indicate that paranoia has an inherent evolutionary basis; thought to arise from concerns regarding social rank and hierarchy. A state of mind which is attuned to possible sources of threat in the environment is advantageous for survival and status in areas of social competition (Gilbert, 1989; Morrison et al., 2005; Price, 1967).

Subordinates (i.e. those with low social rank) within social hierarchies are more likely to be attacked by dominant aggressors, and therefore their survival is contingent on having social mentalities that are highly attuned and reactive to threat (Gilbert, 1989, 2000b). Indeed, as the results of chapter four have shown, low social rank is significantly associated with an increased escalation of evolutionary-based behavioural strategies (i.e the IDS) designed to protect against this. Social ranking theory therefore views paranoia as the expression of innate beliefs
about threat and danger in the environment, which co-exist with wider evolved biopsychological mechanisms such as the attachment system (Gilbert, 1989, 2005; Freeman, Garety, Kuipers, Fowler & Bebbington, 2002).

Gilbert (2005a) argues our social lives are broadly organised by recruitment of safety vs. threat-based social mentalities. Secure attachment is associated with a sense of safeness in the environment, linked to caregivers’ ability to reduce threat-based mentalities and ameliorate negative affect. Conversely, early adverse attachment experiences (e.g. childhood neglect) mean that a sense of safeness is not available, or the system is disrupted to the point where closeness is experienced as distressing, as opposed to soothing (e.g. parental criticism, affectionless control). For these people, threat-based mentalities remain online and emotional distress has a greater chance of remaining unregulated. Consequently, interpersonal and social experience for these individuals is more likely to be imbued with perceptions of threat and a “better safe than sorry” attitude- with outcomes such as paranoia, IDS escalation and social anxiety (Gilbert et al., 2005; Gumley & Schwannauer, 2006; Michail & Birchwood, 2009; Sloman, 2008; Trower & Chadwick, 1995). As such, it is now recognised that paranoid and persecutory thoughts have a strong emotional basis (e.g. interpersonal anxieties, fear) which contribute to their maintenance and associated distress (Freeman et al., 2005; Garety & Hemsley, 1987; Johns, Cannon, Singleton, Murray, Farrell, & Brugha et al., 2004; Martin & Penn, 2001).

There is now a growing evidence base for this social ranking framework of paranoia. For example, MacBeth et al., (2008) have demonstrated that paranoia is uniquely predicted by insecure attachment schemata and markers of threat-based social mentalities (e.g.
interpersonal distancing). As such, they argue that paranoia represents the unwanted outcome of the interaction between threat-based mentalities and an insecure attachment base. Using a virtual reality paradigm, Freeman et al., (2003, 2008) have illustrated that paranoid ideas about strangers were predicted by the degree of interpersonal sensitivity (i.e. feelings of personal inadequacy). Furthermore, Pickering, Simpson and Bentall (2008) also report that working models of insecure attachment (i.e. anxiety, avoidance) were uniquely predictive of paranoia. Importantly, this relationship was also partly mediated by the perception of others as powerful (e.g. low social rank). Freeman et al., (2005) additionally report that low social rank was significantly associated with the frequency, conviction and distress associated with paranoid thoughts. Furthermore, Gilbert, Boxall, Cheung, and Irons (2005) have also demonstrated that ratings of social rank and power were significantly predictive of paranoid ideation after controlling for depression. Generally therefore, these studies provide illuminative support for the role of evolutionary based cognitive mechanisms (e.g. social mentalities, attachment schema) continuing to underpin the expression of paranoia within contemporary society.

**Persecution in Voice Hearers with Command Hallucinations**

Recent years have seen the decoupling of persecutory ideation from a traditional disease-based, biomedical context (Kraepelin, 1919). As such, assessments of the antecedents and concomitants of persecution are increasingly valued in their own right as both academically and clinically relevant (Bentall, 1990; Birchwood, 2003; Whaley, 1999). The agent and nature of persecution within psychosis is varied and complex: it will commonly pertain to beliefs about internally generated phenomena (e.g. “The voice is out to get me” “The spirits want to
sacrifice me") but also centre around more generalised suspiciousness and paranoia pertaining to external society, strangers and familiar people (e.g. “People on the street are plotting to remove my organs” “My mate David is informing MI6 about me”). As highlighted, these delusions and hallucinations remain treatment resistant in a significant proportion of individuals, and can arise due to poor adherence with medication regimes (Kane, 1996; Nose, Barbui & Tansella, 2003). Moreover, acting on highly malevolent and omnipotent voices (i.e. command hallucinations) in order to mitigate perceived threat and “obey” the voice is common: up to one third of voice hearers will attempt to resist, comply with or appease the wishes of their voice (s) (Beck-Sander, Birchwood & Chadwick, 1997; Braham et al., 2004; Cheung, Schweitzer, Crowley & Tuckwell, 1997; Goodwin, Alderson & Rosenthal, 1971; Junginger, 1990). These violent acts commonly include self-harm and/or harm to others, along with other aggressive acts (e.g. destroying property). This distinction in the content of hallucinations (i.e. harm to self vs. harm to others) is important. Support for the direct interaction between positive symptoms (e.g. severity of voices) and these types of violent behaviour is currently equivocal, indicating that it may be better explained by considering the broader emotional and social context of the individual (Appelbaum, Robbins & Monahan, 2000; Bjørkly, 2002; Milton, Amin, Singh, Harrison, Jones, & Croudace et al., 2001; Mullen, 2006; Rudnick, 1997; Swanson, Swartz, Van Dorn, Elbogen, Wagner & Rosenheck et al., 2006). For example, Fox, Gray and Lewis (2004) have demonstrated that voice hearers whose voices commanded them to self-harm had significantly lower social rank, compared to a group who heard voices telling them to harm other people. Moreover, as highlighted, current models of suicidal behaviour in psychosis argue for the significant role of involuntary subordination moderating suicidal behaviour (Johnson et al., 2008). Consequently, social rank would appear
to play a critical role in determining the violent outcome of command hallucinations, but this role is still not fully understood; a problem which is exacerbated when considering these individuals are veracious consumers of health services, more likely to be detained on treatment orders, and take high doses of antipsychotic medication to no effect (Rogers, Watt, Gray, MacCulloch & Gournay, 2002; Shawyer, McKinnon, Farhall, Trauer & Copolov, 2003). Freeman, Garety, Kuipers, Fowler, Bebbington and Dunn (2007) additionally report that 96% of people with psychosis will also take part in other less violent safety behaviours such as avoidance of situations that the person believes would be dangerous to enter (e.g. not getting on the bus). Generally, these safety behaviours aim to reduce perceived threat but paradoxically cause disconfirmation of the delusion and increased distress (i.e. “The only reason I wasn’t attacked is because I didn’t get on the bus”) (Applebaum, Robbins, & Roth, 1999; Freeman, Garety & Kuipers, 2001; Freeman et al., 2007; Hacker et al., 2008; Morrison, 1998).

As discussed in chapter one, it is clear that delusions in psychosis may be partially maintained by a number of higher-order cognitive factors. These include a bias toward jumping to conclusions and threatening stimuli, along with mentalisation (e.g. ToM) deficits (Bentall & Kaney, 1989; Corcoran et al., 1997; Garety & Freeman, 1999). These theories however largely failed to address the input of attachment schema and social ranking mentalities, which are known to underpin paranoid ideation and associated behavioural (e.g. avoidance, the IDS) and emotional responses (e.g. distress, social anxiety) in non-clinical samples. Due to its basis within social ranking theory, the relevance of these evolutionary, interpersonal factors has however been accounted for by the cognitive model of voices (Chadwick & Birchwood, 1997;
Birchwood et al., 2000, 2004). It argues that distress and the extent to which delusions are acted upon is a function of both the perceived power differential (social rank) between the individual and their hallucination, and beliefs (formed from attachment and interpersonal experiences) in the omnipotence, benevolence and malevolence of the voice (Barrowcliff & Haddock, 2010; Birchwood et al., 2004; Gilbert, 1992; Hacker et al., 2008; Junginger, 1990; Reynolds & Scragg, 2010; Trower et al., 2004). In this context, it is the nature and content of the delusional relationship which is thought to be critical, along with the perceived consequences of non-compliance (transgression) with the dominant persecutor (e.g. death).

In people with command hallucinations, it is still not understood how these important factors such as beliefs about the intent and meaning of voices (i.e. “My voice is powerful”) relate to persecutory thoughts that voice hearers have about other people (i.e. “Other people want to harm me”). Social ranking theory would suggest that the same ranking mentalities attuned to threat in the environment (i.e. persecution from others) would also be recruited for relationships with voices. For instance, Green, Garety, Freeman, Fowler, Bebbington and Dunn et al., (2006) found that the power differential individuals perceived in relation to persecutors was an important factor. As such, those with low social rank may experience greater threat from others (i.e. persecution) along with increased perceptions of powerful voices. This congruency between persecutory and voice relationships however remains to be elucidated in people with command hallucinations. Indeed, Freeman (2007) argues that the role of social ranking theory in contributing to persecution within psychosis is one of the main areas to be addressed: “It is also of note that psychological factors such as social rank, power differentials and submissive behaviours...are yet to be fully applied to paranoia and may be another important element in understanding the experience” (p. 436).
Deservedness of Persecution

Trower and Chadwick (1995) argue that paranoia arises not as a response to real threat, but instead as a function of perceived evaluations from other people. Pertinent to this is the construction of the self, which all people have a basic and innate need to construe. Stable construction of the self allows for safety-based social mentalities to help us in navigating the variety of potentially dangerous social roles we find ourselves in (Gilbert, 2000a). BM/PM theory argues that paranoia and other psychopathologies arise as defence against threats to this secure self construction and identity. In line with constructivist theory, they argue that the self is inherently unstable and therefore needs to be continually constructed from our interactions with others (Levine, 1992; Goffman, 1971; Sampson, 1993; Schore, 1994; Gergen, 1971). The successful construction of a functional and secure self is argued to comprise three factors; an objective self, the subjective self and the other. The objective self is the outward, socially constructed individual that is observed in everyday life. Its production is however centred upon being quantified by the other; argued to be the role of significant others, whom the individual is securely attached, who both recognise and value the presented self. In this framework, secure self-construction is therefore vitally contingent on having secure attachment relations (Dagnan et al., 2002). This perception of approval from the other is monitored by the subjective self agent. The subjective self chooses the actions and behaviours that aim to define an authentically presented self to the other, and subsequently appraises the feedback of the other. This positive feedback has the potential to transform the unconstructed self into the objective, constructed self. Thus if the subjective self agent appraises a failure of the other to recognise it, then this can lead to a breakdown in objective self-construction.
Social Rank & Attachment In Relation to Deservedness

This failure of the other to objectively construct a secure self may occur in two distinct ways, with ramifications for both social mentalities and internal working models of attachment:

(1) PM persecution is argued to be characterised by an *insecurely constructed* self, which is constantly seeking approval and acceptance from the other in order to realise construction of an objective self. PM individuals remain “stuck” as unconstructed because the other may be disengaged, indifferent or simply unavailable to attend to the self presented to it. For instance, this may be due to adverse early attachment experiences in which the individual was neglected. Consequently, viewed within attachment theory, the continual desire for acceptance and approval by the other means PM types are thought to be characterised by attachment anxiety (e.g. perceived acceptability/rejection from others). Trower and Chadwick (1995) argue that PM types deal with the failure in self-construction by recasting negative/absent evaluations from the other as *persecution*. This delusional renunciation results in the PM type viewing themselves as “worthy” of persecution. Through this, the other is cast down as envious and blamed for failure in objective self-construction. Consequently, PM types will see themselves as higher in social rank and morally superior compared to the other. This is exacerbated by the fact the PM has no stably constructed self and his/her attention is therefore entirely focused on the perceived inadequacies of the other.
(2) BM people are thought to have an alienated and engulfed self, who have associated extreme negative feelings of worthlessness, hopelessness, shame and depression (Gilbert & Allan, 1998). BM types see themselves specifically as alienated, as the other has taken ownership of the objective self. Whilst PM types perceive a lack of engagement from the other, BM individuals conversely perceive an over-engagement. This may stem from affectionless, parental over-involvement and control, hostile criticism and failure to meet high standards as a child (Bowlby, 1969; Melo, Taylor, & Bentall, 2006). Consequently, the objective self is not the desired self as forwarded and freely selected by the subjective self agent, but instead a foreign self defined and imposed solely by the hostile other. The BM individual will therefore view themselves as lower in social rank compared to other people, who are generally viewed as controlling, powerful and threatening. The BM type is thus characterised by attachment avoidance (Barthomolew, 1990; Bowlby, 1969). As opposed to PM types, whose delusionary persecution arises from a failure of the other to recognise them, BM persecution arises from a sense of justified punishment imposed by the other. In the same way that the PM person will cast the other down as malevolent, inferior and morally reprehensible, the BM person will view the other as superior and omnipotent and will try at all costs to conceal their negative self-representations from it (Trower & Chadwick, 1995). Importantly, the theory argues that the malevolence of the other does not change - it is the intent of the other (i.e. punishment vs. persecution) that significantly differs.
Deservedness and Command Hallucinations

As highlighted in chapter one, deservedness has been shown to fluctuate within psychosis (e.g. Melo et al., 2006). It is still unclear what psychological processes drive these fluctuations in deservedness. Social ranking theory argues that the experience of psychosis directly promotes involuntary subordination, which then further down-regulates self-esteem (Birchwood et al., 2000, 2007). It may be speculated therefore, that as the deleterious nature of psychosis, along with the unremitting, omnipotent and persecutory nature of voices on self-esteem becomes deeper entrenched, feelings of deservedness may increase.

Additionally, the cognitive model of voices would suggest that, due to the differences in social comparison and beliefs in the intent of the persecutor between PM and BM, relationships with command hallucinations may vary as a function of deservedness. This has important clinical implications for understanding how persecutory beliefs (e.g. omnipotence) and dangerous behavioural responses (e.g. appeasement and resistance) may arise or be maintained but, to date, has received little empirical attention. For instance, it would be expected that both PM and BM would view their voices as equally malevolent. However, PM voice hearers may view their malevolent voices as an unjust persecution from the other, and consequently see themselves as higher in social rank to the voice and other people. Conversely, BM voice hearers may view their malevolent voices as a justified punishment from the other. As such they would expected to be lower in social rank, and see their voices and others as powerful, omnipotent and superior. BM individuals may also feel compelled to comply with the wishes of their voices (i.e appeasement) and may also show a lesser degree of resistance, due to their purportedly subordinate nature. The theory would also indicate that BM may also be
characterised by an increase in self-harm and suicidal behaviour. Furthermore, core differences in working models of attachment are also argued to be at the heart of the psychological expression of deservedness (Trower & Chadwick, 1995). It is still not known however if these predicated differences in attachment schemata (i.e. anxiety and avoidance) meaningfully relate to the level of deservedness in people with command hallucinations. Indeed, it may be that BM voice hearers, due to their high attachment avoidance, are characterised by a fearful (negative self view, lack of trust in others) attachment style. Alternatively, the grandiose, unconstructed self of PM types will view others as inferior and therefore may be higher in dismissing (overt positive self-view, higher self-esteem) or preoccupied (sense of self worth contingent on approval from others) insecure attachment styles (Barthomolew, 1990; Bartholomew & Horowitz, 1991; Berry et al., 2007).

**Main Hypotheses**

1. **Persecution in People with Command Hallucinations.**

1.1. Those perceiving themselves to have lower social rank will perceive their voices to have greater power, and will be more likely to hold stronger persecutory beliefs.
2. Deservedness of Persecution in People with Command Hallucinations

It is the general aim to assess the prevalence of Bad Me (BM) and Poor Me (PM) paranoia in people with command hallucinations.

2.1. It is hypothesised that those in the earlier stages of their illness will have lower deservedness compared to those with a longer duration of illness, who will have more ‘bad me’ paranoia.

2.2 It is hypothesised that both PM and BM groups will experience equivalent levels of malevolence from their voices.

2.3. Additionally, compared to PM, BM voice hearers will have:

(a) Lower social rank;

(b) More powerful and omnipotent voices;

(c) Greater self-harm & suicide attempts;

(d) Greater compliance and reduced resistance to voices;

(e) BM voice hearers will be characterised by a fearful attachment style and PM voice hearers with a dismissing style
Methodology

Measures

The current study employed the PSYRATS, CDSS, SCS, BAVQ-R and RAAS which have been described in detail in the prior chapters 4 and 5 of this thesis. The additional measures administered were:

**Positive and Negative Syndrome Scale (PANSS: Kay, Fiszbein & Opler, 1987)**

The PANSS is a well established and widely used measure of psychotic symptoms in psychosis. The scale contains thirty items rated on seven-point scales, administered in the context of a clinical interview. There are three subscales: positive syndrome, negative syndrome and general psychopathology. The positive syndrome scale contains items for delusions, conceptual disorganisation, hallucinations, excitement, grandiosity, hostility and suspiciousness. The negative syndrome scale comprises ratings of blunted affect, emotional withdrawal, poor rapport, social withdrawal, abstract thinking, lack of spontaneity, and stereotyped thinking. The general syndrome scale contains items for somatic concern, anxiety, guilt feelings, tension, mannerisms, posturing, depression, motor retardation, uncooperativeness, unusual thought content, disorientation, poor attention, lack of judgement and insight, disturbance of volition, poor impulse control, preoccupation, and active social avoidance. Kay et al., (1987) report the inter-rater reliability as .90 for the scale. A copy of the scale can be found in appendix 1.
**Voice Compliance Scale (VCS; Beck-Sander, Birchwood & Chadwick, 1997)**

The VCS is an observer-rated measure of the frequency of command hallucinations, along with the level of compliance associated with each command. It involves a semi-structured interview (cognitive assessment of voices interview) in which voice commands and associated behaviours (compliance, resistance) are recorded. A key-worker or relative is then interviewed in order to corroborate the information. In the case of a discrepancy, the behaviour judged to be the worst is recorded. Behaviours are then coded from one to five based on the following criteria: (1) No appeasement or compliance present; (2) Symbolic appeasement (i.e. compliance with harmless commands) (3) Appeasement (i.e preparatory acts or gestures) (4) Partial compliance with at least one severe command (5) Full compliance with at least one severe command (i.e. slitting wrists in response to voices). The construct validity of the VCS is good for social ranking theory - its scores have been shown to significantly relate to greater distress and power of the voice (Trower et al., 2004). A copy of the measure can be found in appendix 1.

**Voice Power Differential Scale (VPD; Birchwood et al., 2000)**

The VPD contains seven items, rated on five-point scales, which aim to assess the appraisal of the relative power between voice hearer and their voice (s). Specifically, the VPD assesses the superiority, knowledge, ability to harm, respect, confidence and strength of hallucinations: “I feel much more powerful than my voice”. Development of the VPD was informed directly by ranking theory, and has previously been used to good effect within psychosis samples (e.g. Birchwood et al., 2000, 2004). Birchwood et al., (2000) report a cronbach’s alpha of 0.85, and re-test reliability of 0.8 for the scale. A copy of the scale can be found in appendix 1.
**Persecution and Deservedness Scale (PaDS; Melo et al., 2009)**

The PaDS is a recently developed twenty item measure with persecution and deservedness subscales rated on five point likert-scales. The ten item persecution subscale pertains to the individual being the target of malevolence from other people in daily life (i.e. “I believe that some people want to hurt me deliberately” “Every time I meet someone for the first time, I’m afraid they’ve already heard bad things about me.”) The ten item deservedness subscale contains ratings of the deservedness of the equivalent persecution item (i.e. “Do you feel like you deserve people to hurt you”). The PaDS has been used to good effect for assessment of persecution and associated deservedness in both normal and clinical samples (Melo et al., 2006; Udachina, Thewissen, Myin-Germeys, Fitzpatrick, O’Kane, & Bentall, 2009). Melo et al., (2009) report the internal reliability for the scale as (α = .84), with an acceptable intraclass correlation coefficient (0.38). A copy of the measure can be found in appendix 1.

**Sampling**

The inclusion criteria for the current study were an ICD-10 diagnosis of Schizophrenia or related disorder, along with the experience of auditory hallucinations. The sample was recruited from a randomised control trial aimed at assessing the efficacy of cognitive behavioural therapy (CBT) to reduce harmful compliance with command hallucinations (MRC COMMAND Trial). Participants were consented to the current study at one of three time-points; baseline, nice month post-randomisation or eighteen month post-randomisation. Their inclusion in the current study did not alter their progress in the trial. Table 6.1 reports which
control arm (i.e. CBT vs. control) and time-point of the COMMAND trial each participant in the current study was recruited from. Participant consent and information forms can be found in appendix 3.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Condition</th>
<th>Stage Recruited</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CBT</td>
<td>18 months</td>
</tr>
<tr>
<td>2</td>
<td>CBT</td>
<td>9 months</td>
</tr>
<tr>
<td>3</td>
<td>CBT</td>
<td>Baseline</td>
</tr>
<tr>
<td>4</td>
<td>CBT</td>
<td>18 months</td>
</tr>
<tr>
<td>5</td>
<td>CONTROL</td>
<td>9 months</td>
</tr>
<tr>
<td>6</td>
<td>CONTROL</td>
<td>9 months</td>
</tr>
<tr>
<td>7</td>
<td>CBT</td>
<td>9 months</td>
</tr>
<tr>
<td>8</td>
<td>CONTROL</td>
<td>18 months</td>
</tr>
<tr>
<td>9</td>
<td>CBT</td>
<td>Baseline</td>
</tr>
<tr>
<td>10</td>
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</tr>
<tr>
<td>11</td>
<td>CBT</td>
<td>Baseline</td>
</tr>
<tr>
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<td>CBT</td>
<td>9 months</td>
</tr>
<tr>
<td>13</td>
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<td>18 months</td>
</tr>
<tr>
<td>14</td>
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</tr>
<tr>
<td>15</td>
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</tr>
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</tr>
<tr>
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<td></td>
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</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
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</tr>
<tr>
<td>18</td>
<td>CONTROL</td>
<td>Baseline</td>
</tr>
<tr>
<td>19</td>
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</tr>
<tr>
<td>21</td>
<td>CONTROL</td>
<td>Baseline</td>
</tr>
<tr>
<td>22</td>
<td>CBT</td>
<td>Baseline</td>
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<tr>
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<td>9 months</td>
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<tr>
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<tr>
<td>25</td>
<td>CONTROL</td>
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<td>26</td>
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<tr>
<td>27</td>
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<td>9 months</td>
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<tr>
<td>30</td>
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<td>33</td>
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<td>Baseline</td>
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<td>34</td>
<td>CONTROL</td>
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<tr>
<td>35</td>
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</tr>
<tr>
<td>36</td>
<td>CONTROL</td>
<td>9 months</td>
</tr>
<tr>
<td>37</td>
<td>CBT</td>
<td>18 months</td>
</tr>
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</table>
Table 6.1 – Condition and time-point within COMMAND trial for study sample

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>CBT</td>
<td>Baseline</td>
</tr>
<tr>
<td>39</td>
<td>CBT</td>
<td>Baseline</td>
</tr>
<tr>
<td>40</td>
<td>CONTROL</td>
<td>9 months</td>
</tr>
</tbody>
</table>

Results

40 participants were recruited from the MRC COMMAND trial sample (n=64). Table 6.2 details the demographic and clinical information for the sample. Table 6.3 details descriptive data for the dependent measures, ordered by condition in the COMMAND trial.
Table 6.2 – Sample Demographic and Clinical Characteristics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Schizophrenia ($n = 17$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unspecified psychosis ($n = 11$)</td>
</tr>
<tr>
<td></td>
<td>Paranoid Psychosis ($n = 7$)</td>
</tr>
<tr>
<td></td>
<td>Schizoaffective disorder ($n = 5$)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>(mean yrs &amp; standard deviation)</th>
<th>(41 ± 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male ($n = 22$)</td>
<td>Female ($n = 18$)</td>
</tr>
<tr>
<td>Illness Duration</td>
<td>mean yrs &amp; standard deviation</td>
<td>(16 ± 12)</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Single ($n = 33$)</td>
<td>In a relationship/married ($n = 7$)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White British ($n = 28$)</td>
<td>Asian Pakistani ($n = 8$)</td>
</tr>
<tr>
<td></td>
<td>Black Caribbean ($n = 3$)</td>
<td>Mixed White &amp; Black Caribbean ($n = 1$)</td>
</tr>
<tr>
<td>Level of Education</td>
<td>No qualifications ($n = 23$)</td>
<td>GCSE/A-level ($n = 14$)</td>
</tr>
<tr>
<td></td>
<td>Degree level ($n = 3$)</td>
<td></td>
</tr>
<tr>
<td>Positive and Negative Syndrome Scale (PANSS)</td>
<td>Positive ($19.40 ± 5.32$)</td>
<td>Negative ($15.19 ± 5.92$)</td>
</tr>
<tr>
<td></td>
<td>General Psychopathology ($34.97 ± 10.36$)</td>
<td></td>
</tr>
<tr>
<td>Psychotic Symptom Rating Scale Auditory Hallucinations (PSYRATS-AH)</td>
<td>($30.77 ± 8.45$)</td>
<td></td>
</tr>
<tr>
<td>Calgary Depression Scale for Schizophrenia (CDSS)</td>
<td>($9.71 ± 6.62$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate to severe clinical depression (CDSS ≥ 5)</td>
<td>($n = 29$, 72.5%)</td>
</tr>
<tr>
<td>Measure</td>
<td>CBT Condition (n=21)</td>
<td>Control Condition (n = 19)</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Positive and Negative Symptom Scale (PANSS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>17.81 ± 5.31</td>
<td>21 ± 4.55</td>
</tr>
<tr>
<td>Negative</td>
<td>15.23 ± 5.77</td>
<td>15.63 ± 7.24</td>
</tr>
<tr>
<td>General</td>
<td>33.57 ± 9.78</td>
<td>36.53 ± 10.32</td>
</tr>
<tr>
<td>Psychotic Symptom Rating Scale Auditory Hallucinations (PSYRATS-AH)</td>
<td>29.57 ± 10.65</td>
<td>31.84 ± 4.81</td>
</tr>
<tr>
<td>Calgary Depression Scale for Schizophrenia (CDSS)</td>
<td>9.32 ± 7.11</td>
<td>9.46 ± 6.17</td>
</tr>
<tr>
<td>Voice Compliance Scale (VCS)</td>
<td>4.38 ± 1.43</td>
<td>4.63 ± 1.01</td>
</tr>
<tr>
<td>Social Comparison Scale (SCS)</td>
<td>26.24 ± 11.17</td>
<td>28.68 ± 10.65</td>
</tr>
<tr>
<td>Voice Power Scale (VPD)</td>
<td>22.38 ± 6.82</td>
<td>25.21 ± 6.52</td>
</tr>
<tr>
<td>Beliefs About Voices Omnipoetence (BAVQ-R)</td>
<td>10.23 ± 5.12</td>
<td>12.68 ± 3.94</td>
</tr>
<tr>
<td>Belief About Voices Malevolence (BAVQ-R)</td>
<td>10.85 ± 5.17</td>
<td>10.73 ± 5.21</td>
</tr>
<tr>
<td>Belief About Voices Resistance (BAVQ-R)</td>
<td>19.23 ± 6.78</td>
<td>20.21 ± 6.69</td>
</tr>
<tr>
<td>Belief About Voices Engagement (BAVQ-R)</td>
<td>5.23 ± 3.75</td>
<td>6.36 ± 7.08</td>
</tr>
<tr>
<td>Measure</td>
<td>Control Mean ± SD</td>
<td>CBT Mean ± SD</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Belief About Voices Benevolence (BAVQ-R)</td>
<td>2.10 ± 2.99</td>
<td>5.05 ± 5.46</td>
</tr>
<tr>
<td>Persecution (PaDS)</td>
<td>22.67 ± 11.69</td>
<td>25.74 ± 10.40</td>
</tr>
<tr>
<td>Deservedness (PaDS)</td>
<td>7.95 ± 11.74</td>
<td>9.78 ± 10.80</td>
</tr>
<tr>
<td>Harm to Others (&lt;2 years)</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Suicide Attempts (&lt;2 years)</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Harm to Self (&lt;2 years)</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 6.3 – Descriptive data for dependent measures for control and CBT groups
1. Persecution in People with Command Hallucinations

For the sample, scores of twenty represented the fiftieth percentile for the persecution subscale of the PaDS. Scores (< 20) were therefore defined as ‘Low persecution’. ‘Moderate persecution’ was defined as scores from the fiftieth to eightieth percentile (20-33). ‘High persecution’ was defined as persecution scores over or equal to the eightieth percentile (≥34). The mean PaDS persecution score was 26.12 (SD 11.06). N=9 participants were classed as highly persecuted, N=19 as moderately persecuted and N=12 were classed as having low levels of persecution.

**Hypothesis 1.1 - Those perceiving themselves to have lower social rank will perceive their voices to have greater power, and will be more likely to hold stronger persecutory beliefs**

A Pearson’s correlation analysis for the entire sample (n=40) was conducted with VPD power scores, total social comparison scale (SCS) and the persecution subscale of the PaDS. No significant relationship emerged between voice power and degree of persecution ($r = .23; p = .40$). Voice power and social rank were not significantly related ($r = -.23; p = .17$). Persecution and social rank were however significantly associated ($r = -.32; p < .05$). As such, the hypothesis was partially supported: those with lower social rank had increased perceptions of persecution from others, but not more powerful voices.
2. Deservedness of Persecution in Command Hallucinations

A person cannot judge the degree of deservedness unless they feel persecuted. Therefore, in line with the PaDs protocol, deservedness scores on the PaDS were only computed if the individual scored (> 2) on the equivalent persecution item (Melo et al., 2009). A full copy of the PaDS can be found in appendix 1.

This resulted in any individual with a total persecution score of (<20) having no deservedness score. Individuals with moderate and high persecution (n=28) were subsequently allocated into bad-me and poor-me groups. This resulted in 12 participants with low paranoia being excluded from inclusion into BM/PM groups. In line with previous applications of the PaDS, participants were allocated as BM or PM on the basis of a median split (± 5) in their deservedness scores (e.g. Pickering et al., 2008). 15 moderately and highly paranoid voice hearers were PM, whilst 13 were BM. Deservedness and persecution subscales of the PaDS were significantly correlated (r = .54; p <.01). As such, people with higher persecution also felt more deserving of it. Table 6.4 reports the mean scores on the dependent measures for BM and PM groups. All the variables met the assumptions for normality, apart from the voice compliance scale which was negatively skewed due to the nature of the clinical sample (i.e. history of harmful compliance to voices).
<table>
<thead>
<tr>
<th>Measure</th>
<th>Poor Me (n=15)</th>
<th>Bad Me (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of Illness</td>
<td>16.85 ± 13.75</td>
<td>18.61 ± 11.76</td>
</tr>
<tr>
<td>Voice Compliance Scale (VCS)</td>
<td>4.86 ± .54</td>
<td>4.92 ± .29</td>
</tr>
<tr>
<td>Social Comparison Scale (SCS)</td>
<td>29.64 ± 11.49</td>
<td>21.67 ± 9.74</td>
</tr>
<tr>
<td>Voice Power Scale (VPD)</td>
<td>21.36 ± 6.55</td>
<td>28.25 ± 3.33</td>
</tr>
<tr>
<td>Beliefs About Voices Omnirpotence (BAVQ-R)</td>
<td>9.71 ± 4.56</td>
<td>14.42 ± 3.39</td>
</tr>
<tr>
<td>Belief About Voices Malevolence (BAVQ-R)</td>
<td>10.21 ± 5.10</td>
<td>13.27 ± 3.35</td>
</tr>
<tr>
<td>Belief About Voices Resistance (BAVQ-R)</td>
<td>20 ± 5.43</td>
<td>20.82 ± 6.26</td>
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<tr>
<td>Harm to Others (&lt;2 years)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Suicide Attempts (&lt;2 years)</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Harm to Self (&lt;2 years)</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 6.4 – Scores on the dependent measures for BM and PM groups.
Hypothesis 2.1 - Those in the earlier stages of their illness will have lower deservedness compared to those with a longer duration of illness, who will have more ‘bad me’ paranoia

A one way ANOVA was conducted to address differences in duration of illness between PM and BM groups. The results indicated that duration of illness did not significantly differ across PM and BM groups ($F = 0.12, p = .73$). The continuous deservedness subscale of the PaDS also showed no significant association with duration of illness ($r = .05; p > .05$). Therefore, the hypothesis that deservedness would vary in line with duration of illness was not supported.

Hypothesis 2.2 - Both PM and BM groups will experience equivalent levels of malevolence from their voices

A one-way ANOVA was conducted to address the differences in voice malevolence across BM and PM groups. As hypothesised, voice malevolence did not significantly differ across BM and PM groups ($F = 2.2; p = .10$). The deservedness subscale also showed no significant association with malevolence ($r = .30; p > .05$). As such, both BM and PM voice hearers had equivalent perceptions of malevolent voices.

Hypotheses 2.3

(a) Social Rank

A one-way ANOVA indicated that BM voice hearers had significantly lower social rank compared to PM ($F = 3.86; p < .05$, partial eta squared = .13). Deservedness and social rank were also significantly correlated ($r = -.38; p < .05$). Therefore, the hypothesis that BM would be characterised by lower social rank compared to PM was confirmed.
(b) Voice Omnipotence & Power

It was hypothesised that voice omnipotence and power would also be higher in the BM group compared to PM. This was confirmed: a MANOVA indicated that BM voice hearers had significantly higher voice power scores ($F = 10.66; p < .01$, partial eta squared=.31) and beliefs in the omnipotence of voices ($F = 6.90; p < .05$, partial eta squared=.27). Deservedness was also significantly correlated with voice power ($r = .41; p < .01$) and omnipotence ($r = .38; p < .05$). As such, people with high deservedness experienced more powerful and omnipotent voices compared to PM voice hearers.

(c) Self Harm & Suicide Attempts

Previous suicide attempts, self-harm, and incidents of harm to others were collected by information gained from note screening and interviews with the participants. These behaviours were scored as present (previous incident in the last two years) or not present (no incident in the last two years). The hypothesis that BM would be associated with higher suicide was partially supported: a Mann-Whitney $U$ test indicated a non significant trend toward the higher rate of people who had attempted suicide in the BM group ($U = 65; p = .06$). The hypothesis that self-harm would be higher in the BM group was not confirmed: the difference in number of people who had self-harmed between the BM/PM groups was not significant ($U = 84; p = .55$).

(d) Voice Compliance & Resistance

A Mann-Whitney $U$ test indicated that compliance was not significantly higher in BM voice hearers ($U = 83.5; p = .51$). Resistance to voices was also not significantly lower in the BM
group (F=.23; p=.64). Compliance was not significantly correlated with deservedness (spearman’s rho = .14; p >.05). Deservedness and resistance also showed no significant association (r = .13; p >.05). The hypothesis that compliance and resistance to voices would be different in the BM group compared to PM was therefore not supported.

(e) Attachment

A significant majority (n=31) of the sample had an insecure attachment style, compared to n=9 with a secure attachment style (X² = 20.57; p <.01). To address the distribution in BM and PM groups, the four factor (secure, preoccupied, dismissing, fearful) model was computed from RAAS subscale scores in line with the guidelines from Collins (1999). Table 6.5 reports the numbers of participants in each attachment style in the PM and BM groups. The majority (69%) of BM participants had a fearful attachment style, whilst PM was characterised by a more even distribution of attachment style—with fearful attachment still being the most prevalent (46.7%). No statistically significant differences in attachment styles across the deservedness groups emerged. In addition to the anxiety subscale, attachment avoidance scores were also derived from scores on the RAAS in line with criteria stipulated by Collins (1996). Table 6.6 reports the correlations between deservedness scores and the avoidance and anxiety subscales of the RAAS. The greater the level of deservedness, the greater the level of both attachment anxiety and avoidance.
<table>
<thead>
<tr>
<th>Style</th>
<th>Poor Me (n=15)</th>
<th>Bad Me (n=13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Preoccupied</td>
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<td>4</td>
</tr>
<tr>
<td>Dismissing</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Fearful</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 6.5 – Distribution of attachment style in BM and PM groups

<table>
<thead>
<tr>
<th>PaDS Deservedness (r) (n=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Attachment Anxiety</td>
</tr>
<tr>
<td>Adult Attachment Avoidance</td>
</tr>
</tbody>
</table>

Table 6.6 - Pearson’s correlations between PaDS Deservedness, RAAS Anxiety and avoidance sub-scales
Discussion

Persecution in Command Hallucinations

Informed by social ranking theory, the initial hypothesis for the current study was that voice hearers who were low in social rank would perceive more persecution from others (e.g. “I worry that people want to harm me”), along with perceptions of more powerful voices. The findings partially supported this hypothesis: whilst those low in social rank felt more persecuted, they did not have more powerful voices. Thus, as predicated by social ranking theory, attention to threat is increased, and perhaps necessary in evolutionary terms, in those who feel subordinated (Michail & Birchwood, 2009; Freeman, 2007; Gilbert, 1989; 2005; Green et al., 2006). As highlighted, people who are reliant on the threat-defence system (i.e. those with low social rank) are more attuned to threats in the environment, to the detriment of mentalisation capabilities (i.e. thinking objectively about the intents of others) (Liotti & Gilbert, 2011). The current study reflects a partial examination of these social ranking processes within people who experience command hallucinations; suggesting that the proclivity for threat is reflected in increased perceptions of persecution from other people (e.g. strangers). It should be noted, this may not always be without an appreciable reason. Indeed one participant recalled being attacked in public, which then provided an evidence-base for their beliefs.

However, the findings currently offer no indication that specific threat-beliefs relating to the power of voices will follow from this threat-based social mentality. It may be that the persecution from others assessed in the current study reflects a more generalised appraisal of
malevolent intent. Although voice malevolence and omnipotence are likely in some way to be related through a core cognitive appraisal, they also differ appreciably in their structure. Indeed, interventions which have tackled beliefs in voice power and omnipotence have not always evidenced tantamount reductions in voice malevolence (Trower et al., 2004; Valmaggia, van der Gaag, Tarrier, Pijnenborg & Sloof, 2005). It is therefore possible that beliefs in the malevolence of voices would more closely match persecutory threat regarding other people within daily life. This prediction requires explicit empirical assessment. It should also be noted that the lack of a significant relationship between social rank and voice power is surprising, given the significant relationship evidenced in the work detailed in both chapters four and five – along with the existing body of literature indicating social appraisals are critical determinants of voice omnipotence and power (Birchwood et al., 2000, 2004). It may be that the current study is relatively underpowered to detect a significant relationship, and this association may become significant if using a larger sample size. Cumulatively therefore, whilst the findings support the explanatory utility of a social ranking framework in accounting for increased feelings of persecution within psychosis, the specific link between threat in relation to others and the powerful nature of voices cannot be supported.

Deservedness of Persecution in Command Hallucinations

Prevalence of Deservedness & Relationship with Duration of Illness

Within those who were moderately to highly persecuted, the findings indicated that the distribution of BM and PM persecution was approximately equal, with a slightly higher rate of
PM. This relative abundance of deservedness is supportive of the findings of a recent investigation by Morris, Milner, Trower and Peters (2011). They found that 41% (n=15) of the total sample (n=36) could be classed as BM based on scores from the “delusions” section of the Scale for Assessment of Positive Symptoms (SAPS: Andreasen, 1984). This higher rate of deservedness observed in both the current study and that of Morris et al., (2011) largely differs with regard to previous studies that have indicated BM paranoia to be rare within psychosis. Indeed, an additional aim of the current research was therefore to assess if individual variability in deservedness could be explained by duration of illness. This hypothesis that deservedness would increase in line with illness duration was not supported. Therefore, whilst the experience of psychosis may increasingly denigrate self-esteem, through time spent living with a stigmatised illness (e.g. Rooke & Birchwood, 1998), the current findings suggest that illness duration alone will not make the individual anymore deserving of their persecution. As with paranoia, it may be that deservedness fluctuates rapidly within the daily life of the individual in response to daily stressors and associated changes in affect (e.g. anxiety and self-esteem) (Freeman et al., 2002). For instance, Thewissen et al., (2011) have recently demonstrated that paranoid episodes within psychosis are directly driven by momentary decreases in self-esteem and increases in anxiety. The relationship these emotional processes have in mediating the associated deservedness of the persecutory belief is an important area for future longitudinal research.
Deservedness, Social Rank & Voice Beliefs

Within those who were moderately and highly persecuted, the current study aimed to address deservedness of persecution, and its impact on the nature of persecutory voices. This represents the first empirical attempt to apply deservedness theory as a way of framing the symptomatic relationships (i.e. beliefs) and critical responses (i.e. self-harm, resistance) to command hallucinations within psychosis. As hypothesised, the findings indicated that malevolence did not significantly differ as a function of deservedness, whilst omnipotence and voice power were significantly higher in BM voice hearers. BM voice hearers were also significantly more subordinated compared to PM (i.e. lower social rank). As such, whilst both forms of persecution within psychosis are associated with appraisals of threatening voices, the data suggest that interpretation of the threat differs (i.e. omnipotent implementation of justified punishment vs. unjustified persecution from an inferior other). It may be that these appraisals of increased voice power and omnipotence in BM individuals are recruited by social mentalities and interpersonal schema moulded by the traumatic childhood and life experiences of the BM individual (Chadwick & Birchwood, 1995; Birchwood et al., 2000, 2004).

Deservedness & Violence

Following from voice beliefs, a main area of research for the current study was also to assess if behavioural outcomes in relation to command hallucinations could be explained by individual differences in deservedness of persecution. As such, it was hypothesised that self-harm and suicidal behaviour would be higher in the BM group. This hypothesis was partially supported
by a non-significant trend toward increased suicide attempts in the last two years in the BM group. Again, with regard to power, it is possible this relationship would become significant if the sample size was increased. In line with contemporary theories of suicidal behaviour in psychosis (i.e. the ‘Cry of Pain’ model) it is likely the increased subordinated status of the BM individuals may account for the increased incidences of suicidal behaviour (Iqbal, Birchwood, Chadwick & Trower, 2000; Fox et al., 2004; Johnson, 1997; Taylor et al., 2010). This may then be exacerbated by the greater omnipotence and power of the BM hallucinators commands: as the cognitive model of voices argues, harmful compliance with voices (i.e. suicide) increases as a function of voice omnipotence and power.

Incidences of self-harm, independent from suicide, over the last two years were not significantly higher in the BM group. The hypothesis that compliance would be higher, and resistance to voices lower, in BM was also not supported. Due to the nature of the sample (i.e. recruited from a study aiming to reduce harmful compliance to voices) compliance was high and negatively skewed. As such, assessment of the relationship between measures of voice compliance, resistance and deservedness may require a sample with increased variability in compliance and resistance to voices, in order to assess the relationship more clearly. With regard to self-harm, it may be that the relationship with deservedness is accounted for by other factors such as substance abuse which were not assessed in the current study. For example, it is now well acknowledged that substance use (e.g. alcohol, cannabis) is associated with increases in self-harm for people experiencing psychosis (Hawton, Sutton, Haw, Sinclair, & Deeks, 2005; Hawton, Rodham, Evans, & Weatherall, 2002). Indeed, Melo and Bentall (2010) have also recently demonstrated that alcohol/drug use and levels of deservedness are
significantly related. It should also be highlighted that using records from the last two years may be potentially unreliable if deservedness fluctuates over time. For example, hypothetically, individuals who were PM in the current study may have been BM when they harmed themselves.

Deservedness & Working Models of Adult Attachment

The final area of research aimed to assess the relationship between deservedness and working models of adult attachment styles. The BM group was characterised by a fearful attachment style – supporting the hypothesis that deservedness is associated with models of avoidant attachment (e.g. negative view of others). However, deservedness was also positively associated with attachment anxiety. Interestingly, this association has also been reported in a non-clinical sample (Pickering et al., 2008). Consequently, the observed positive relationship between deservedness and attachment anxiety is likely to be mediated by other factors: one potential variable being self-esteem (Bentall et al., 2001). Attachment anxiety, due to its links with self-worth, has been shown to be specifically predictive of low self-esteem (Bentall et al., 2008; Murray, Holmes, Griffin, Bellavia & Rose, 2001; Pickering et al., 2008). The lower levels of attachment anxiety than expected in the PM group may therefore have been due to them having relatively higher levels of self-esteem compared to the BM participants (Smith, Freeman & Kuipers, 2005). This interpretation generally supports the contention that deservedness may specifically increase when self-esteem is low (Bentall et al., 2008; Chadwick et al., 2005; Trower & Chadwick, 1995).
Methodological Issues

There are a number of limitations to the current study. The sample was drawn from a larger study which aimed to assess the efficacy of a CBTp intervention to reduce harmful compliance with hallucinations. This form of social ranking CBTp is still rare, and, at the time of writing, not available on the NHS. By virtue of this, the sample had higher than average levels of compliance to voices (this made assessment of differences in compliance and resistance difficult) and contained participants who had received a very targeted form of CBTp - that the wider population of people with psychosis will have likely not been exposed to. Participants were drawn from control and CBT arms of the trial, and at differing time points in their trial progress (e.g. baseline, 9 months, 18 months). As such, this variability in sampling means that some participants will have had therapy to reduce the power of voices, and others not. Whilst we were interested in a purely cross-sectional analysis of the relationship between deservedness and voice variables, it remains that the exposure of some participants to CBTp represents a significant confounding factor on some of the main dependent variables. It would perhaps have been wiser to assess how exposure to CBT may have reduced deservedness in line with reductions in voice power, or if therapy promoted self-esteem which may have then mediated decreases in deservedness. The role of Hawthorne effects in decreasing deservedness would also have been of interest to assess. Consequently, the nature of both the clinical sample and sampling strategy, means that generalisation of the results to people with psychosis beyond the current thesis should be made with a high degree of caution. What follows from these caveats is the recommendation that the study be replicated in a more representative sample drawn from the national population, and not from a sample used for a clinical trial of CBTp which targeted some of the main outcome variables.
The study was also underpowered, with the effect sizes for the significant relationships being relatively small. The findings preclude any analysis of the causality of deservedness in the genesis of persecutory hallucinations, along with how deservedness may vary over time. If rapid shifts in deservedness are observed over time, then longitudinal analysis (i.e. ESM) is vital to assess the dimensional nature of the construct within psychosis. The nature of the analysis also means that causal relationships between deservedness and voice relationships were unable to be drawn. It would be of interest in future work to attempt to chart the nature of deservedness longitudinally, and how this varies in line with voice beliefs and power - the factors that underpin the potentially phasic nature of deservedness are still largely unknown.

Further, a measure of participant self-esteem was not included. This is important, as it is argued that attachment anxiety in BM may be due to lower self-esteem in this group. As such, this explanation must be interpreted with caution.
Chapter 7

Conclusions and Implications for Psychological Treatment

Summary of Main Findings

The current thesis has aimed to extend the application of social ranking theory to the understanding of auditory hallucinations and persecutory delusions in psychosis. This was largely represented within the current work by the attempts to explicitly assess important elements of the IDS; it is the core bio-behavioural mechanism implemented by social ranking theory, yet paradoxically has suffered from a lack of assessment within the day to day lives of people with psychosis. This was achieved by using two main ecological routes which mirror the core structure of the IDS: behavioural and cognitive. The assessment of the IDS was however incomplete and subject to a number of methodological issues.

In the first analogue study, the salient finding arising from the attempted ethological analysis of the IDS was that important components of its behavioural structure (i.e. flight) were significantly escalated during a shame challenge in participants with higher levels of shame proneness and low social rank. Low social rank also related to increased reactivity of this aspect of IDS behaviour when shame challenged. This was argued to provide initial, more ecologically valid, support for the relationship between low social rank and active components of the IDS, which has been previously limited to questionnaire based assessments. In
participants with psychosis, lower social status and a greater belief in omnipotent voices correlated with greater levels of components of IDS behaviour (e.g. flight) when talking about voices. Moreover, it was beliefs in the omnipotence of voices that predicted increases in flight behaviour when talking about voices, compared to talking about the more neutral topics of everyday life. Consequently, the data are tentatively suggestive that people with more omnipotent voices are likely to have an activated IDS, especially in contexts where their social rank and sense of shame may be volatile (e.g. having to talk their illness). However, this is currently only a prediction made from the ethological studies, and further more robust operationalisation of the IDS, and its relationship with measures of clinical depression, are needed.

In chapter five, the ESM study found that low social rank and voice omnipotence predicted important cognitive components of the IDS (i.e involuntary subordination) over one week of everyday life. These cognitive elements of the IDS were also found to predict levels of both negative and positive affect during the daily life of people with psychosis. Interestingly, this relationship between the IDS and daily affect was no stronger in voice hearers who were also clinically depressed. In summary, in line with social rank theory, the results of this study indicate that some important cognitive elements of the IDS and the subordinate social schema which are recruited for social and voice relations may be significantly entwined. Again, the study did not aim to include a complete measure of the IDS, so any suggested links with the full IDS construct beyond the current thesis must be interpreted with caution.

The current thesis also paid attention to persecutory thoughts in people with command hallucinations. The utility of social ranking theory was partially demonstrated, by the indication
that the appraisal of low social rank significantly increased perceptions of persecution from others. Compliance with voices did not differ as a function of deservedness. However, participants high in deservedness of persecution had significantly lower social rank, and greater beliefs in the power and omnipotence of voices compared to voice hearers with lower levels of deservedness.

**Implications for the Cognitive Model of Voices**

The results of the studies contained in the current thesis have some implications for the cognitive model of voices. It should be noted that these recommendations are preliminary, and currently hypothetical; the current thesis recognises that its assessment of the IDS may have been an ecologically valid improvement over extant work, but was by no means a full assessment of the construct; subject to a number of appreciable methodological caveats. With this in mind, this thesis recommends that the function of important elements of the IDS (i.e. flight behaviour, involuntary subordination) *could potentially* be incorporated into the cognitive model of voices. Whilst it is currently believed that voice relationships mirror social relationships, the current thesis has extended this core association into the more socially dynamic everyday life and relationships of the individual. Moreover, it has demonstrated that these appraisals of voice and social subordination are heavily associated with important elements of the IDS. The nature of the IDS that flows from these subordinate social mentalities could be recognised by future empirical investigations which aim to test the predictions of the model. More robust and cogent assessment of the IDS, and its relationship with social/voice cognition, is however needed.
The potential governance of positive and negative affect by involuntary subordination should also now be acknowledged. At the present time, the cognitive model argues that affect is largely based on the power differential between the voice hearer and their voice. The current thesis argues that, while this is a key association, it should be recognised that affect may also be regulated by some of the active components of an online IDS (e.g. feelings of defeat, entrapment and shame) which arise from, and may serve to maintain, these subordinate relationships. More reliable measures of depression than employed in the current thesis are however needed, to more fully corroborate this potential association.

Affective variability has also been included as the key dependent variable in the extant literature arguing for the affective pathway to psychosis (e.g. Myin-Germeys & Van Os, 2007). The current thesis recommends that work within this area could now recognise that the IDS is likely to be the salient mechanism which arises from noxious environmental stressors (e.g. negative life events, trauma) and its role in governing affective reactions to events during daily life. Future directions in this area could begin to reliably correlate the physiological changes arising from this heightened sensitivity to stress (i.e. HPA axis activation) to the behavioural (i.e. arrested flight) and cognitive (i.e. involuntary subordination) elements of the IDS in people with psychosis. This could potentially involve physiological and behavioural markers of cortisol and the IDS being taken at baseline, with a week of ESM subsequently used to assess involuntary subordination.

The methodological orientation toward ecological framing of the cognitive model started by the current thesis could also now be continued, as this is the critical and natural step that empirical work must now take in order to improve our understanding of the relationship
between voice relationships and social processes. The wide variability of social rank and the IDS within daily life means that ecological and longitudinal assessments are vital. This will potentially involve many applications of the ESM in order to corroborate the relationship between the IDS and social mentalities, along with how the IDS varies across different situational contexts (i.e. being at home vs. work).

Whilst no relationship with voice compliance was observed, deservedness of persecution emerged as a potential governor of social mentalities pertaining to voices and other people. It is therefore concluded that deservedness of persecution could potentially be included into the cognitive model of voices, as a governor of subordinate social mentalities. Further work with different psychosis samples is however needed. Deservedness may also emerge as a significant risk factor for the expression of powerful and omnipotent voices; the current thesis suggests that possession of deservedness schema may infer a cognitive vulnerability for voices to become realised as omnipotent and powerful once frank positive symptoms are evident. A future empirical direction could assess the nature of deservedness within ultra high risk and prodromal samples. It is also theoretically plausible that those with higher deservedness may have a stronger and more escalated IDS due to their increased subordination. Testing of this explicit relationship is a welcome avenue of exploration for future empirical work.

**Clinical Implications**

By emphasising the salient role of cognitive appraisals (i.e. voice beliefs) in mediation of dysfunctional affect and behaviour, CBTp informed by social ranking theory aims to undermine the ability of powerful and omnipotent voices to threaten the individual, along with helping the client gain a sense of their own power. The studies contained in the current thesis all
focused on these core appraisals of voice power and omnipotence that are currently addressed in CBTp. It should be noted however that voice omnipotence in the ethological study was perhaps lower than expected. Notwithstanding this, the observed association between these appraisals of voice power and omnipotence, with both the IDS and deservedness of persecution, may have the potential to inform current therapeutic protocols. It is important to highlight that all the studies contained within the current thesis recruited participants with a relatively chronic experience of psychosis and positive symptoms. As such, this chapter aims to highlight possible interventions to reduce distress and beliefs associated with symptoms, but not reduce symptoms per se. Again, these proposed clinical implications are hypothetical and should be interpreted with caution; in line with the only partial, and methodologically constrained, assessment of the IDS in the current thesis.

The IDS & CBTp

To date, CBTp focuses on testing and potentially undermining core voice beliefs (i.e. power and omnipotence) through collaborative empiricism and Socratic questioning (i.e. “What evidence do you have of the voices power?”), with the efficacy of interventions resting on reductions in self-reported measures of voice beliefs (e.g. the BAVQ-R) (Chadwick et al., 2000; Trower et al., 2004). The current thesis suggests that these same beliefs are moderated by factors that operate and fluctuate during daily life (e.g. involuntary subordination, low social rank during social interactions). As such, CBTp that focuses solely on appraisals of power during therapy sessions may find that when patients return to everyday life, the IDS may still be regulating their affect and voice beliefs. Indeed, current CBTp trials have produced mixed results regarding the reduction of negative affect, suggesting that reductions in voice beliefs
alone may not be sufficient to completely ameliorate distress (Chadwick et al., 2000; Trower et al., 2004). The ESM work detailed in chapter five has however indicated that omnipotent voices beliefs as measured on the BAVQ-R do moderate the same appraisals operational during daily life. As such, CBTp protocols that continue to focus on the omnipotence scale of the BAVQ-R as an outcome measure are not invalid for reducing appraisals of voice power and omnipotence during daily life. CBTp may additionally benefit from introduction of diary methods for keeping track of social rank appraisals made during daily life, and how these may improve following sessions to reduce voice power and omnipotence. For instance, based on the ESM, the “Psymate” has recently been developed for ecological monitoring of positive symptoms (Myin-Germeys, Birchwood & Kwapi, 2011). The current thesis thus contends that the introduction of ecological methodologies may be an important area for future implementation and validation of CBTp.

This would potentially allow clinicians to track how the therapeutic targeting of voice appraisals over relatively brief sessions of therapy are carried over into, and possibly “undone”, during social and situational events during daily life. Theoretically, outcomes may also be improved by targeting low social rank directly, through interventions designed to promote self-esteem and positive social comparisons; which have already been shown to be efficacious in reducing the potential for the more global experience of psychotic illness to infer social loss and entrapment in first episode individuals (Gumley et al., 2006). Further, environmental modification of adverse social contexts where social rank is likely to be low, may also help to reduce voice omnipotence. This would hypothetically involve an initial phase of ESM upon commencement of therapy, in order to identify the structure and content of the individual’s social world. After this, the main contexts in which social inferiority is experienced
could be identified; the aim of which would be promotion of a healthier social climate, where social rank is less likely to be denigrated.

It might be important in the future for CBTp that aims to focus on omnipotence and power appraisals, to also recognise that these specific beliefs could potentially be maintained by both the cognitive and behavioural components of the IDS. At the time of writing, this explicit identification and targeted reduction of an active IDS within psychosis has yet to be fully introduced into the nascent evidence base of social ranking-based CBTp, although may be broadly representative of a cognitive interpersonal therapy (CIT) approach. This CIT framework highlights aspects of involuntary subordination (e.g. defeat, entrapment) in psychosis arising from attachment and interpersonal experience (Gumley, 2007). The current thesis argues that the key aspect for voice hearers is the notion that their IDS may be internally escalated, and therefore may have the potential to be internally de-escalated by altering the psychological processes involved in its maintenance (e.g. beliefs of defeat, power and subordination). Through this, the negative cycle, which sees the IDS and voice beliefs reciprocally exacerbating each other, may be broken. Of course, at this stage this therapeutic implication is purely theoretical and wider, robust assessment of the IDS, and its potential to exert an ameliorative effect on voice cognition, is needed.

It is generally advocated that the best way to attenuate an escalated IDS is to accept defeat and move on (Sloman, 2008; Sloman et al., 2003). In psychosis, initial steps in this direction are likely to be achieved with the individual being guided by the clinician to appreciate how aspects of the IDS (e.g. feeling defeated and trapped) may have come to define their thoughts and feelings about voices. The current thesis therefore suggests that CBTp protocols could
begin to incorporate clinician-facilitated acceptance of defeat in voice hearers who have an escalated IDS.

Whilst this may be viable when the defeat has come from external transient sources (e.g. being fired from job), it is more complicated when the individual is essentially in competition with internally generated phenomena (e.g. hallucinations). For voice hearers, escape will often be blocked and the IDS is therefore more likely to remain active. For instance, for individuals who have been treatment-resistant for many years, it is unlikely that the source of defeat and failure (i.e. internal voice activity) may ever be completely abolished. As such, it is necessary for CBTp to emphasise issues of control and power over symptoms, whilst recognising and being honest with the client that voices will be likely to remain present post-therapy.

This proposed and hypothetical curtailment of the IDS is also likely to be contingent on the insight of the client into their illness, along with their capacity for mentalisation. On a general level, therapeutic alliance is predicted by mentalisation ability in people with schizophrenia (Davis, Eicher & Lysaker, 2011). CBTp protocols which focus on attenuation of the IDS could therefore include an initial metacognitive assessment, after which the content of therapy is tailored to the clients’ reflective capacity (Lysaker, Buck, Carcione, Procacci, Salvatore & Nicolo, 2011). Moreover, increased insight pertaining to the experience of psychosis is associated with lower social rank and greater distress (Birchwood et al., 2000; MacBeth et al., 2011; McLeod, Coertze & Moore, 2009).

Therefore, although acceptance of defeat and entrapment from omnipotent voices may be initially painful, it may be that this is the initial step needed to ultimately attenuate their IDS.
response by allowing the individual to focus on more realistic goals and reframe their experience of hallucinations (e.g. not competing against the voice, but functioning with it). Current psychological therapies which may facilitate this acceptance of defeat include Acceptance and Commitment Therapy (ACT; Hayes & Pierson, 2005). As a ‘third wave’ therapy, ACT seeks to address the relationship between the individual and their symptoms and promote psychological flexibility. Applied to psychosis, Chadwick (2006) has taken these principles of ACT and formulated Person-Based Cognitive Therapy (PBCT). PBCT aims to facilitate acceptance of the uncontrollable aspect of the voice hearing experience through methods such as mindfulness. Dannahy, Hayward, Strauss, Turton, Harding and Chadwick (2011) have recently reported data from a trial of PBCT, which was shown to significantly reduce voice related distress, control and dependence. Compassionate mind therapy (CMT; Gilbert, 2009) may also be sympathetic to attenuation of the IDS. Based on the safety vs. defence systems, CMT aims to reduce internal criticism and promote positive affect through self-compassion and acceptance. Mayhew and Gilbert (2006) report that CMT with psychotic voice hearers was able to significantly reduce beliefs in the malevolent and persecutory nature of voices. Reductions in depression, anxiety and interpersonal sensitivity were also observed. The degree to which this re-alignment of the voice hearing relationship through interventions such as CMT and PBCT may also attenuate the IDS response to omnipotent voices, is a salient area for future empirical testing.

Failure to accept and modify the voice hearing experience may broadly relate to what McGlashan et al., (1975) have termed “sealing-over”, whereby individuals maintain an avoidant style of coping with psychosis and fail to psychologically integrate the experience. Indeed, more globally, individuals with higher reflective function show better social and
functional recovery from psychosis, and allow themselves to pass through the stages of psychological adjustment arising from social loss (e.g. angry protest, avoidance, gradual reappraisal) (Braehler & Schwannauer, 2011; Gumley & Schwannauer, 2006; Lysaker, DiMaggio, Carcione, Procacci, Buck & Davies et al., 2010). The difficulty in accepting defeat may also be akin to what Leahy (2000, 2004) has described as sunk-cost commitments, whereby large investment of previous behaviours and choices render people resistant to change and “waste” their previous efforts. Within voice hearers, this may relate to many years spent fighting and unsuccessfully trying to banish their voices. Consequently, it would be important to frame acceptance of defeat not as an additional failure which is incongruent with their previous interpersonal struggles, but as the ultimate culmination of their previous plights and a positive step forward. In conclusion therefore, the degree to which voice hearers are amenable to clinician-led acceptance of defeat, ergo attenuation of the IDS, could potentially be an important, but not complete, determinant of improved outcomes in psychosis.

Psychoeducation regarding the evolutionary basis of behaviour may also help clients to normalise and positively contextualise their IDS responses (i.e. the behaviours and thoughts you are exhibiting are found in everybody, automatic and designed to keep you safe). Indeed, clients may question the reasons for their involuntary subordination to others; an IDS-informed psychoeducation intervention may help to address these ego-dystonic feelings. Again, this is akin to relative, non-pathological view that the cognitive model of voices holds on maintenance of hallucinatory experience. Care must be taken however not to over emphasise the involuntary aspect of the mechanism, as this may lead to clients questioning what they can do to reduce it. As such, the issue of personal responsibility for reduction of the IDS and restructuring of voice beliefs must be paramount. Further, Meaden and Hacker (2011) argue
that clinical staff have a tendency to focus on the *aesthetics* of behaviour as opposed to its root cause. As such, staff may also benefit from education regarding the reasons underpinning the avoidant and non-affiliative style of an active IDS in their clients (i.e. the client is not being difficult and non-communicative through choice, but is displaying an automatic and involuntary behavioural response that is normal when considering their beliefs about their psychotic symptoms).

**Deservedness and CBTp**

Tackling the deservedness of voice hearers may also have some important implications for CBTp. Again, the deservedness study employed in the current thesis used a very specific sample of high compliance command hallucinators - some of which had been exposed to CBTp. The proposed implications should therefore be interpreted with this limitation in mind.

Deservedness theory allows for the content of persecutory delusions to be seen not as an ego-defence (which has negative connotations) but as a more natural function of the negative beliefs, feelings and life experiences of the individual (Bentall & Kaney, 1996; Freeman & Garety, 2000). As in the general application of attachment theory to treatment within psychosis, this allows for a more sympathetic framing of the patients’ difficulties (Barrowclough, Haddock, Lowens, Conner, Pidliswiyi & Tracey, 2001; Berry et al., 2008). The findings of the current study would suggest that targeted reduction in the high deservedness of BM voice hearers may reduce the omnipotent and powerful nature of voices.

This will involve exploring incidences of disruption to the attachment system, and how omnipotent voices may have come to be personified as salient persecutors from the individual’s life history (Chadwick, Sambrooke, Rasch & Davies, 2000). Additionally, it may be
that BM voice hearers have a more escalated IDS (i.e. increased subordination and distress). Future work could continue to assess how the IDS and deservedness co-exist, and any causal relationship between them. Consequently, the aforementioned suggestion that reduction of the IDS take place within CBTp, may also be beneficial in moderating deservedness.

Limitations

The current thesis has attempted to operationalise the IDS in participants with psychosis for the first time. The exact behavioural and cognitive definition of the IDS needs further refinement; the current work has aimed to include the behavioural and cognitive variables most often argued in the literature to represent the IDS. There does however remain no fixed and standardised definition of the IDS.

The current work has conceptualised the IDS in a rudimentary manner within the context of the ECSI. Studies 1 and 2 derived the IDSb variable, which was a composite consisting of the flight, displacement and submission categories of the ECSI. This selection was based on the previous literature that has described the IDS, and therefore was based solely on face validity in the absence of any robust methodological process (i.e. factor analysis). As such, other ECSI categories which match the description of the IDS in the literature (e.g. assertion, affiliation) may also have been potentially selected. Indeed, talking about voices did significantly modulate levels of the ECSI assertion variable. If the ECSI is to be employed for IDS assessment in the future, then these other potentially valid and important categories should be considered. As it stands, the failure to include these other potentially important IDS behaviours into the IDSb variable represents a pertinent limitation on the methodological quality of the current thesis.
It should also be additionally noted that, in the analogue study, IDSb categories did not show any relationship with the validated measures of defeat and entrapment. Moreover, the challenge interviews did not promote a statistically significant increase in submission or displacement (e.g. 2/3 of the IDSb variable) - with larger changes in flight behaviour accounting for the significant change in IDSb across shame and voice challenge conditions. Consequently, it could be argued that the IDSb variable was not a valid measure of the IDS, and the generalisibility of the current results are limited by these methodological issues. It is likely that the flight category taps an important behavioural component of the IDS, with the specific ECSI categories of submission and displacement categories being more extraneous to the construct. As such, future work is needed to employ more robust statistical techniques (e.g. principal components analysis, path modelling) to define the behavioural profile of the IDS with greater methodological validity. The behavioural basis of the IDS therefore remains to be contextualised within the context of increased incidences of defeat and entrapment; this requires further and explicit assessment in a sample with higher levels of these key aspects of involuntary subordination. The failure of the current work to be able to associate IDS behaviour with these key aspects of involuntary subordination is a salient limitation. The ECSI coding system may also require further specification on order to more accurately assess fluctuations in IDS behaviour. For example, there are now a variety of computer-based behavioural coding tools (e.g. The Observer XT ®) which may more accurately assess IDS behaviour, compared to the ‘pen and paper’ method of the ECSI.

It should also be noted that the interviews designed to engage the IDS in both the analogue and voice studies used a closed style of questions, having been directly taken from standardised questionnaires. Using more open ended questions may have allowed for a more
rich assessment of the experience of shame and voice hearing; open questions allowing the participants to talk for longer and in greater depth about their experiences. This could have also potentially allowed for a qualitative analysis (e.g. grounded theory) of the voice and shame narratives, which would have been of interest. Furthermore, a post-interview manipulation check, whereby an assessment of participant’s beliefs regarding how their interpersonal behaviour may have been assessed and recorded across the paradigm (i.e. “I believe I was expected to behave differently when talking about voices”) would have greatly improved the robustness of the experimental manipulation, and allowed for any demand characteristics to be controlled for. A basic check of the degree of participant engagement in the interview conditions could also have been introduced (e.g. “I talked fully and truthfully about my previous shameful experiences” “There were some shameful experiences I did not disclose”). Checks on the participant’s views on the interpersonal behaviour of the researcher across the conditions could also have been made (e.g. “The researcher seemed equally interested in both my neutral and shameful experiences”). Moreover, it would have been of interest to assess if exposure to the challenge condition questions increased within-subject scores on existing validated measures of the manipulated variables (e.g. Test of Self-Conscious Affect: Tangney et al., 1992). These proposed checks would have greatly bolstered the methodological rigour of the challenge interview paradigm, and helped to support the contention that it is was talking about shame and voices that directly drove the observed changes in behaviour, as opposed to the influence of extraneous variables that were not assessed in the current work.

In terms of the clinical implications, application of IDS reduction to existing therapies such as CMT and PBCT is currently only theoretical. Attempts to attenuate the IDS would have to be
sympathetic to the other pertinent aims of therapy. Theoretically, it is also hard to disentangle the relationship between subordinate social mentalities and the active elements of the IDS.

The current work has found beliefs in voice omnipotence in particular to predict some elements of IDS behaviour and cognition. It may be however that an IDS initially active in response to other defeats and failures in the voice hearers life (e.g. abuse, discrimination, unemployment), not merely the experience of voices, then makes beliefs in voice omnipotence more likely. In this context, it remains unclear ‘what comes first’. Unpacking this cyclical relationship between the IDS and social mentalities is a welcome avenue for future research.

It should also be noted that the current research has defined voice relationships solely in terms of BAVQ-R factors such as malevolence and omnipotence. Whilst these are valid, social relating is a complex dynamic with many other facets. Indeed, voice hearers can often struggle to solely conceptualise their voices within domains such as power and omnipotence. To address this, measures such as the recently developed Voice and You measure (VAY; Hayward, Denney, Vaughn & Fowler, 2008) aim to define inter-relating with voices across wider interpersonal domains such as closeness and dependence. Recent research has also indicated that other relational factors such as the expressed emotion of dominant voices can elevate distress (Connor & Birchwood, 2011). The relationship between these salient, wider aspects of social relating and the IDS requires explicit empirical assessment.

With regard to the deservedness of persecution, again this was the first empirical attempt to apply the framework to voice hearers. Due to the nature of the sample used, compliance with voices did not differ across deservedness groups. As highlighted, the nature of the sample also provided a large confounding variable, and limits wider applicability of the results.
Consequently, whilst deservedness may play a potentially important role within the cognitive model, further empirical work, with a different sample, is needed in order to fully integrate it into the model. It is hoped that doing so would ultimately function to inform interventions that would reduce distress and improve quality of life for individuals and their families - the desired outcomes with which this thesis concludes.
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Appendix 1 - Measures

**ECSI Behaviour patterns**

1. Look at. *Looking at the interviewer.*

2. Head to side. *The head is tilted to one side.*


4. Flash. *A quick raising and lowering of the eyebrows.*

5. Raise. *The eyebrows are raised and kept up for some time.*

6. Smile. *The lip corners are drawn back and up.*


8. Lips in. *The lips are drawn slightly in and pressed together.*

9. Mouth corners back. *The corners of the mouth are drawn back but not raised as in smile.*

10. Look away. *Looking away from the interviewer.*

11. Look down. *Looking down at feet, lap or floor.*

12. Shut. *The eyes are closed.*

13. Chin. *The chin is drawn in towards the chest.*

14. Crouch. *The body is bent right forward till the head is near the knees.*

15. Still. *A sudden cessation of movement, a freezing.*


17. Thrust. *A sharp forward movement of the head towards the
18. Lean forward. *Leaning forward from the hips towards the interviewer.*

19. Frown. *The eyebrows are drawn together and lowered at the centre.*

20. Shrug. *The shoulders are raised and dropped again.*

21. Small mouth. *The lip corners are brought towards each other so that the mouth looks small.*

22. Wrinkle. *A wrinkling of the skin on the bridge of the nose.*

23. Gesture. *Variable hand and arm movements used during speech.*

24. Groom. *The fingers are passed through the hair in a combing movement.*

25. Hand-face. *Hand(s) in contact with the face.*

26. Hand-mouth. *Hand(s) in contact with the mouth.*

27. Scratch. *The fingernails are used to scratch part of the body, frequently the head.*

28. Yawn. *The mouth opens widely, roundly and fairly slowly, closing more swiftly. Mouth movement is accompanied by a deep breath and often closing of the eyes and lowering of the brows.*

29. Fumble. *Twisting and fiddling finger movements, with wedding ring, handkerchief, other hand, etc.*

30. Twist mouth. *The lips are closed, pushed forward and twisted to one side.*
31. Lick lips. *The tongue is passed over the lips.*

32. Bite lips. *One lip, usually the lower, is drawn into the mouth and held between the teeth.*

33. Relax. *An obvious loosening of muscle tension so that the whole body relaxes in the chair.*

34. Settle. *Adjusting movement into a more comfortable posture in the chair.*

35. Fold arms. *The arms are folded across the chest.*

36. Laugh. *The mouth corners are drawn up and out, remaining pointed, the lips parting to reveal some of the upper and lower teeth.*

37. Neutral face. *A face without expression and without particular muscular tension. It is the basic awake face.*

**Scoring instructions**

Item 1 – LOOK AT. Add the items 2–6 to get AFFILIATION; add the items 7–9 to get SUBMISSION; add the items 2–9 to get PROSOCIAL; add the items 10–15 to get FLIGHT; add the items 16–22 to get ASSERTION; item 23 to get GESTURE; add the items 24–32 to get DISPLACEMENT; add the items 33–37 to get RELAXATION
Analogue Study Shame Interview

[Shame]

Have you felt ashamed of any of your personal habits?
Have you worried about what other people think of any of your personal habits?
Have you tried to cover up or conceal any of your personal habits?
Have you felt ashamed of your manner with others?
Have you worried about what other people think of your manner with others?
Have you avoided people because of your manner?
Have you felt ashamed of the sort of person you are?
Have you worried about what other people think of the sort of person you are?
Have you tried to conceal from others the sort of person you are?
Have you felt ashamed of your ability to do things?
Have you worried about what other people think of your ability to do things?
Have you avoided people because of your inability to do things?
Do you feel ashamed when you do something wrong?
Have you worried about what other people think of you when you do something wrong?
Have you tried to cover up or conceal things you felt ashamed of having done?
Have you felt ashamed when you said something stupid?
Have you worried about what other people think of you when you said something stupid?
Have you avoided contact with anyone who knew you said something stupid?
Have you felt ashamed when you failed at something which was important to you?
Have you worried about what other people think or you when you fail?
Have you avoided people who have seen you fail?

Have you felt ashamed of your body or any part of it?

Have you worried about what other people think or your appearance?

Have you avoided looking at yourself in the mirror?

Have you wanted to hide or conceal your body or any part of it?

Have you felt ashamed of your behaviours around eating?

Have you worried about what other people think of your behaviours around eating?

Have you tried to hide or conceal your behaviours around eating?

[everyday life]

What time do you usually wake up?

Can you describe you routine in the morning during the week?

Does this differ at the weekend?

What do you usually eat for breakfast during the week?

What do you usually eat for breakfast at the weekend?

Lunch – where and when do you usually have it and what do you have?

How long does lunch usually last?

Can you describe an average afternoon during the week?

How often would you do grocery shopping during the week?

Does this differ at the weekend?

Dinner – where and when do you usually have it and what do you like to eat for tea?

Would this be likely to change at the weekend?

Can you describe an average weekday evening for yourself please?

Describe an average weekend evening?

How often do you take exercise during the week?
How often do you take exercise at the weekend?

Do you pursue many hobbies at the weekend?

Are you often bored?

What time would you usually go to bed during the week?

What time would you usually go to bed at the weekend?

How many hours sleep do you have on average?
**Defeat Scale (Gilbert & Allan, 1998).**

**THE DEFEAT SCALE (D SCALE)**

Below is a series of statements, which describe how people can feel about themselves. Read each item carefully and circle the number to the right of the statement that best describes how you have felt in the last 7 days. Use the scale below. Please do not omit any item.

**SCALE**

0 = NEVER    1 = RARELY    2 = SOMETIMES    3 = MOSTLY (a lot)    4 = ALWAYS

1. I feel that I have not made it in life
2. I feel that I am a successful person
3. I feel defeated by life
4. I feel that I am basically a winner
5. I feel that I have lost my standing in the world
6. I feel that life has treated me like a punch bag
7. I feel powerless
<table>
<thead>
<tr>
<th></th>
<th>I feel that my confidence has been knocked out of me</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>I feel able to deal with whatever life throws at me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>I feel that I have sunk to the bottom of the ladder</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>I feel completely knocked out of action</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>I feel that I am one of life’s losers</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>I feel that I have given up</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>I feel down and out</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>I feel that I have lost important battles in life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>I feel that there is no fight left in me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
The Social Comparison Scale (SCS; Allan & Gilbert, 1995).

Social Comparison Scale (SCS) Case number:

Collected by:

Date:

Please circle the number between each statement at the point which best fits the way which you see yourself in comparison to others at the moment.

Like this:

Small 1 2 3 4 5 6 7 8 9 10 Big

In relationship to others, I feel:

Inferior 1 2 3 4 5 6 7 8 9 10 Superior
Less competent 1 2 3 4 5 6 7 8 9 10 More competent
Less likable 1 2 3 4 5 6 7 8 9 10 More likeable
Less reserved 1 2 3 4 5 6 7 8 9 10 More reserved
Left out 1 2 3 4 5 6 7 8 9 10 Accepted
Different 1 2 3 4 5 6 7 8 9 10 Same

Thank you for your help.
Revised Adult Attachment Scale (RAAS; Collins, 1996).

Please read each of the following statements and rate the extent to which it describes your feelings about relationships.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all Characteristic of me</th>
<th>Fairly Uncharacteristic of me</th>
<th>Unsure</th>
<th>Fairly Characteristic of me</th>
<th>Very Characteristic of me</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find it relatively easy to get close to people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it difficult to allow myself to depend on others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often worry that other people don’t really like me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find that others are reluctant to get as close as I would like</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am comfortable depending on others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t worry about people getting too close to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find that people are never there when you need them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am somewhat uncomfortable being close to others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often worry that other people won’t want to stay with me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I show my feelings for others, I’m afraid they will not feel the same about me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often wonder whether</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>others really care about me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am comfortable developing close relationships with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am uncomfortable when anyone gets too emotionally close to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I know that people will be there when I need them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I want to get close to people, but I worry about being hurt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find it difficult to trust others completely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other people often want me to be emotionally closer than I feel comfortable being</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not sure that I can always depend on people to be there when I need them</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Scoring Instructions for the Revised Adult Attachment Scale

Questions: 3, 9, 11, & 17 - the phrase “other people” was substituted for the phrase “romantic partners”, used by the original scale. The scale contains 3 subscales, each composed of six items. The 3 subscales are CLOSE, DEPEND, and ANXIETY. The CLOSE scale measures the extent to which a person is comfortable with closeness and intimacy. The DEPEND scale measures the extent to which a person feels he/she can depend on others to be available when needed. The ANXIETY subscale measures the extent to which a person is worried about being rejected or unloved. Each item is rated on a 5 point scale (1 = not at all characteristic of me to 5 = very characteristic of me). Higher scores represent greater confidence in dependability of others, higher anxiety, and greater comfort with closeness.

Scoring Instructions:

Average the ratings for the six items that compose each subscale, as indicated below. Items with an asterisk should be reverse-scored before averaging.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLOSE</td>
<td>1 6 8* 12 13* 17*</td>
</tr>
<tr>
<td>DEPEND</td>
<td>2* 5 7* 14 16* 18*</td>
</tr>
<tr>
<td>ANXIETY</td>
<td>3 4 9 10 11 15</td>
</tr>
</tbody>
</table>

SPSS COMMANDS FOR CREATING 4 ATTACHMENT STYLES USING THE RAAS

The following SPSS commands will create Bartholomew’s (1990) four attachment styles (secure, preoccupied, fearful, dismissing) based on scores on the 3 attachment dimensions (close, depend, anxiety). Note that, at present, this method is quite exploratory. I have defined the styles in terms of theoretically expected profiles along the dimensions. For example, a secure person should score high on the close and depend dimensions, and low on the anxiety dimension. I define a “high” score as being above the midpoint on a 5-point scale, and a low score as below the midpoint. (Note that this is NOT the same as performing a median split). However, what this means is that individuals who score at the midpoint will be excluded from the sample. On the one hand, this method provides a more clear assessment of attachment style because we exclude individuals who appear to fall on the boundary of more than one style, or who don’t clearly belong to any style. On the other hand, this is problematic because
we lose important data points, and we have to worry whenever we remove any subjects from our sample. At present, we have used this procedure in only a handful of samples but we are finding that we lose about 7% of our sample. We are continuing to explore the validity of this method of scoring and we suggest that it be used with caution, and only in conjunction with the continuous measures that include the entire sample. [personal communication, Nancy Collins].

*****Reverse code the appropriate items*****

RECODE AT8 AT13 AT17 AT2 AT7 AT16 AT18
        (1=5) (2=4) (3=3) (4=2) (5=1)
        INTO AT8R AT13R AT17R AT2R AT7R AT16R AT18R.

*****Compute the three attachment dimensions*****

COMPUTE  CLOSE = MEAN (AT1, AT6, AT8R, AT12, AT13R, AT17R).
COMPUTE  ANXIETY = MEAN (AT3, AT4, AT9, AT10, AT11, AT15).

*****Combine the CLOSE and DEPEND dimensions into a single composite*****

COMPUTE  CLOSEDEP = MEAN(CLOSE, DEPEND).

**Compute an attachment style variable by using cutoff scores above/below the midpoint**
IF (CLOSEDEP GT 3) AND (ANXIETY LT 3) STYLE = 1
IF (CLOSEDEP GT 3) AND (ANXIETY GT 3) STYLE = 2
IF (CLOSEDEP LT 3) AND (ANXIETY LT 3) STYLE = 3
IF (CLOSEDEP LT 3) AND (ANXIETY GT 3) STYLE = 4

VALUE LABELS STYLE 1 ‘SECURE’ 2 ‘PREOCC’ 3 ‘DISMISS’ 4 ‘FEARFUL’.
**Entrapment Scale (ES; Gilbert & Allan, 1998)**

<table>
<thead>
<tr>
<th></th>
<th>Not at all like me</th>
<th>A little bit like me</th>
<th>Moderately like me</th>
<th>Quite a bit like me</th>
<th>Extremely like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to get away from myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel powerless to change myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I would like to escape from my thoughts and feelings</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel trapped inside myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I would like to get away from who I am and start again</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel I'm in a deep hole I can't get out of</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am in a situation I feel trapped in</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I have a strong desire to escape from things in my life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I am in a relationship I can't get out of</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I often have the feeling that I would just like to run away</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel powerless to change things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel trapped by my obligations</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
I can see no way out of my current situation

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would like to get away from other more powerful people in life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I have a strong desire to get away and stay away from where I am</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>I feel trapped by other people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983).

Patients are asked to choose one response from the four given for each interview. They should give an immediate response and be dissuaded from thinking too long about their answers. The questions relating to anxiety are marked "A", and to depression "D". The score for each answer is given in the right column. Instruct the patient to answer how it currently describes their feelings.

A I feel tense or 'wound up':

Most of the time 3
A lot of the time 2
From time to time, occasionally 1
Not at all 0

D I still enjoy the things I used to enjoy:

Definitely as much 0
Not quite so much 1
Only a little 2
Hardly at all 3

A I get a sort of frightened feeling as if something awful is about to happen:

Very definitely and quite badly 3
Yes, but not too badly 2
A little, but it doesn’t worry me 1
Not at all 0

D I can laugh and see the funny side of things:

As much as I always could 0
Not quite so much now 1
Definitely not so much now 2
Not at all 3
A Worrying thoughts go through my mind:

A great deal of the time 3
A lot of the time 2
From time to time, but not too often 1
Only occasionally 0

D I feel cheerful:

Not at all 3
Not often 2
Sometimes 1
Most of the time 0

A I can sit at ease and feel relaxed:

Definitely 0
Usually 1
Not Often 2
Not at all 3

D I feel as if I am slowed down:

Nearly all the time 3
Very often 2
Sometimes 1
Not at all 0

A I get a sort of frightened feeling like 'butterflies' in the stomach:

Not at all 0
Occasionally 1
Quite Often 2
Very Often 3

D I have lost interest in my appearance:
Definitely 3
I don’t take as much care as I should 2
I may not take quite as much care 1
I take just as much care as ever 0

A I feel restless as I have to be on the move:

Very much indeed 3
Quite a lot 2
Not very much 1
Not at all 0

D I look forward with enjoyment to things:

As much as I ever did 0
Rather less than I used to 1
Definitely less than I used to 2
Hardly at all 3

A I get sudden feelings of panic:

Very often indeed 3
Quite often 2
Not very often 1
Not at all 0

D I can enjoy a good book or radio or TV program

Often 0
Sometimes 1
Not often 2
Very seldom 3

0-7 = Normal
8-10 = Borderline abnormal
11-21 = Abnormal
Other as Shamer Scale (OAS; Goss et al., 1994).

0=Never 1 = Seldom 2 = Sometimes 3 = Frequent 4 = Almost Always

I feel that other people see me as not good enough 0 1 2 3 4
I think that other people look down on me 0 1 2 3 4
Other people put me down alot 0 1 2 3 4
I feel insecure about others opinions of me 0 1 2 3 4
Other people see me as not measuring up 0 1 2 3 4
Other people see me as small and insignificant 0 1 2 3 4
Other people see me as defective as a person 0 1 2 3 4
People see me as unimportant compared to others 0 1 2 3 4
Other people look for my faults 0 1 2 3 4
People see me as striving for perfection 0 1 2 3 4
I think others are able to see my defects 0 1 2 3 4
Others are critical or punishing when I make a mistake 0 1 2 3 4
People distance themselves from me when I make mistakes 0 1 2 3 4
Other people always remember my mistakes 0 1 2 3 4
Others see me as fragile 0 1 2 3 4
Others see me as empty and unfulfilled

Other people think there is something missing in me

Other people think I have lost control over my body and feelings
Psychotic Symptom Rating Scale – Auditory Hallucinations Subscale (PSYRATS-AH; Haddock et al., 1999).

AUDITORY HALLUCINATIONS: SCORING CRITERIA

1. Frequency

How often do you experience voices? E.g. every day, all day long etc.

0  Voices not present or less than once a week, (specify frequency present)
1  Voices occur for at least once a week
2  Voices occur at least once a day
3  Voices occur at least once an hour
4  Voices occur continuously or almost continually i.e. stop only for a few seconds or minutes.

2. Duration

When you hear your voices, how long do they last e.g. few seconds, minutes, hours, all day long?

0  Voices not present
1  Voices last for a few seconds, fleeting voices
2  Voices last for several minutes
3  Voices last for at least one hour
4  Voices last for hours at a time.

3. Location
When you hear your voices, where do they sound like they are coming from?

- Inside your head and/or outside your head?
- If voices sound like they are outside your head, whereabouts do they sound like they are coming from?

0  No voices present
1  Voices originate inside head only
2  Voices outside the head, but close to ears or head
   Voices inside the head may also be present
3  Voices originate inside or close to ears AND outside head away from ears
4  Voices originate from outside space, away from head only

4.  Loudness

How loud are your voices?
Are they louder than your voice, about the same loudness, quieter, or just a whisper?

0  Voices are not present
1  Quieter than own voice, whispers
2  About the same loudness as own voice
3  Louder than own voice
4  Extremely loud, shouting

5.  Beliefs Re-origin of Voices

What do you think has caused your voices?
- Are the voices caused by factors related to yourself or solely due to other people or factors?
If patient expresses an external origin:
-How much do you believe that your voices are caused by _____________ (add patients attribution) on a scale from 0-100 with 100 being that you are totally convinced, have no doubts and 0 being that it is completely untrue?

0  Voices not present  
1  Believes voices to be solely internally generated and related to self  
2  Holds less than 50% conviction that voices originate from external causes  
3  Holds 50% or more conviction (but less than 100%) that voices originate from external cause  
4  Believes voices are solely due to external causes (100% conviction)

6. Amount of Negative Content of Voices

Do you voices say unpleasant or negative things?

-Can you give me some examples of what the voices say? (record these e.g’s)
-How much of the time do the voices say these type of unpleasant or negative items?

0  No unpleasant content  
1  Occasional unpleasant content  
2  Minority of voice content is unpleasant or negative (less than 50%)  
3  Majority of voice content is unpleasant or negative (more than 50%)  
4  All of voice content is unpleasant or negative

7. Degree of Negative Content

(Rate using criteria on scale, asking patient for more detail if necessary)
0  Not unpleasant or negative
1  Some degree of negative content, but not personal comments relating to self or family e.g. swear words or comments not directed to self, e.g. “the milkman is ugly”
2  Personal verbal abuse, comments on behaviour e.g. “shouldn’t do that, or say that”
3  Personal verbal abuse relating to self-concept e.g. “you’re lazy, ugly, mad, perverted”
4  Personal threats to self e.g. threats to harm to self or family, extreme instructions or commands to harm self or others and personal verbal abuse as in (3)

8. Amount of Distress

Are your voices distressing?
-How much of the time?

0  Voices not distressing at all
1  Voices occasionally distressing, majority not distressing
2  Equal amounts of distressing and non-distress ing voices
3  Majority of voices distressing, minority not distressing
4  Voices always distressing

9. Intensity of Distress

When voices are distressing, how distressing are they?
-Do they cause you minimal, moderate, severe distress?
-Are they the most distressing they have ever been?
0   Voices not distressing at all
1   Voices slightly distressing
2   Voices are distressing to a moderate degree
3   Voices are distressing, although subject could feel worse
4   Voices are extremely distressing, feel the worst he/she could possibly feel

10. 'Disruption to the Life Caused by Voices

How much disruption do the voices cause to your life?

-Do the voices stop you from working or other daytime activity?
-Do they interfere with your relationships with friends and/or family?
-Do they prevent you from looking after yourself, e.g. bathing, changing clothes etc?

0   No disruption to life, able to maintain independent living with no problems in daily living skills. Able to maintain social and family relationships (if present)

1   Voices cause minimal amount of disruption to life e.g. interferes with concentration although able to maintain daytime activity and social and family relationships and be able to maintain independent living without support

2   Voices cause moderate amount of disruption to life causing some Disturbance to daytime activity and/or family or social activities. The patient is not in hospital although may live in supported accommodation or receive additional help with daily living skills

3   Voices cause severe disruption to life so that hospitalisation is
usually necessary. The patient is able to maintain some daily activities, self-care and relationships whilst in hospital. The patient may also be in supported accommodation but experiencing severe disruption of life in terms of activities, daily living skills and or relationships

4 Voices cause complete disruption of daily life requiring hospitalisation. The patient is unable to maintain any daily activities and social relationships. Self-care is also severely disrupted

11. Controllability of Voices

-Do you think that you have any control over when your voices happen?
-Can you dismiss or bring on your voices?

0 Subject believes they can have control over their and can always bring on or dismiss them at will

1 Subject believes they can have some control over the voices on the majority of occasions

2 Subject believes they can have some control over their voices approximately half of the time

3 Subject believes they can have some control over their but only occasionally. The majority of time the subject experiences voices which are uncontrollable
Subject has no control over when the voices occur and cannot dismiss or bring them on at all.
**Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1990)**

Interviewer: Ask the first question as written. Use follow up probes or qualifiers at your discretion. Time frame refers to last two weeks unless stipulated. N.B. The last item, #9, is based on observations of the entire interview.

1. **DEPRESSION**: How would you describe your mood over the last two weeks? Do you keep reasonably cheerful or have you been very depressed or low spirited recently? In the last two weeks how often have you (own words) every day? All day?

0. Absent
1. Mild Expresses some sadness or discouragement on questioning.
2. Moderate Distinct depressed mood persisting up to half the time over last 2 weeks: present daily.
3. Severe Markedly depressed mood persisting daily over half the time interfering with normal motor and social functioning.

2. **HOPELESSNESS**: How do you see the future for yourself? Can you see any future? - or has life seemed quite hopeless? Have you given up or does there still seem some reason for trying?

0. Absent
1. Mild Has at times felt hopeless over the last two weeks but still has some degree of hope for the future.
2. Moderate Persistent, moderate sense of hopelessness over last week. Can be persuaded to acknowledge possibility of things being better.
3. Severe Persisting and distressing sense of hopelessness.

3. **SELF DEPRECIATION**: What is your opinion of your self compared to other people? Do you feel better, not as good, or about the same as others? Do you feel inferior or even worthless?
0. Absent

1. Mild Some inferiority; not amounting to feeling of worthlessness.

2. Moderate Subject feels worthless, but less than 50% of the time.

3. Severe Subject feels worthless more than 50% of the time. May be challenged to acknowledge otherwise.

4. GUILTY IDEAS OF REFERENCE: Do you have the feeling that you are being blamed for something or even wrongly accused? What about? (Do not include justifiable blame or accusation. Exclude delusions of guilt.)

0. Absent

1. Mild Subject feels blamed but not accused less than 50% of the time.

2. Moderate Persisting sense of being blamed, and/or occasional sense of being accused.

3. Severe Persistent sense of being accused. When challenged, acknowledges that it is not so.

5. PATHOLOGICAL GUILT: Do you tend to blame yourself for little things you may have done in the past? Do you think that you deserve to be so concerned about this?

0. Absent

1. Mild Subject sometimes feels over guilty about some minor peccadillo, but less than 50% of time.

2. Moderate Subject usually (over 50% of time) feels guilty about past actions the significance of which he exaggerates.

3. Severe Subject usually feels s/he is to blame for everything that has gone wrong, even when not his/her fault.
6. MORNING DEPRESSION: When you have felt depressed over the last 2 weeks have you noticed the depression being worse at any particular time of day?

0. Absent No depression.
1. Mild Depression present but no diurnal variation.
2. Moderate Depression spontaneously mentioned to be worse in a.m.
3. Severe Depression markedly worse in a.m., with impaired functioning which improves in p.m.

7. EARLY WAKENING: Do you wake earlier in the morning than is normal for you? How many times a week does this happen?

0. Absent No early wakening.
1. Mild Occasionally wakes (up to twice weekly) 1 hour or more before normal time to wake or alarm time.
2. Moderate Often wakes early (up to 5 times weekly) 1 hour or more before normal time to wake or alarm.
3. Severe Daily wakes 1 hour or more before normal time.

8. SUICIDE: Have you felt that life wasn’t worth living? Did you ever feel like ending it all? What did you think you might do? Did you actually try?

0. Absent
1. Mild Frequent thoughts of being better off dead, or occasional thoughts of suicide.
2. Moderate Deliberately considered suicide with a plan, but made no attempt.
3. Severe Suicidal attempt apparently designed to end in death (i.e.: accidental discovery or inefficient means).

9. OBSERVED DEPRESSION: Based on interviewer’s observations during the entire interview. The question “Do you feel like crying?” used at appropriate points in the interview, may elicit information
useful to this observation.

0. Absent

1. Mild Subject appears sad and mournful even during parts of the interview, involving affectively neutral discussion.

2. Moderate Subject appears sad and mournful throughout the interview, with gloomy monotonous voice and is tearful or close to tears at times.

3. Severe Subject chokes on distressing topics, frequently sighs deeply and cries openly, or is persistently in a state of frozen misery if examiner is sure that this is present.
Belief About Voices Questionnaire – Revised (BAVQ-R; Chadwick et al., 2000)

Beliefs About Voices Questionnaire (BAVQ – R)

There are many people who hear voices. It would help us to find out how you are feeling about your voices by completing this questionnaire. Please read each statement and tick the box that best describes the way you have been feeling in the past week.

If you hear more than one voice then please complete the form for the voice that is dominant.

Thank you for your help.

Case: ........................................................................

Researcher......................................................................

<table>
<thead>
<tr>
<th>BELIEFS ABOUT VOICES</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
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<td>My voice is evil</td>
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<td>My voice wants me to do bad things</td>
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<td>14</td>
<td>My voice is helping me to achieve my goal in life</td>
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<td>15</td>
<td>My voice will harm or kill me if I disobey or resist it</td>
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<td>16</td>
<td>My voice is trying to corrupt or destroy me</td>
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<td>17</td>
<td>I am grateful for my voice</td>
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<td>18</td>
<td>My voice rules my life</td>
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**EMOTIONAL REACTIONS**

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<td>My voice reassures me</td>
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<td>My voice frightens me</td>
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<td>My voice makes me happy</td>
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<td>My voice makes me feel down</td>
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<td>My voice makes me feel angry</td>
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<td>My voice makes me feel calm</td>
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<td>My voice makes me feel anxious</td>
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<td>26</td>
<td>My voice makes me feel confident</td>
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<td>I try and take my mind off it</td>
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Beliefs About Voices Questionnaire (BAVQ – R)
Scoring Sheet

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Malevolence total __ (range -0 – 18)
Benevolence total __ (range- 0 – 18)
Omnipotence total __ (range- 0 – 18)
Resistance total __ (range 0 – 27)
  of which emotional - __ (range 0 – 12)
  of which behavioural - __ (range 0 – 15)
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<th>Engagement total</th>
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<td>of which emotional</td>
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**Voice Hearer Interview Schedule**

*How many voices do you hear?*

*How long have you heard these voices?*

*Do you know who the voice(s) are?*

*Is one of the voices more dominant than the others?*

*Does the voice talk to you or about you?*

*Has the voice used your name?*

*Can you tell me the type of things the voice says? (2 or 3 recent examples)*

*When the voice talks what do you usually do?*

*Is there anything you have found to do that makes the voice go away or seem less intense (e.g. talking, reading, drugs)?*

*How do you feel when the voice speaks?*

*Are there times when you hear the voice and do not feel this way?*

*Do you think that the voice may be very powerful?*

*What makes you think this?*

*Can you control the voice?*

*How sure are you that you can control it?*

*Can you have a conversation with it?*

*How often does the voice tell you what to do?*

*How often do you only do a bit or part of what the voice tells you?*

*Have you any idea why it is that you hear this particular voice?*

*Do you think the voice is trying to harm you in some way?*

**Neutral**

*What have you been up to today?*

*Current living arrangements-have you lived here long?*

*Do you like it?*

*Are the staff/residents nice?*

*Is the area nice?*
Do you think the area has changed much?
What don’t you like about it?
What time do you usually wake up?
What do you usually eat for breakfast?
Lunch?
How long does lunch usually last?
How often would you do grocery shopping during the week?
Dinner – where and when do you usually have it and what do you like to eat for tea?
How often do you take exercise during the week?
Do you enjoy sport? Football etc
Whose your favourite football team?
Do you see them much?
Do you pursue any hobbies?
What time would you usually go to bed during the week?
Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987).

**POSITIVE SCALE**

**P1. Delusions**
Beliefs which are unfounded, unrealistic, and idiosyncratic. Basis for rating thought content expressed in the interview and its influence on social relations and behavior.

**P2. Conceptual disorganization**
Disorganized process of thinking characterized by disruption of goal-directed sequencing, e.g., circumstantiality, tangentiality, loose associations non sequiturs, gross illogicality, or thought block. Basis for rating: cognitive-verbal processes observed during the course of interview.

**P3. Hallucinatory behavior**
Verbal report or behavior indicating perceptions which are not generated by external stimuli. These may occur in the auditory visual, olfactory, or somatic realms. Basis for rating: Verbal report and physical manifestations during the course of interview as well as reports of behavior by primary care workers or family.

**P4. Excitement**
Hyperactivity as reflected in accelerated motor behavior, heightened responsivity to stimuli hypervigilance, or excessive mood lability. Basis for rating: Behavioral manifestations during the course of interview as well as reports of behavior by primary care workers or family.

**P5. Grandiosity**
Exaggerated self-opinion and unrealistic convictions of superiority, including delusions of extraordinary abilities, wealth, knowledge, fame, power, and moral righteousness. Basis for rating: thought content expressed in the interview and its influence on behavior.

**P6. Suspiciousness/persecution**
Unrealistic or exaggerated ideas of persecution, as reflected in guardedness, a distrustful attitude, suspicious hypervigilance, or frank delusions that others mean one harm. Basis for rating: thought content expressed in the interview and its influence on behavior.

**P7. Hostility**
Verbal and nonverbal expressions of anger and resentment, including sarcasm, passive-aggressive behavior, verbal abuse, and assaultiveness. Basis for rating: interpersonal behavior observed during the interview and reports by primary care workers or family.

**NEGATIVE SCALE**

**N1. Blunted affect**
Diminished emotional responsiveness as characterized by a reduction in facial expression, modulation of feelings, and communicative gestures. Basis for rating: observation of physical manifestations of affective tone and emotional responsiveness during the course of interview.

**N2. Emotional withdrawal**
Lack of interest in, involvement with, and affective commitment to life's events. Basis for rating: reports of functioning from primary care workers or family and observation of interpersonal behavior during the course of interview.

**N3. Poor rapport**
Lack of interpersonal empathy, openness in conversation, and sense of closeness, interest, or involvement with the interviewer. This is evidenced by interpersonal distancing and reduced verbal and nonverbal communication. Basis for rating: interpersonal behavior during the course of interview.
N4. Passive/apathetic social withdrawal
Diminished interest and initiative in social interactions due to passivity, apathy, anergy, or avolition.
This leads to reduced interpersonal involvement and neglect of activities of daily living. Basis for rating: reports on social behavior from primary care workers or family.

N5. Difficulty in abstract thinking
Impairment in the use of the abstract-symbolic mode of thinking, as evidenced by difficulty in classification, forming generalizations, and proceeding beyond concrete or egocentric thinking in problem-solving tasks. Basis for rating: responses to questions on similarities and proverb interpretation, and use of concrete vs. abstract mode during the course of the interview.

N6. Lack of spontaneity and flow of conversation
Reduction in the normal flow of communication associated with apathy, avolition, defensiveness, or cognitive deficit. This is manifested by diminished fluidity and productivity of the verbal-interactional process. Basis for rating: cognitive-verbal processes observed during the course of interview.

N7. Stereotyped thinking
Decreased fluidity, spontaneity, and flexibility of thinking, as evidenced in rigid, repetitious, or barren thought content. Basis for rating: cognitive-verbal processes observed during the interview.

GENERAL PSYCHOPATHOLOGY

G1. Somatic concern
Physical complaints or beliefs about bodily illness or malfunctions. This may range from a vague sense of ill being to clear-cut delusions of catastrophic physical disease. Basis for rating: thought content expressed in the interview.

G2. Anxiety
Subjective experience of nervousness, worry, apprehension, or restlessness, ranging from excessive concern about the present or future to feelings of panic. Basis for rating: verbal report during the course of interview and corresponding physical manifestations.

G3. Guilt feelings
Sense of remorse or self-blame for real or imagined misdeeds in the past. Basis for rating: verbal report of guilt feelings during the course of interview and the influence on attitudes and thoughts.

G4. Tension
Overt physical manifestations of fear, anxiety, and agitation, such as stiffness, tremor, profuse sweating, and restlessness. Basis for rating: verbal report attesting to anxiety and, thereupon, the severity of physical manifestations of tension observed during the interview.

G5. Mannerisms and posturing
Unnatural movements or posture as characterized by an awkward, stilted, disorganized, or bizarre appearance. Basis for rating: observation of physical manifestations during the course of interview as well as reports from primary care workers or family.

G6. Depression
Feelings of sadness, discouragement, helplessness, and pessimism. Basis for rating: verbal report of depressed mood during the course of interview and its observed influence on attitude and behavior.

G7. Motor retardation
Reduction in motor activity as reflected in slowing or lessening of movements and speech, diminished responsiveness to stimuli, and reduced body tone. Basis for rating: manifestations during the course of interview as well as reports by primary care workers or family.

G8. Uncooperativeness
Active refusal to comply with the will of significant others, including the interviewer, hospital staff, or family, which may be associated with distrust, defensiveness, stubbornness, and negativism.
rejection of authority, hostility, or belligerence. Basis for rating interpersonal behavior observed during the course of interview as well as reports by primary care workers or family.

**G9. Unusual thought content**
Thinking characterized by strange, fantastic, or bizarre ideas, ranging from those which are remote or atypical to those which are distorted, illogical, and patently absurd. Basis for rating: thought content expressed during the course of interview.

**G10. Disorientation**
Lack of awareness of one's relationship to the milieu, including persons, place, and time, which may be due to confusion or withdrawal. Basis for rating: responses to interview questions on orientation.

**G11. Poor attention**
Failure in focused alertness manifested by poor concentration, distractibility from internal and external stimuli, and difficulty in harnessing, sustaining, or shifting focus to new stimuli. Basis for rating: manifestations during the course of interview.

**G12. Lack of judgment and insight**
Impaired awareness or understanding of one's own psychiatric condition and life situation. This is evidenced by failure to recognize past or present psychiatric illness or symptoms, denial of need for psychiatric hospitalization or treatment, decisions characterized by poor anticipation of consequences, and unrealistic short-term and long-range planning. Basis for rating: thought content expressed during the interview.

**G13. Disturbance of volition**
Disturbance in the wilful initiation, sustenance, and control of one's thoughts, behavior, movements, and speech. Basis for rating thought content and behavior manifested in the course of interview.

**G14. Poor impulse control**
Disordered regulation and control of action on inner urges resulting in sudden, unmodulated, arbitrary, or misdirected discharge of tension and emotions without concern about consequences. Basis for rating: behavior during the course of interview and reported by primary care workers or family.

**G15. Preoccupation**
Absorption with internally generated thoughts and feelings and with autistic experiences to the detriment of reality orientation and adaptive behavior. Basis for rating: interpersonal behavior observed during the course of interview.

**G16. Active social avoidance**
Diminished social involvement associated with unwarranted fear, hostility, or distrust. Basis for rating: reports of social functioning by primary care workers or family.
Cognitive Assessment of Voices with Voice Compliance Scale (VCS; Beck-Sander et al., 1997).

Compliance Behaviour Rating Scale
This is an observer related scale that measures the frequency of Command Hallucinations and level of compliance/resistance with each identified command. It is completed in two stages.

The research assistant will use a structured interview format to obtain a description of all Commands and associated behaviours - compliance or resistance. They will then interview either the client’s care coordinator or relative to confirm the information. The researcher will then produce a vignette and use the Compliance Scale to classify the behaviour (see scale below). The behaviour will be rated at baseline, nine and eighteen months follow up.

Compliance Behaviour Rating Scale

**Level 1**
Neither appeasement or compliant

**Level 2**
Symbolic appeasement, i.e. compliant with innocuous and/or harmless Commands.

**Level 3**
Appeasement. Prepatory acts or gestures.
**Level 4**
Partial compliance with at least one severe command.

**Level 5**
Full compliance with at least one severe command.

---

**Cognitive Assessment of Voices Interview Schedule combined with Revised Voice Compliance Scale.**

**SCORING SHEET**

**VOICE**

1. How many voices do you hear?

2. Does the voice come through the ears or from inside your head?

3. Is the voice a man or a woman, or are you unsure?

4. Is one of the voices more dominant than the others?

<table>
<thead>
<tr>
<th>No. of voices</th>
<th>Through ears</th>
<th>Inside ears</th>
<th>Both</th>
<th>Male</th>
<th>Female</th>
</tr>
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<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>0</td>
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<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
CONTENT

1. Does the voice talk to you or about you?

2. Has the voice used your name?

3. Can you tell me what kinds of things the voice says? (record 2 or 3 recent examples)

Explore if the voice ever says the following (recorded examples)
a. **Commands**: Does the voice ever tell you to do something?

3a) 0 No  
     1 Yes  
     2 Unable to say  
     3 Unsure

b. **Advice**: Does the voice ever give you advice or suggestions?

3b) 0 No  
     1 Yes

c. **Commentary**: Does the voice ever comment on what you are doing or thinking?

3c) 0 No  
     1 Yes

d. **Criticism and Abuse**: Does the voice ever say unpleasant things about you or someone else?

3d) 0 No  
     1 Yes

e. **Hostility**: Does the voice ever threaten to harm you or someone else?

3e) 0 No  
     1 Yes

4. Then **IDENTIFY THE TARGET VOICE**: Is there a voice that is more distressing/disturbing
Target voice CONTENT:

[Subsequent Qs will focus on the target command voice]

**ANTECEDENTS (cues)**

1. We have found that most people’s voices are more active at certain times: perhaps last thing at night, or when they are in the pub, or when they are feeling nervous. Are there certain times or occasions when your voice is more active?

2. Are there times when you don’t hear the voice? Perhaps when you have company and are talking to someone?

3. What are you doing when the voice says __________________________ [command]?

4. Do you always do what the voice says in this situation(s)?

| 1  | Harm self |
| 2  | Harm others |
| 4  | See main text |

**ANTECEDENTS**

1) See main text

2) See main text
5. Is there something about being in this particular situation that makes you believe that you have to do as the voice(s) say(s)?

3) See main text

6. Who are you with/who is around you?

4)  
0 No  
1 Yes  
2 Sometimes

5) See main text

7. How do you feel in this situation(s)?

8. Do you feel like this at any other time?

AFFECT

1. How do you feel when the voice speaks? (scared, tormented, reassured, amused, indifferent, etc)

6) See main text

2. Are there times when you hear the voice and do not feel this way? (record feelings)

7) See main text

8) See main text
BEHAVIOUR

1. When the voice talks what do you usually do?

   Do you (use prompts: always, usually, sometimes never)

   a. Listen because you feel you have to?

   b. Listen because you want to?

   c. Shout and swear at the voice?

   d. Do what the voice says willingly?

   e. Talk to the voice?

   f. Ignore the voice?

   g. Try and stop talking to it?

2. Is there anything you have found to do that makes the voice go away or seem less intense (e.g. talking, reading, drugs).

IDENTITY

1. Beliefs about IDENTITY of the voice: Do you have an idea whose voice you hear?

   1a) 0 No
   1 Yes

   1b) 0 No
   1 Yes

AFFECT

1) See main text

2) 0 No
   1 Yes
   2 Sometimes
   3 Don't know
2. How sure are you that the voice is (given name)? [use rating scale 0-100%]

3. What makes you think the voice is __________?

**MEANING**

“Most people I have spoken to have found that they really needed to try and make sense of hearing voices, some thought the voice might be punishing them or getting at them in some way, others that it might be trying to help them”.

1. Have you any idea why it is that you hear this particular voice?

2. Do you think the voice is trying to harm you in some way (e.g. punishment for bad deed, undeserved persecution)

3. How sure are you that this is true [use 0-100% rating scale]

4. Is the voice trying to help you (e.g protecting you, developing special power)
5. How sure are you that this is true [use 0-100% rating scale]

6. Has the voice said that this is its purpose? Yes / No

   a. If no, explore evidence: say something like “so you have worked this out for yourself? What makes you think the voice is (give meaning)?

### POWER & CONTROL

1. Do you think that the voice might be very powerful?

   2)  
   0  No  
   1  Yes  
   2  Don’t know  

2. What makes you think this (e.g. voice makes me do things, reads my mind)?

   3)  
   __________ %

3. Can you control the voice? Yes / No

   4)  
   0  No  
   1  Yes
a. How sure are you of this? [use rating scale 0-100%]

4. Can you call up the voice?

5. Can you stop it talking?

6. Can you have a conversation with it (e.g. ask questions and get answers)?

7. How powerful do you think the voice is? [use rating scale 0-100%]

8. Other people have said that their voices are powerful because of the following reasons, do any of these apply to you?

   a. Voice makes the person do things?

   b. Voice reads the mind of the person

   c. Unusual experiences, such as seeing a vision of the voice speaking to them

   d. The voice led them to harm
e. The frequency of the voice
f. The person is unable to control when the voice speaks and stops
g. The voice knows all about them, about their past
h. The voice makes predictions about the future
i. The voice comments on things the person is thinking

<table>
<thead>
<tr>
<th>FREQUENCY</th>
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<tbody>
<tr>
<td>1. How often does this voice tell you what to do? (daily/weekly/monthly)</td>
</tr>
<tr>
<td>2. How many times do you do what the voice(s) tells you to do?</td>
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<tr>
<td>3. How often do you only do a bit or part of what the voice(s) has asked/told you to do?</td>
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<th>COMPLIANCE</th>
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<tr>
<td>1. Do you believe you have to do as the voice(s) say(s)?</td>
</tr>
</tbody>
</table>

| 0  | No |
| 1  | Yes |
| 2  | Don’t know |

| 3a) | ________ |
|     | % |

| 4) |
| 0  | No |
| 1  | Yes |

| 5) |
| 0  | No |
| 1  | Yes |

| 6) |
| 0  | No |
| 1  | Yes |

| 7) | ________ |
|    | % |

| 8a) | 0  | No |
|     | 1  | Yes |
2. How likely are you to do as the voice says now? [0-100%]
Note: also ask this question to a close relative or staff member who knows the client well

3. How likely are you to do as the voice says in the future? [0-100%]
Note: also ask this question to a close relative or staff member who knows the client well

4. Why do you do what the voice(s) tell you OR Do you have a reason for doing what the voice(s) say? (use prompts)

a. The voices go away or leave me alone

b. I was going to do it anyway

c. I’m afraid or scared of the voice

d. I’m anxious

e. I feel pain in my body if I don’t comply

f. If I don’t do as they say then something might happen (good or bad)

g. I’ll be harmed/punished if I don’t comply

h. Other reasons

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<th>FREQUENCY</th>
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<tr>
<td>1)</td>
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<tr>
<td>1 Daily</td>
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</table>
5. **How do you feel about doing what the voice tells you?**

   Do you ever feel _______ (use prompts) if you do as the voice tells you?

   a. Not in control

   b. Worried/scared

   c. Better/happier

   d. More in control

   e. Its in my interest to comply because _______

   f. Other feelings

6. **How do you feel and what happens when you do exactly what the voice says/ask you to do?**

7. **Even if the voice hadn’t told you to ______________ would you**

   | 2) Weekly | 3 Monthly | 4 All the time |
   | 2) See main text |
   | 3) See main text |

   | COMPLIANCE |
   | 1) |
   | 0 No |
   | 1 Yes |
   | 2 Sometimes |
   | 2) ________ % |
   | 3) ________ % |
   | 340 |
have wanted to anyway?
   a. YES/NO/Don’t know

   b. Why?

8. Do you always do what the voice(s) ask/tells you to do no matter what it is?
   a. YES/NO

   b. Why?

9. What do you get out of complying? (is it in your personal interest to comply? [Relief? Instrumental i.e. a means to an end? Personal?)

10. Does the frequency of the command increase/decrease if you comply?
1. Why is it that you do not do as the voice(s) ask/tell you to do? (use prompts)

   a. I know/believe that it is wrong to do what they are asking?

   b. If I ignore the voice it goes away

   c. I feel more in control

   d. I feel better/happier

   e. I feel worried/scared

   f. Other reasons

2. How do you feel when you do not do/resist what the voice(s) tells/asks? (use prompts)

   a. I feel worried in case something might happen (what?)

   b. I feel happier/more in control for resisting?

   c. I feel worried/scared that I might act on what the voice(s) says

   d. Other feelings

3. Does the frequency of the command increase/decrease if you resist?
SITUATIONS

1. Compliance

a. In which situations do you do as the voice says/asks? (Where? What is happening? What time of day?)

b. Do you always do what the voice says in this situation(s)?

c. Is there something about being in this particular situation that makes you believe that you have to do as the voice(s) says?
d. Who are you with/who is around you?


e. How do you feel in this situation(s)?

f. Do you feel like this at any other time?

1. Resistance

a. In which situations do you resist what the voice says/asks? (where? What is happening? What time of day?)

b. Do you always resist what the voice says in this situation/these situations?
c. Is there something about being in this particular situation that makes you believe that you have to resist what the voice(s) say?

2c) 0 No 1 Yes

2d) See main text

3)
1 Increases
2 Decreases
3 Stays the same

EMOTIONAL AND BEHAVIOURAL CONSEQUENCES OF COMPLIANCE/RESISTANCE

[feeling prompts: worrying/distressed/good/useless/guilty/anxious/panic/happy/no different]

I. Non-Compliance
When the voice says _______________ [command] do you ever?

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<td>1c)</td>
<td>0</td>
<td>No</td>
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<tr>
<td>2</td>
<td>Don’t know</td>
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a. Not do as the voice says  YES / NO

What happens? How do you feel?

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<td>1d)</td>
<td>See main text</td>
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b. Do the opposite of what the voice says?  YES / NO

What happens? How do you feel?

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c. Are you prevented from doing as the voice says (e.g. someone stops you/delusional belief)  YES / NO

What happens? How do you feel?

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<td>1f)</td>
<td>0</td>
<td>No</td>
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<td>2</td>
<td>Sometimes</td>
<td></td>
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<tr>
<td>3</td>
<td>Don’t know</td>
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Resistance

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<td>1a)</td>
<td>See main text</td>
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2. Partial Compliance
a. When the voice says ______________ [command] do you ever partly do as the voice says?

b. For example, do you think “I’ll do it late” [covert appeasement]

What happens? How do you feel?

c. Plan how to fulfil the command [covert acting]

What happens? How do you feel?

d. Do something to satisfy the voice which is not what you were told/asked to do? [overt appeasement]

What happens? How do you feel?
e. Do a bit or part of what the voice asks/tells you to do? [overt partial acting]

What happens? How do you feel?

f. Carry out what the voice says in your imagination only (fantasise) [covert full acting]

What happens? How do you feel?

3. Full compliance

a. When the voice says _______ [command] do you ever do exactly as the voice says/asks you to do? [overt full acting]

What happens? How do you feel?

1a) 0 No 1 Yes

1b) 0 No 1 Yes

1c) 0 No 1 Yes

See main text

2a) 0 No 1 Yes

See main text

See main text
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<td>2b)</td>
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<td>Yes</td>
<td>Yes</td>
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<td>2c)</td>
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<td>Yes</td>
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<td>2d)</td>
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<td>No</td>
<td>Yes</td>
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<td>2e)</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
<td>1</td>
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</table>

See main text
### Category of Command

| 2f) | 0   | No       | 1 | Yes |

#### Non-serious

**Innocuous comment**

*e.g.*

| 3a) | 0   | No       | 1 | Yes |

#### Critical Comment

*e.g.*

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<table>
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<th>Imperative</th>
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<tr>
<th>Day to day instruction</th>
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<tr>
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<th>Future orientated decision making</th>
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<th>Antisocial</th>
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<tr>
<td>Illegal (minor)</td>
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<td>----------------</td>
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<tr>
<td>e.g.</td>
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| Serious        |  |
| Illegal (major)|  |
| e.g.           |   |

| Self harm      |  |
|                |   |
| e.g.           |   |

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<tr>
<th>Other (e.g. bizarre)</th>
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Voice Power Differential Scale (VPD; Birchwood et al., 2000).

**VOICE POWER DIFFERENTIAL SCALE (VPD)**

(Birchwood et al, 2000)

Client’s Name:.................................................................................................

Date Assessed........................

Please circle the number which best describes how you feel in relation to your voice
..............................................................................................................(Name or description of voice)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am much more powerful than my voice</td>
<td>I am more powerful than my voice</td>
<td>We have about the same amount of power as each other</td>
<td>My voice is more powerful than me</td>
<td>My voice is much more powerful than me</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am much stronger than my voice</td>
<td>I am stronger than my voice</td>
<td>We are as strong as each other</td>
<td>My voice is stronger than me</td>
<td>My voice is much stronger than me</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am much more confident than my voice</td>
<td>I am more confident than my voice</td>
<td>We are as confident as each other</td>
<td>My voice is more confident than me</td>
<td>My voice is much more confident than me</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>I respect my voice much more than it respects me</td>
<td>I respect my voice more than it respects me</td>
<td>We respect each other about the same</td>
<td>My voice respects me more than I respect it</td>
<td>My voice respects me much more than I respect it</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I am much more able to harm my voice than it is able</td>
<td>I am more able to harm my voice than it is able to</td>
<td>We are equally able to harm each other</td>
<td>My voice is more able to harm me than I am able to</td>
<td>My voice is much more able to harm me than I am able</td>
</tr>
<tr>
<td></td>
<td>to harm me</td>
<td>harm me</td>
<td>harm it</td>
<td>to harm it</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>---------</td>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>1</td>
<td>I am greatly superior to my voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I am superior to my voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>We are equal to each other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>My voice is superior to me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>My voice is greatly superior to me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am much more knowledgeable than my voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am more knowledgeable than my voice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We have about the same amount of knowledge as each other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>My voice is more knowledgeable than me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>My voice is much more knowledgeable than me</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Persecution and Deservedness Scale (PaDS; Melo et al., 2009)

**Persecution and Deservedness Scale**

1. There are times when I worry that others might be plotting against me.

<table>
<thead>
<tr>
<th>Certainly false</th>
<th>Possibly false</th>
<th>Unsure</th>
<th>Possibly true</th>
<th>Certainly true</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

1.1 Do you feel like you deserve others to plot against you?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Possibly not</th>
<th>Unsure</th>
<th>Possibly</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

2. I often find it hard to think of anything other than the negative ideas others have about me.

<table>
<thead>
<tr>
<th>Certainly false</th>
<th>Possibly false</th>
<th>Unsure</th>
<th>Possibly true</th>
<th>Certainly true</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

2.1 Do you feel like you deserve people to have negative ideas about you?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Possibly not</th>
<th>Unsure</th>
<th>Possibly</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

3. My friends often tell me to relax and stop worrying about being deceived or harmed.

<table>
<thead>
<tr>
<th>Certainly false</th>
<th>Possibly false</th>
<th>Unsure</th>
<th>Possibly true</th>
<th>Certainly true</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

3.1 Do you feel like you
deserve being deceived or harmed?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Certainly false</td>
<td>Possibly false</td>
<td>Unsure</td>
<td>Possibly true</td>
<td>Certainly true</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>4.1</th>
<th>Do you feel like you deserve to have people hearing bad things about you?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>5.</th>
<th>I’m often suspicious of other people’s intentions towards me.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Certainly false</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>5.1</th>
<th>Do you feel like you deserve people having bad intentions towards you?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>6.</th>
<th>Sometimes, I just know that people are talking critically about me.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Certainly false</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>6.1</th>
<th>Do you feel like you</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
deserve people to talk critically about you?  

0  1  2  3  4

7. There are people who think of me as a bad person.

Certainly false  Possibly false  Unsure  Possibly true  Certainly true

0  1  2  3  4

If you’ve answered 2 or above to the last question, please answer to the following question:

7.1 Do you feel like you deserve people to think of you as a bad person?  

Not at all  Possibly not  Unsure  Possibly  Very much

0  1  2  3  4

8. People will almost certainly lie to me.

Certainly false  Possibly false  Unsure  Possibly true  Certainly true

0  1  2  3  4

If you’ve answered 2 or above to the last question, please answer to the following question:

8.1 Do you feel like you deserve people to lie to you?  

Not at all  Possibly not  Unsure  Possibly  Very much

0  1  2  3  4

9. I believe that some people want to hurt me deliberately.

Certainly false  Possibly false  Unsure  Possibly true  Certainly true

0  1  2  3  4

If you’ve answered 2 or above to the last question, please answer to the following question:

9.1 Do you feel like you deserve people to hurt you deliberately?  

Not at all  Possibly not  Unsure  Possibly  Very much

0  1  2  3  4
Please read each of the following statements carefully and indicate the extent to which they are true or false by circling a number on the scale.

<table>
<thead>
<tr>
<th>10. You should only trust yourself.</th>
<th>Certainly false</th>
<th>Possibly false</th>
<th>Unsure</th>
<th>Possibly true</th>
<th>Certainly true</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

If you’ve answered 2 or above to the last question, please answer to the following question:

<table>
<thead>
<tr>
<th>10.1 Do you feel like you deserve to have no one you can trust?</th>
<th>Not at all</th>
<th>Possibly not</th>
<th>Unsure</th>
<th>Possibly</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Please read each of the following statements carefully and indicate the extent to which they are true or false by circling a number on the scale.
ESM assessments completed at each sampling point (10 times a day)

Where am I? ........................................................................................................................................

Am I alone? No/Yes (IF YES, PLEASE GO STRAIGHT TO NEXT TABLE)
If not, with whom? ................................................................................................................................

How many? Men........../Women?......... / Children? ...........................................................

<table>
<thead>
<tr>
<th></th>
<th>Not</th>
<th>Moderate</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like this company</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I prefer being alone</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>We are talking</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel inferior</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel superior</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel left out</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel different</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel put down</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not</th>
<th>Moderate</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>My voice is present</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My voice is powerful</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>It’s interfering</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>out of my control</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My voice is superior</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not</th>
<th>Moderate</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>happy</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>low</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>guilty</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ashamed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>good mood</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>anxious</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>annoyed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>scared</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not</th>
<th>Moderate</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to get away from myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel powerless to change myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I would like to escape</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel trapped inside myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I would like to start again</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel in a deep hole</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not</th>
<th>Moderate</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>All these thoughts are out of my control</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>I feel defeated</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
It’s exactly: .......... hrs .......... min

Notes....................................................................................................................................................

....................................................................................................................................................

....................................................................................................................................................

....................................................................................................................................................

....................................................................................................................................................

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....................................................................................................................................................

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Part 1

Study Title: A Multicentre, Randomised Controlled Trial of Cognitive Therapy to Prevent Harmful Compliance with Command Hallucinations.

Secondary study: Deservedness of persecution in people who experience Command Hallucinations (participation in the secondary study is optional)

You are being invited to take part in a research study. Before you decide to take part it is important for you to understand why the
research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

The purpose of the study:

The study is trying to find out whether or not a psychological treatment called cognitive therapy assists people in coping with their voices.

What is Cognitive Therapy?

Cognitive therapy is a psychological treatment, which helps people to identify ways of thinking that may upset them or cause them distress. In therapy the therapist works with the client to develop helpful thoughts and beliefs along with teaching the client coping skills. The therapists in this study will be seeing people on a regular basis and are either specially trained psychologists or mental health nurses.

Why have I been chosen?

We are inviting everyone in the area who is experiencing voices that give commands/orders.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and will be asked to
sign a consent form. You are still free to withdraw at any time and without giving a reason. People will receive the same standard of care even if they do not take part in the study. This is also true for people who take part and then decide to leave the study at a later point.

What will happen to me if I take part?

- **Part one**
  In order to find out whether cognitive therapy helps people with voices, we need to compare two groups of people. People in one group will receive normal care. People in the other group will receive normal care as well as cognitive therapy.

1. If you agree to take part a researcher will arrange to meet with you to explain the study in more detail. If you are happy with the study, the researcher will then ask some questions about your voices. This will take place over two sessions. Each session usually lasts an hour.
2. If we feel that it is not the right time for you to take part, your care will continue as normal and you will no longer be involved in the study.
3. If the questionnaires indicate the trial is suitable for you, then you will be randomly assigned to one of two groups.

**Either:** you will get usual care and a researcher will meet up with you at two further time intervals to see how you are doing. This happens eight months and eighteen months after the first session. At each time interval the researcher will meet with you over two sessions. Each session is usually an hour long.
Or: you will get usual care plus up to twenty-five sessions of cognitive therapy: the number of sessions varies because people’s needs are different. The researcher will also meet up with you eight months and eighteen months after the first session to see how you are doing – as described above.

Whichever option is chosen for you, your usual care will carry on as normal.

Part two
In addition to the above, you will be asked to complete with the research assistant some additional questionnaires about how feel in relation to your voices and how you see yourself in relation to others. Please note that this is optional and you may refuse to complete these additional questionnaires. These extra questionnaires take approximately 15 minutes to complete. The purpose of these questionnaires is to help us understand how people perceive themselves in relation to their voices and whether this affects the relationships they form with other people.

Do I have to fill in these additional questionnaires?
No. It is up to you to decide whether or not you wish to complete these additional questionnaires. If you do, you will be given this information sheet to keep and will be asked to sign a consent form (with two parts). You are still free to withdraw at any time and without giving a reason. People will receive the same standard of care even if they do not take part in the study. This is also true for
people who take part and then decide to leave the study at a later point.

**Expenses and payments**

If you participate in this trial you will be given £20 at the start of the study, at eight months and also at eighteen months into the study. This will cover your travel expenses and any other out of pocket expenses you might incur.

**What are the possible side effects of taking part?**

Some of the questionnaires may cover issues that are sensitive and/or distressing for you – you can stop if you feel uncomfortable at any stage of the interview, and refuse to answer questions that you feel are too distressing.

**What are the possible benefits of taking part?**

Participants from previous studies have found meeting up with a study researcher helpful. Cognitive therapy is also helpful for many people and is regularly used in the NHS to help people with mental health problems. Although we cannot promise the study will help you we do hope to learn how to effectively help people with voices that are giving orders and commands.

**What if there is a problem?**
If you are worried or concerned about any aspect of the study you should talk to the researcher. If you would like to make a complaint about the study you should contact your local Patient Advice & Liaison Service. More information about this can be found in Part 2 of this information sheet.

**Will my taking part in this study be kept confidential?**

Yes. All the information about your participation in this study will be kept confidential. Your identity and any personal information will not be revealed in the results of the study. Further information is given in Part 2.

**What will happen when the research study stops?**

The whole study will last for 3 years. At the end of it the results will be analysed at the University of Birmingham. If the study shows that the treatment is effective, it will help promote the use of this therapy within services nationally and internationally.

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

The results of the study will be written up for publication in health professional journals. They will also be presented at conferences in the UK and abroad. Your anonymity will be preserved at all times.

**Who is organising and funding the research?**

The research is organised by The University of Birmingham, Department of Primary Care and General Practice and funded by a
grant from the Medical Research Council. The University of Birmingham provides indemnity. The West Midlands Multi Centre Research Ethics Committee has reviewed the protocol.

**Contact for Further Information**

If you agree to take part, you will be given a copy of the Patient Information Sheet and a copy of the signed consent form to keep.

This is the end of Part 1 of the information sheet.

If the information in Part 1 has interested you and you are thinking of taking part,

Please continue to read the additional information in part 2 before making a decision.

**Part 2**

**What if relevant new information becomes available?**

Sometimes during the course of a research project, new information becomes available about the study treatment. If this happens, your research doctor will tell you about it and discuss whether you want to or should continue in this study. If you decide to continue in the study you will be asked to sign an updated consent form.

Sometimes when new information becomes available your research doctor might consider it to be in your best interests to withdraw you from the study. If this happens they will explain the reasons and
arrange for your care to continue. If the study is stopped for any other reason, you will be told why and your continuing care will be arranged.

**What will happen if I don’t want to carry on with the study?**

You can leave the study at any time and your care will not be affected. If you leave the study, any information we have already collected may still be used for the purposes of the trial.

Some of the questions the research will ask you may be sensitive and upset you. If you find questions upset you, please tell the researcher and they can give you a break or stop the research altogether. Should the research stop we would ask your permission to share information arising from the visits and questionnaires with the clinical case manager from your care team. We would ask them to liaise with you or your carer to ensure any issues that have been raised are sorted out.

**What if there is a problem?**

**Complaints:**

Please speak to the researcher if you have any concerns about the study. If they are unable to address your concerns, you can contact your local Patient Advice and Liaison Service [insert local contact details of PALS]. If you remain unhappy, you can make a formal complaint through the NHS complaints mechanism. Your local Patient Advice and Liaison Service can advise you how to do this.
Harm:

There are no special compensation arrangements in place for this study. If you do suffer harm as a result of taking part in this study and this is because someone is negligent, you may have grounds for taking legal action against the University of Birmingham. You may have to pay your own legal costs to do this. Taking legal action would not prevent you from making a formal complaint through the NHS complaints mechanism.

Will my taking part in this study be kept confidential?

Yes. Any information we collect about you will be kept in a locked filing cabinet. This includes questionnaires, tape recordings and notes from interviews. In order to provide clients with the best possible care, it is sometimes necessary to share information. As a result the research team may share information about you with your clinical team. This information will still be treated confidentially within both teams. Any information from or about you will have your name, address and any other identifying features removed so that you cannot be recognised from it. This means that your anonymity will be preserved at all times during and after the study time period. The tapes will be destroyed 5 years after the study has been completed. This is in line with Birmingham University’s research policy.
PART TWO

TITLE: Deservedness of Persecution in People who experience Command Hallucinations

Name of Researcher:

The participant should complete the whole of this sheet himself/herself

I confirm that I have read and understand the information sheet dated November 2008 (version 4.1) and have had the opportunity to ask questions about the above study.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my medical care or legal rights being affected.

I understand that responsible individuals may look at sections of my medical notes where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

____________________     ________________  _______________  
Name of Patient    Date    Signature

____________________  ________________  ________________  
Name of Person taking consent  Date    Signature
(If different from researcher)

______________________  _________________  ________________  
Researcher    Date    Signature
PARTICIPANT CONSENT FORM

A study to assess the behavioural correlates of shame, attachment and social rank.

I understand that my participation in this project will involve me filling out questionnaires. These will ask me about my feelings of anxiety and depression. They will also ask about my relationships with other people. I also understand that I will be videotaped talking to the researcher for 10 minutes and am comfortable to do this. I will be expected to talk about my everyday routine, and also times that I have felt ashamed.

In total, the experiment will take approximately 10 minutes of my time. I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason and without loss of Research Participation Scheme credits. I also understand that I am free to ask any questions at any time. I am free to withdraw without providing a reason, or to discuss my concerns with Liam Gillies.

I understand that the information provided by me will be held anonymously so that it is impossible to trace this information back to me individually. Information will be held in a secure file. The researcher and supervisors will be the only people who watch the tape. In accordance with the Data Protection Act this information may be retained.

I understand that this study involves me being videotaped, and I explicitly consent to this. I understand that my data will be retained for a minimum of 5 years following the publication of the study results.

I, ________________________________ (NAME), consent to participate in this study conducted by Liam Gillies in the School of Psychology, University of Birmingham under the supervision of Professor Max Birchwood & Dr Maria Michail.

Signed:

Date:

I,_______________________________(NAME), acknowledge the participant has given full consent and will adhere to the University’s rules and regulations when conducting this research.

Signe
PARTICIPANT INFORMATION SHEET

A study to assess the behavioural correlates of shame, attachment and social rank.

You are being invited to take part in a research study. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

1. The purpose of the study

The purpose of the study is to test a new behavioural coding system that I have devised for my PhD studies. If it proves useful it will be used with clinical patients with Schizophrenia and hopefully other contexts.

2. Do I have to take part?

You are not obliged to take part. Taking part in this experiment will contribute toward you research participation scheme credits.

3. What will happen to me if I take part?

The experiment consists of two brief stages:

A) Initially you will be asked to fill out questionnaires. These will ask you about feelings of anxiety, depression. They will also ask you about your relationships with other people.

B) After this, you will be videotaped talking to the experimenter for 10 minutes. After this, you will have to fill out one more questionnaire then you will be free to go.
4. What are the possible side effects of taking part?

There will be no side effects of taking part. You will be asked to talk about shameful situations which may make you feel slightly uncomfortable. You will however be free to stop at any time and refuse to answer any questions that you find too uncomfortable.

5. What are the possible benefits of taking part?

Taking part in this research will allow you first hand experience of applied psychological research. Moreover, you will be contributing to the validation of a measure which will then be used with patients with Schizophrenia. This will help us understand if the way some patients behave is linked to their feelings about other people. You will also receive 0.5 credits for participation.

6. What if there is a problem?

We do not anticipate any problems during the interview. However, if you are worried or concerned about any aspect of the study then please contact the researcher (Liam Gillies) and/or the principal supervisors (Prof. Max Birchwood & Dr Maria Michail). If you would like to make a complaint then you should contact the relevant University official.

7. Will my taking part in this study be kept confidential?

Yes. All information about your participation in this study will be kept confidential. Your identity and personal information will not be disclosed in the results of the study. Your anonymised data will be used for a PhD thesis and possibly for further publication. All data will be kept in a highly secured office, in a locked cabinet accessible only to the researcher and supervisors.

8. What will happen when the research study stops?

After all the study is completed, the results will hopefully be published. Data will be retained for a minimum of 5 years following publication.

9. What will happen if I don’t want to carry on with the study?

You can leave the study at any time with no consequence to yourself.

10. Contact for Further Information

Liam Gillies, PhD Researcher

Office 517, Frankland Building
PARTICIPANT INFORMATION SHEET

Study Title: Are relationships in everyday life similar to relationships with voices?

You are being invited to take part in a research study. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

The purpose of the study:
The aim of the study is to use a process called the Experimental Sampling method in order to find out if how you feel and act from day to day relates to your relationship with your voice(s).

What is the Experimental Sampling Method?
The Experimental Sampling Method (ESM) is a method that involves giving you some diaries and a wristwatch to wear. For 4-6 days, we ask you to write how you are feeling in the diaries. The watch will bleep to remind you to fill the
diary out. You will be given 6 diaries in total. After the 6 days, the researcher will collect the diaries and watch.

**Why have I been chosen?**

We are inviting everyone who might be experiencing voices to take part.

**Do I have to take part?**

No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and will be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason. People will receive the same standard of care even if they do not take part in the study. This is also true for people who take part and then decide to leave the study at a later point.

**What will happen to me if I take part?**

If you agree to take part the researcher will come and see you at your home or hospital. The researcher will conduct questions which will require you to talk about the voices that you hear and also how you think and feel. After this, you will be given the diaries and watch to wear. After 6 days, the researcher will come back and see you to collect the diary and watch.

**Expenses and payments**

If you participate in the study you will receive £25 for your time

**What are the possible side effects of taking part?**

We do not anticipate any side effects of taking part.

**What are the possible benefits of taking part?**

Taking part in this study will help us to understand what the relationship that people have with their voices and other unusual experiences.

**What if there is a problem?**

If you are worried or concerned about any aspect of the study you should talk to the researcher. If you would like to make a complaint about the study you should contact your local Patient Advice & Liaison Service.
**Will my taking part in this study be kept confidential?**

Yes. Any information we collect about you will be kept in a locked filing cabinet. This includes questionnaires, tape recordings and notes from interviews. All videotapes will have audio removed. In order to provide clients with the best possible care, it is sometimes necessary to share information. As a result the research team may share information about you with your clinical team. This information will still be treated confidentially within both teams. If you disclose information that may endanger yourself or others, confidentiality will be broken.

Any information from or about you will have your name, address and any other identifying features removed so that you cannot be recognised from it. This means that your anonymity will be preserved at all times during and after the study time period. The tapes will be destroyed 5 years after the study has been completed. This is in line with Birmingham University’s research policy.

**What will happen when the study stops?**

The whole study will last for 3 years. At the end of it the results will be analysed at the University of Birmingham.

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

The results of the study will be published in scientific journals.

**Who is organising and funding the research?**

The research is part of an ongoing project run by Psychologists at the University of Birmingham.

**What will happen if I don’t want to carry on with the study?**

You can leave the study at any time and your care will not be affected. If you leave the study, any information we have already collected may still be used for the purposes of the trial.

**What if there is a problem?**

**Complaints:**
Please speak to the researcher if you have any concerns about the study. If they are unable to address your concerns, you can contact your local Patient Advice and Liaison Service: Telephone: 0800 953 0045. Email: pals@bsmhft.nhs.uk

If you remain unhappy, you can make a formal complaint through the NHS complaints mechanism. Your local Patient Advice and Liaison Service can advise you how to do this.

Harm:

There are no special compensation arrangements in place for this study. If you do suffer harm as a result of taking part in this study and this is because someone is negligent, you may have grounds for taking legal action against the University of Birmingham. You may have to pay your own legal costs to do this. Taking legal action would not prevent you from making a formal complaint through the NHS complaints mechanism.

Thank you for reading this.

Liam Gillies
School of Psychology

University of Birmingham

PARTICIPANT CONSENT FORM (v.3.0)

Study Title: The social world in Schizophrenia: Are relationships in everyday life the same as relationships with voices?

Patient Identification No for this study:

| Name of Researcher: | | |

Please initial box

I agree to take part in the study

I confirm that I have read and understand the information sheet dated August 2009 (version 3) for the above study and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my medical care or legal rights being affected.

I understand that responsible individuals may look at sections of my medical notes where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.

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