

# **“Auditory Hallucinations: Beliefs about voices and perceptions of threat”**

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# ABSTRACT

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**Author: Victoria Watkins**

**Objectives** There were two aims of the present study. The first aim was to explore the relationship between participants’ beliefs about the malevolent and benevolent intentions of their hallucinatory voice and the relationship to beliefs about threat. This aim was intended to examine the relationship between two cognitive models of auditory hallucinations presented by Chadwick and Birchwood (1994) and Morrison (1998). These models both implicated beliefs about voices and misinterpretations as a central feature in individuals’ responses to their voices. The second aim was to further investigate Morrison’s (1998) model, which proposed a relationship between beliefs about threat and the use of safety behaviours.

**Design** The study was a correlational design, prompted by the exploratory nature of the study. The following measures were used: ‘Beliefs About Voices Questionnaire – Revised’ (BAVQ-R; Chadwick, Lees and Birchwood, 2000); Semi-structured safety behaviour interview (Morrison & Nothard, in press) – adapted for the study; an adapted emotional Stroop test and a visual analogue scale were both used to assess for threat.

**Results** Strong relationships were found between threat and malevolence and threat and benevolence, which suggested that as ratings of threat increased then malevolence scores increased and benevolence scores decreased. A strong relationship was found between threat and frequency of safety behaviour use, indicating that as threat increased then frequency decreased. Finally a strong relationship was found between threat and ratings of distress if the safety behaviour could not be used, which suggested that as threat increased then distress also increased.

**Conclusions** The researcher concluded that the two cognitive models had identified related beliefs in malevolence and threat and these relationships were worthy of further exploration, perhaps with a view to integrating the two models. The relationship between threat and safety behaviours was partially supported, but it is recommended that the function of the safety behaviour be explored in relation to threat, to define behaviours which serve to avoid the threat from those that help to challenge the threat.

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# 1. INTRODUCTION

## 1.1. Overview

The introduction will begin by mentioning the history, incidence and symptoms of schizophrenia, highlighting auditory hallucinations as the most common symptom. It will then briefly mention various models used historically to understand the syndrome, moving on to introduce recent cognitive models. It was felt that a brief overview should be given, in order to allow the reader to see where cognitive models for auditory hallucinations fit into the wider field of 'schizophrenia'. This information will therefore not be comprehensive, but simply a concise overview of the field.

Following this, the development of cognitive theories for schizophrenia will be outlined. This includes the reconceptualisation of schizophrenia in the late 1980's. This movement criticised the validity of the syndrome known as 'schizophrenia' and proposed the 'symptom approach' where the symptoms of schizophrenia are viewed as separate problems, it also presented the idea that these symptoms are on a continuum with normal experience.

The main body of the introduction will focus on the symptom of auditory hallucinations, particularly 'hearing voices' and will begin by defining 'voices'. Four cognitive models of auditory hallucinations will then be presented. The first model proposed a mechanism by which voices occur. The second model postulated a link between intrusive thoughts and voices. The final two models present evidence to implicate the role of interpretation of the experience as a key feature in an individuals' presentation. They propose that a negative interpretation leads to responses associated with distress and disability seen in individuals diagnosed with 'schizophrenia'.

These four theories will allow the exploration of the role of thoughts, beliefs and behaviour in relation to the development and maintenance of voices. It will examine the role of intrusive thoughts and meta-cognition; it will propose that voices are unwanted intrusive thoughts that are externally attributed; it will also suggest that meta-cognitive beliefs play an important role in voice hearing. A case will be made for the role of beliefs in affective and behavioural responses and a cognitive theory for the development and maintenance of voices, based on a

cognitive model of panic, will be reviewed. Within this latter model, the role of threat and safety behaviours will be considered. Finally, gaps in the research will be identified and hypotheses presented. The clinical relevance of this research will also be discussed.

## 1.2. Schizophrenia

### 1.2.1. History of schizophrenia

The term ‘schizophrenia’ dates back to the late 1800’s when Kraepelin first described it in 1896 as ‘dementia praecox’ (Boyle, 1990). It was this that marked the beginning of the modern concept of schizophrenia. Kraepelin produced over eight publications describing the symptoms and presentation of dementia praecox and by 1913 he had identified 11 sub-groups which all inferred the ‘illness’. These included: influence on thought; hallucinations of sight, sound and smell; catatonia; and paranoia. He also proposed a common pattern of onset, course and outcome (Bentall, 1990c).

Bleuler, who was influenced by Kraepelin’s writings, introduced the word ‘schizophrenia’ in 1911 and in essence echoed Kraepelin’s ideas. Bleuler, however, adopted his own set of criteria for inferring schizophrenia; indeed it was he who proposed the modern concept of primary symptoms (hallucinations and delusions) and secondary symptoms (withdrawal and thought disorder) (Boyle, 1990). These symptoms make up the modern-day diagnostic criteria for schizophrenia, outlined below.

### 1.2.2. Incidence and symptoms of schizophrenia

It is estimated that schizophrenia affects almost one in every 100 of the population, affecting more men than women (World Health Organisation (WHO), 1992). As mentioned, a diagnosis of schizophrenia is based on the presence of primary, and often concurrent secondary symptoms, that persist for at least one month. The criteria outlined by the Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition (DSM-IV, American Psychiatric Association, 1994) are summarised below.

### 1.2.2.1. Diagnostic criteria (APA, 1994)

A. Characteristic Symptoms: At least two of the following, each present for a significant portion of time during the last month:

1. delusions
2. hallucinations
3. disorganised speech
4. grossly disorganised or catatonic behaviour
5. negative symptoms, *i.e.*, affective flattening, alogia (loss of logical thought) or avolition (loss of will or motivation)

B. Social / occupational dysfunction

C. Continuous signs of disturbance over last month

D. & E. Exclusion of other medical or mood disorders

The primary symptoms of schizophrenia centre on hallucinations and disruption of thought (delusions and paranoia). Auditory hallucinations are the most common symptom reported by individuals experiencing an acute episode of schizophrenia, with 73 per cent reporting this symptom (World Health Organisation, 1973).

### 1.2.3. Models of Understanding Schizophrenia

Several models of schizophrenia have emerged in the literature over the last century. Historically, and to this day, schizophrenia has predominantly been understood in terms of the 'medical model'. This model includes theories such as the dopamine hypothesis, which implicates excessive activity in the dopaminergic system (Snyder, 1986) and is treated with anti-psychotic medication to regulate the dysfunction (Carr, 1999). Various other neurochemicals have also been implicated in schizophrenia: serotonin, noradrenaline, acetylcholine, prostaglandin, neuropeptides and gamma-aminobutyric acid (GABA) as well as a genetic component to the illness (Bentall, 1990c).

In addition to the medical model, there is a plethora of psychosocial and integrative models surrounding the aetiology of 'schizophrenia'. A popular example of an integrative theory is the stress-vulnerability model (Zubin & Ludwig, 1983). This model implicates dysfunctional

neurochemical levels and neuroanatomical abnormalities as a potential vulnerability, which can then interact with stress factors and lead to the occurrence of symptomatology. The biological vulnerabilities are also thought to underpin psychological abnormalities, such as information processing biases (Zubin & Ludwig, 1983).

Cognitive theories for schizophrenia have only developed since the late 1980's. This was the result of a reconceptualisation of the way schizophrenia was viewed. Cognitive theories centre on the role of thoughts and beliefs in the aetiology and maintenance of a problem. Within cognitive models, faulty beliefs and misinterpretations would be the main focus of therapy. Beck's (1976) cognitive model of depression, for example, suggests that people's experiences lead them to form assumptions about themselves and the world, which are used to organise perception and govern behaviour. Such assumptions concern, for instance, what people need to do to be happy ('If someone thinks badly of me, I cannot be happy') or what they must do to feel worthwhile ('I must do well at everything I undertake'). These are not responsible for depression alone, but can cause problems when they conflict with a critical event. So the belief that being worthwhile depends on total success could lead to depression in the face of failure. Once activated these dysfunctional assumptions lead to negative automatic thoughts. These negative automatic thoughts and dysfunctional assumptions would then be the focus of cognitive therapy for depression and would also form part of a cognitive approach to the symptoms of psychosis.

There is further literature examining the various models for understanding the aetiology and maintenance of 'schizophrenia'. The purpose of this study, however, was to further examine two cognitive models of hearing voices. Therefore, this literature review will now only focus on cognitive models and will then concentrate on the symptom of auditory hallucinations. This will provide the reader with information relevant to the models being investigated.

### 1.3. Development of Cognitive Theories for Schizophrenia

The advancements in cognitive theories for schizophrenia depended on two important developments. Firstly, there was the 'symptom approach', which shifted the focus away from a syndrome of 'schizophrenia' towards individual symptoms and encouraged the emergence

of many cognitive theories of auditory hallucinations, delusions and paranoia. Secondly, the symptom approach proposed that these symptoms lay on a continuum with normal experience, thus introducing the idea that hallucinations, delusions and paranoia were not discontinuous from normal experience, as previously believed, and not restricted to psychiatric populations.

### 1.3.1. The symptom approach

It was the reconceptualisation of schizophrenia in the late 1980's as "symptoms not syndrome" (Bentall, Jackson & Pilgrim, 1988), which allowed the development of a cognitive approach to the disorder. Until this time, the dominant approach in the field was the medical model in which schizophrenia was viewed as discontinuous from normal experience. For example, a delusion was traditionally defined as a belief, which is not weakened by counter argument or direct refutation (Chadwick, Birchwood & Trower, 1996). In contrast, one of the main aims in cognitive behaviour therapy is to help patients to challenge their irrational beliefs and erroneous interpretations (Hawton, Salkovskis, Kirk & Clark, 2001). Therefore, if the delusional belief were not amenable to challenging, then the role of cognitive psychotherapy would be limited.

Berrios (1991) argued that hallucinatory voices are not just a symptom of a higher-level disorder, but the content of the hallucination is in itself significant. Many authors support Berrios in acknowledging the significance of the individual symptoms of schizophrenia (*e.g.*, Persons 1986; Boyle, 1990; Bentall, 1990a). Boyle (1990), in particular, wrote extensively criticising the scientific validity of 'schizophrenia' as a psychiatric concept. Cognitive theorists now recommend that research on the aetiology and treatment of psychosis benefits from the focus on individual symptoms of hallucinations, delusions and paranoia, rather than the syndrome of 'schizophrenia' (*e.g.* Morrison, Haddock & Tarrier 1995; Chadwick, Birchwood & Trower, 1996).

Since this recommendation, several cognitive models for the aetiology and maintenance of the individual symptoms have arisen, basically because the focus on individual symptoms has allowed closer scrutiny of the mechanisms involved. Cognitive theory can be easily applied

based on the assumption that normal processes such as faulty beliefs or misattribution are involved.

With the assumption that the symptoms of 'schizophrenia' lie on a continuum with normal processes, research has examined the extent to which auditory hallucinations occur within the general population and can be induced in non-psychiatric individuals under laboratory conditions.

### 1.3.2. Auditory hallucinations as part of a continuum of normal experience

A cognitive approach relies on examining the role of thoughts, feelings and behaviour in order to understand and treat a particular problem. It aims to help the individual to challenge their irrational beliefs (Hawton *et al.* 2001). A cognitive approach to auditory hallucinations therefore would rely on the assumption that they are not discontinuous from normal experience, but rather involve the same irrational thoughts and beliefs seen in other emotional problems, such as depression. Research evidence is accumulating to support this.

#### 1.3.2.1. Incidence in non-psychiatric populations

Evidence reveals that auditory hallucinations are not uncommon and are not restricted to psychiatric populations. One study found that 16 per cent of primary care patients, with no psychiatric disorder, heard voices (Verdoux, Maurice-Tison, Gay, Van Os *et al.*, 1998). Epidemiological data showed that the annual incidence rate of hallucinatory experiences was four to five per cent of the general population (Tien, 1991). This was higher than the incidence rate of 'schizophrenia', estimated to be one per cent (WHO, 1992), suggesting that more people experience this symptom other than those diagnosed with 'schizophrenia'.

Studies examining the prevalence of auditory hallucinations in students found that between 37-71 per cent reported some experience of verbal hallucinations while awake (Posey & Losch, 1983; Barrett & Etheridge, 1992) and these experiences were unrelated to incipient psychopathology. Furthermore, the experience of hearing one's

own thoughts aloud is common, reported by over 30 per cent of respondents (Launay & Slade, 1981; Posey & Losch, 1983).

Since auditory hallucinations are experienced within the general population and without concurrent psychopathology, this suggests that the experience of hearing voices itself is not discontinuous from normal experience, and lends support to the idea that these symptoms lie on a continuum with normal experience.

#### 1.3.2.2. Auditory hallucinations produced under laboratory conditions

Hallucinations can also be induced in people without any psychopathology, under laboratory conditions. They can also be seen in those under the influence of drugs or alcohol, undergoing alcohol withdrawal or in a state of delirium (Kingdon & Turkington, 1994). Kingdon and Turkington further reviewed the occurrence of auditory hallucinations induced in normal individuals under laboratory conditions (Kingdon and Turkington 1994).

Involuntary confinement and hostage situations have also been found to produce hallucinations in many subjects (Seigel, 1984). Sensory deprivation has been found to increase suggestibility and when exposed to ideas about psychic phenomena, a group who were sensory deprived showed a greater change in attitude than a group of non-sensory deprived (Scott, cited in Slade 1984). Leff (1968) also found that in situations of sensory deprivation the more anxious a subject was, the more likely they were to hallucinate. He also concluded “perceptual experiences of normal people under conditions of sensory deprivation overlap considerably with those of mentally ill patients” (1968, pg 1507). Finally, sleep deprivation has been found to produce a proneness to auditory hallucinations (Oswald, 1974; Metzler, Kupfer & Wyatt, 1970).

The evidence of hallucinatory experiences in the normal population and in those without any psychopathology lends further support to the idea that auditory hallucinations are part of a continuum of normal experience. This view is an important one in the field of cognitive psychology. If psychotic phenomena are fundamentally the same as normal processes, such as those seen in anxiety or depression, then like these disorders, they can be understood and treated by similar means (Kingdon & Turkington, 1994). For instance, delusional beliefs could be subjected to reality testing, just as negative automatic thoughts or dysfunctional

assumptions can be in depression (Fennell, 2001). The individual could learn to question the thought or belief and to examine the evidence in support and in opposition of it.

The continuum model proposes that auditory hallucinations lie on a continuum with normal experience. It is perhaps the case that those individuals presenting to services with the symptom are at the more severe end of the continuum and present to services as a result of having a more disabling reaction to the experience. It is interesting to consider the role of interpretation in determining the reaction of the individual to the hallucinatory experience. The cognitive models presented in the next section will consider this.

## 1.4. Auditory Hallucinations

In 1952 Lavater first used the word “hallucinate”, which comes from the Greek term meaning ‘to wander in mind’ to refer to “ghosts and spirites walking by nyght” (Kingdon & Turkington, 1994). More recently, hallucinations have become a term used to describe an object or image that is not real. There are various current definitions of auditory hallucinations. The American Psychiatric Association (APA) define them as “a sensory perception that has the compelling sense of reality of a true perception but that occurs without external stimulation of the relevant sensory organ” (1994, p.767).

Another definition provided by Slade and Bentall (1988) is:

“Any percept-like experience which (a) occurs in the absence of the appropriate stimulus, (b) has the force or impact of the corresponding (real) experience, and (c) is not amenable to direct and voluntary control by the experiencer” (1988, p.23).

An auditory hallucination can take the form of noise, music, single words, a brief phrase or a whole conversation. Voices are defined as auditory hallucinations that are perceived as someone talking (Chadwick, Birchwood & Trower, 1996). In the current system of diagnostic classification e.g. DSM IV (APA, 1994) hallucinations are one of the defining features of schizophrenia. As mentioned previously, auditory hallucinations are the most common symptom reported by individuals experiencing an

acute episode of schizophrenia, with 73 per cent reporting this symptom (World Health Organisation, 1973).

The following section presents four cognitive theories of auditory hallucinations. The term auditory hallucination is used interchangeably with the term 'voices'. Whilst the researcher acknowledges that there are other forms of auditory hallucinations, these theories predominantly focus on voice hearing, as it is the most common form of auditory hallucination (Slade & Bentall, 1988).

## 1.5. Cognitive Theories for Auditory Hallucinations

These four theories include: a proposed mechanism for the external attribution of thoughts to an external source, which is experienced as a voice; the link between intrusive thoughts and voices; and two theories that examine the importance of the meaning or interpretation of the experience in determining the individuals' response to the voice.

### 1.5.1. Bentall's Theory of External Attribution

Bentall (1990a) presented a model for the mechanism of auditory hallucinations. In this he proposed that 'voices' or other hallucinations occur when internal events are misattributed to external sources. This misattribution is maintained by a reduction in anxiety.

A number of cognitive models have been proposed to account for hallucinations, the majority of which make the assumption that hallucinators at some level will misattribute internal cognitive events to an external source. These models differ as to the nature of the mechanisms thought to be responsible for this misattribution, but they all postulate some kind of stable cognitive "deficit". These include: deficits in selection underlying normal perception (Frith 1979); deficits in speech production (Hoffman 1986); and intellectual deficits (Heilbrun & Blum 1984).

However, Bentall (1990b) points out that deficit theories cannot offer a coherent explanation for the cultural and historical variation in the form, content and prevalence of hallucinatory

experiences. Bentall (1990a) proposes an alternative model for the occurrence of hallucinations, which leans on meta-cognition and reflects a *bias* of information processing.

Bentall defines meta-cognition as:

‘The term used ... to denote those mental processes involved in knowledge about mental processes: such processes are clearly important not only in introspection but also in the human being’s ability to control his or her own thinking’ (Bentall, 1990a, p.36).

Bentall (1990a) suggested that hallucinations result from a failure of the meta-cognitive skills involved in discriminating between self-generated and external sources of information.

Hallucinations occur when the individual wrongly infers that an internally generated cognitive event (e.g. verbal thoughts) is a ‘real’ event. For example, an individual hears his or her own thought saying “You are evil” but fails to recognise it as their own. Instead, they attribute it to an external person, for instance, their neighbour or the devil, this means it is then experienced as a voice in the third person.

Bentall’s idea that hallucinations are internal events wrongly attributed to external sources is supported by several subsequent studies. Bentall & Slade (1985) found that individuals who score high for vulnerability to hallucinations (measured using the Launay-Slade scale - Launay & Slade, 1981) and hallucinating psychiatric patients were more likely to report changes in signals in the absence of any real difference, compared to non-hallucinating controls. These individuals were also poorer at recognising their own thoughts (Heilbrun, 1980; Bentall, Baker & Havers 1991). Hallucinating patients have been found to be more likely to make external attributions of their own thoughts if they are positively or negatively salient in content (Morrison & Haddock, 1997; Baker & Morrison, 1998).

Bentall’s hypothesis is also consistent with findings that auditory hallucinations are accompanied by small movements of the speech muscles known as ‘sub vocalisation’; this is also found in normal individuals during ordinary verbal thinking (McGuigan 1966; 1978). Verbal tasks that block sub vocalisation also inhibit the occurrence of auditory hallucinations (Margo, Hemsley & Slade, 1981).

Morrison and Ensum (2003) found that hallucinators' tendency to misattribute internally generated information to external sources is sensitive to changes in their levels of self-focused attention. These findings are consistent with the cognitive bias model of Bentall (1990a) in that top-down processes are explicitly implicated in the synthesis of hallucinatory experience.

Bentall provides an explanation for the presence of auditory hallucinations in line with normal processes. What he neglects to offer is a comprehensive understanding of the significance of the content of the hallucinations. Berrios (1991) commented that the content is significant, but Bentall's theory might suggest that any event can be externally attributed if the individual cannot discriminate whether it is internal or external. The question is then posed as to why it is common that themes exist between voices and these that are often spiritual, threatening or unacceptable (Rachman, 1984).

### 1.5.2. Morrison, Haddock & Tarrier's Model of Intrusive Thoughts

Morrison, Haddock & Tarrier (1995) presented another top-down model that also implicated the role of meta-cognitive beliefs, but accounts for the content of the voice by postulating the link between intrusive thoughts and auditory hallucinations. This model of intrusive thoughts examined more closely the meaning of the content of auditory hallucinations and also implicated the role of interpretation of the hallucinatory experience in the maintenance of the symptom.

Intrusive thoughts are often unacceptable or ego-dystonic by nature and it is suggested that these conflict with meta-cognitive beliefs about thoughts (for instance, "thoughts are dangerous and uncontrollable"). In an attempt to reduce the resulting conflict (or cognitive dissonance), the thought is externally attributed and experienced as an auditory hallucination. Furthermore, it is suggested that the appraisal of the resulting hallucinatory experience elicits affective, physiological and behavioural responses.

#### 1.5.2.1. Mechanism of auditory hallucinations - Role of intrusive thoughts

Morrison, Haddock & Tarrier (1995) described intrusive thoughts as, "thoughts, images or impulses that are unacceptable or unwanted, unrealistic, uncontrollable and ego-dystonic"

(1995, p.271). The concept of ego-dystonic implies that the content of an intrusive thought is inconsistent with the individuals' belief system (Salkovskis, 1985). The idea that hallucinations are externally attributed intrusive thoughts is supported by the similarity in the characteristics of auditory hallucinations; prevailing cognitive models incorporate unintended, unexpected or ego-dystonic internally generated events and the subsequent external attribution of such events (Morrison *et al.*, 1995). Other authors have described the unrealistic and unacceptable nature of hallucinations, for example, Rachman, (1984) highlighted the often blasphemous, unacceptable violent or sexual themes common in voices. Chadwick & Birchwood (1994) also found the content of people's voices to include being told to rape, hit or kill someone and commands to commit suicide or steal. Finally, Morrison (1994) found that voice hearers reported no intrusive thoughts, which is unlikely considering that normal obsessions are a common occurrence (Salkovskis & Harrison, 1984). This might suggest that the intrusive thoughts are not experienced as thoughts because they are being attributed to an external source and experienced as voices. These similarities provide strong suggestions of a link between intrusive thoughts and auditory hallucinations.

#### 1.5.2.2. Mechanism of auditory hallucinations - Role of cognitive dissonance

Bentall's model examined the role of reinforcement in hallucinations and suggested that a reduction in anxiety can act as a reinforcer. Morrison *et al* (1995) however, noted that anxiety reduction alone cannot sufficiently account for the maintenance of auditory hallucinations, as many individuals experience positive or pleasant hallucinations. They proposed that Festinger's (1957) cognitive dissonance theory provides a better explanation for the maintenance of the external attribution of intrusive thoughts. Festinger (1957) described cognitive dissonance as resulting when two cognitions (e.g. thoughts, beliefs and feelings) contradict each other. Furthermore, he stated that dissonance is an uncomfortable state from which an individual is motivated to escape. For cognitive dissonance to occur, two other factors must be present: personal responsibility; and adverse consequences (Cooper & Fazio, 1984). Morrison *et al.* (1995) suggested that auditory hallucinations might prevent dissonance as they remove personal responsibility by attributing the intrusive thought to a third person.

Morrison *et al.* (1995) also hypothesised that meta-cognitive beliefs about controllability (that thoughts should be controllable) may make someone vulnerable to developing auditory hallucinations as such beliefs may increase the likelihood that the individual will infer

personal responsibility or adverse consequences, which is likely to give rise to cognitive dissonance. This idea is supported by findings that meta-cognitive beliefs about controllability and dangerousness of thoughts occur more often in hallucinating individuals, compared to non-hallucinating psychiatric and non-psychiatric controls (Baker & Morrison, 1998). Morrison *et al.* (1995) also proposed that the reduction in dissonance experienced when intrusive thoughts are externally attributed is relieving for the individual and thereby increasing the likelihood that other intrusive thoughts will be externally attributed. The advantages of a model that incorporates cognitive dissonance is that it can account for hallucinations that are pleasant or positive, as these result when positive thoughts are inconsistent with a person's belief system.

#### 1.5.2.3. Appraisal of the auditory hallucination

The maintenance of auditory hallucinations through reduction of cognitive dissonance has been outlined. However, Morrison *et al.* (1995) further proposed that once the intrusive thought is externally attributed and experienced as a voice, the appraisal of this experience elicits certain affective, behavioural and physiological responses. They indicated that a negative appraisal of the symptom is likely to lead to a negative response, including negative mood, increased physiological arousal and behaviours such as suppression or distraction. These negative responses are then proposed to lead to an increase in the likelihood that the hallucination will recur.

Morrison *et al.* (1995) proposed that a negative appraisal can lead to changes in mood, physiology and behaviour that can increase the occurrence of hallucinations, thus forming a vicious circle. Negative mood is thought to increase the likelihood of experiencing auditory hallucinations (Haddock, Bentall & Slade, 1995) for example, by causing a disturbance of sleep (a symptom of depression (Fennell, 2001)). Sleep deprivation has already been implicated in the increased occurrence of hallucinations (Metzler *et al.*, 1970). Negative mood induction was also found to increase the occurrence of intrusive thoughts (Welner & Horowitz, 1975). Behavioural responses to a negative appraisal may include suppression and distraction techniques, and these are purported to increase auditory hallucinations (Salkovskis & Campbell, 1994), for example, thought suppression has been shown to increase the occurrence of intrusive thoughts (Wells, 1995). Stress and arousal have also been found to increase the frequency of intrusive thoughts (Horowitz, 1975), thus a cycle develops.

Morrison *et al.* (1995) noted some shortcomings of their model. Firstly, it only described the responses to the hallucinatory experience based on a negative appraisal. They recognised that if the individual perceives the hallucinatory experience as positive or neutral this will effect the affective, behavioural and physiological responses to the voice. However, they did not offer any further explanation as to how this would influence the maintenance of the symptom. Secondly, they noted that the role of distraction techniques also needs further exploration. They cited findings that poor coping in voice hearers was associated with reliance on distraction (*e.g.* Romme & Escher, 1993), but stated that the use of distraction techniques and other thought control strategies have been found to have a positive effect on voices (Margo, Hemsley & Slade, 1981). The use of different thought control strategies has been further investigated by Morrison and colleagues and these studies suggested that punishment and worry-based thought control strategies, compared to distraction-based strategies, are associated with vulnerability to hallucinations and possibly general psychological dysfunction (Morrison and Wells, 2000; Morrison, Wells & Nothard, 2000).

Chadwick and Birchwood further explored the relationship between voice content, appraisals of hallucinations and subsequent responses with their ABC model. This model incorporates both positive and negative appraisals and subsequent affective, behavioural and physiological responses. The role of techniques such as distraction is further addressed in a later model (Morrison, 1998).

### 1.5.3. Chadwick and Birchwood's ABC Model

The ABC model demonstrates the importance of interpretation in understanding auditory hallucinations (Chadwick & Birchwood, 1994). In this way it is similar to Morrison *et al.*'s (1995) model, acknowledging the significance of the appraisal rather than the hallucination *per se*. They also proposed that the interpretation of the hallucinatory experience is important in determining the emotional and behavioural responses of the individual. Chadwick & Birchwood (1994) proposed a cognitive formulation of hallucinations of voices and showed how reactions to voices were mediated by beliefs about the voices' identity, power, purpose and the consequences of obedience and disobedience. This ABC model outlines the A (activating event) as the auditory hallucination, B (belief) the interpretation of the event and C (consequence) the emotional and behavioural consequences.

Based on data from 26 participants they found that emotional and behavioural responses to voices were incongruent with voice content in 31 per cent. For example, one voice called a participant a fool and told him to commit suicide but was construed as benevolent. Greater consistency was reported on the basis of beliefs about the perceived identity, power and purpose of the voice. A voice believed to be malevolent (punishment for previous misdemeanours or unjustified persecution) led to negative emotions and resistance to the voices' commands. A voice perceived as benevolent (protection from malevolent voices, help maintaining mental well-being, advisory role, development of special powers) provoked positive emotions, engagement with the voices' commands and obedience to the voice.

The reliability and validity of the concepts of malevolence, benevolence, resistance and engagement were measured and recognised by Chadwick & Birchwood (1995) with the development of the Beliefs About Voices Questionnaire (BAVQ). The 30-item scale assessed cognitive ("My voice is punishing me for something I have done") and behavioural ("When I hear my voice, usually I tell it to leave me alone") and affective ("My voice frightens me") reactions to voices. Responses were recorded using a dichotomous response scale ('yes' or 'no').

Birchwood and Chadwick (1997) used the BAVQ to test the validity of the ABC cognitive model. Data from 62 voice hearers found that beliefs about the power and meaning of voices showed a close relationship with coping behaviour and affect: malevolent voices were associated with fear and anger and were resisted; benevolent voices were associated with positive effect and were engaged. Measures of voice form and topography did not show any link with behaviour or affect. This produced empirical evidence to link positive appraisals with engagement and negative appraisals with resistance.

#### 1.5.3.1. Criticisms of the BAVQ

The BAVQ has two specific weaknesses. First, participants answered 'yes' or 'no' to each item; this meant that it was insensitive to individual differences or subtle changes over time. Second, although Chadwick & Birchwood's research showed omnipotence to be of significance, there was only one item measuring this ("My voice is very powerful"). Chadwick, Lees & Birchwood (2000) identified these weaknesses and produced a revised version (BAVQ-R). The revised version contained a further five items measuring

omnipotence and a four point response scale ('disagree', 'unsure', 'slightly agree', 'strongly agree').

The BAVQ-R was tested on 75 participants and reliability and validity were replicated for the original four subscales (malevolence, benevolence, resistance and engagement). There were strong relationships again between malevolence and resistance and benevolence and engagement. The omnipotence subscale showed strong relationships with malevolence and resistance. Omnipotence was negatively correlated with benevolence (Chadwick, Lees & Birchwood, 2000). The BAVQ-R was chosen as a measure for the present study, so will be reviewed in the 'Method' section.

#### 1.5.4. Morrison's Model of the Maintenance of Auditory Hallucinations

So far it has been proposed that the content of voices is linked to intrusive thoughts and this has significance for understanding voices as normal phenomena. These intrusive thoughts are inconsistent with an individual's meta-cognitive beliefs, consequently they are externally attributed and the resulting reduction in cognitive dissonance serves to maintain this attributory bias. However, the presentation of someone with voices can vary, as not all voice hearers seek psychiatric help. Morrison *et al.* (1995) suggested that the appraisal of the hallucinatory experience affects the individual's affective and behavioural response and can cause a vicious circle. Chadwick and Birchwood's (1994) model also found evidence that responses to voices were mediated by the individual's beliefs about the experience. Morrison (1998) proposed that the interpretation of the hallucination is significant in determining the disability and disturbance observed in psychiatric patients with voices.

The role of interpretation has been suggested as important and associated with the use of certain behaviours (Chadwick & Birchwood, 1994). Morrison (1998) presented a model for the maintenance of auditory hallucinations that looked at the role of misinterpretation of the hallucinatory experience as well as the role of safety behaviours (for example, thought control strategies). This approach was based on models of panic and anxiety developed by Clark (1986), Beck (1976) and Salkovskis (1991). Morrison suggested that auditory hallucinations are normal phenomena and that it is the misinterpretation of such phenomena that cause distress and disability commonly seen in patients with hallucinations and a diagnosis of

schizophrenia. In particular he implicated the misinterpretation to be one of perceived threat. The role of safety seeking behaviours in the maintenance of the misinterpretation was also proposed.

Clark (1986) presented a cognitive model for panic that stated that panic attacks result from an enduring tendency to misinterpret certain bodily sensations (usually normal anxiety responses) in a catastrophic manner (meaning immediate disaster). It is proposed that these misinterpretations are likely to be maintained by the use of safety behaviours (hypervigilance and avoidance).

Morrison (1998) applied the same model to auditory hallucinations. Normal phenomena (voices) are misinterpreted in a catastrophic manner (as threatening) and disconfirmation of this threat is avoided by the use of safety behaviours. Morrison (1998) proposed that it is the interpretation of the hallucinatory experience as threatening to physical or psychological integrity that produces those responses typical of individuals diagnosed with 'schizophrenia'. The misinterpretation of threat can be based on voice content ("You are going to die", would be a threat to physical integrity) or in relation to the experience itself (thinking it is a sign of impending madness would be a threat to psychological integrity) (Morrison, 1998). Baker and Morrison (1998) also found that hallucinating individuals are more likely to interpret their thoughts as dangerous or uncontrollable. It is suggested that these meta-cognitive beliefs are likely to increase the likelihood that the individual will interpret the auditory hallucination as threatening.

The role of hypervigilance and avoidance are implicated by Clark (1986) and Salkovskis (1991) as behaviours used to seek safety from the panic or anxiety, but state that these behaviours serve to worsen the fear, as they prevent disconfirmation of the perceived threat. For example, someone who experiences panic attacks when leaving the house may become hypervigilant to signs of panic when thinking about going out and may also avoid going out as much. Both these behaviours reduce the opportunity for the individual to disprove the threat perceived in going out, which serves to maintain the panic. Morrison (1998) proposes that in a similar way to panic, safety behaviours prevent the disconfirmation of the threat perceived by the hallucinator (e.g. shouting back at the voice to avoid doing what it says; distracting oneself in an attempt to avoid going mad). As with panic, these behaviours provide

temporary relief, but prevent disconfirmation of the perceived threat, which serves to worsen the fear.

As mentioned earlier, the role of safety behaviours in the maintenance of auditory hallucinations is still somewhat undefined. Punishment and worry-based thought control strategies have been implicated in vulnerability to hallucinations, whereas distraction-based strategies are more common in non-patients (Morrison & Wells, 2000), implying that distraction may be a more helpful way of managing intrusive thoughts. However, Nayani and David (1996) reported that distraction based behaviours, such as watching television, were cited as making hallucinations worse. Morrison (1998) also implicated safety behaviours that prevent disconfirmation of the perceived threat of the voice as part of the maintenance of hallucinations; these behaviours may include avoidance and escape-behaviours (Salkovskis, 1991). Salkovskis (1991) highlights the difference between avoidance and coping behaviours in anxiety, and there is some evidence to show that distraction can be a beneficial coping tool for some voice hearers (Margo, Hemsley & Slade, 1981). The role of safety behaviours in hallucinating individuals needs further investigation.

## 1.6. Summary

These four theories lend support to the idea that auditory hallucinations lie on a continuum with normal experience and are based on this assumption. They propose that the interpretation of the hallucinatory experience is more important than the experience itself in determining the individuals' response. It is thought that those individuals who present to services are not distinct because they 'hear voices' but because they interpret the experience in a negative way and this negative interpretation leads to the distress and disability seen in patients with a diagnosis of 'schizophrenia'. Therefore, it is postulated that those individuals within the general population who report hearing voices interpret this differently, perhaps more positively. These theories also suggest that the negative interpretation leads to an increase in the likelihood that the hallucination will reoccur, thus leading to a vicious circle.

Bentall proposed that auditory hallucinations are the result of a bias in information processing. Morrison *et al.* (1995) also implicated top-down processes in their model, finding

support for Bentall's (1990b) idea that meta-cognition plays an important role in the external attribution of internal events and postulated that auditory hallucinations were intrusive thoughts that conflict with these meta-cognitive beliefs. They also proposed that the reduction in cognitive dissonance maintains this attribution. The affective and behavioural response to the hallucination is mediated by the interpretation or appraisal of the experience, with negative appraisal leading to responses likely to increase the likelihood of further hallucinations. Chadwick & Birchwood (1994) further supported the role of interpretation of the hallucination as their research found strong empirical relationships between beliefs about voices and affective and behavioural responses.

Morrison (1998) proposed a model of maintenance of auditory hallucinations, which implicated the role of perceived threat of the hallucinatory experience and the role of safety behaviours in the maintenance of the symptom. This was based on other cognitive models for panic and anxiety (Clark, 1986; Salkovskis, 1991). There is no research at the time of writing to investigate the links between the interpretations about voices' intent in Chadwick & Birchwood's (1994) model and that of threat in Morrison's (1998) model. Morrison's (1998) model also requires further research to investigate the relationship between perceptions of threat and the use of safety behaviours.

## 1.7. Research Gaps

1. This review highlights a common theme within the models presented. The role of appraisal of the experience of hearing voices is important in the affective, behavioural and physiological response shown by the individual. However, Chadwick and Birchwood (1994) implicated beliefs about the voice's intentions (malevolence or benevolence) whereas Morrison (1998) implicated beliefs about threat as important in the appraisal of hallucinations. One aim of this study therefore was to see what the relationship would be between beliefs about malevolence and benevolence and beliefs about threat.

2. The final model presented (Morrison, 1998) also needs further investigation. The second aim of this study was to examine the relationship between perceived threat and the use of safety behaviours. There is no research at the time of writing, investigating this relationship within the literature on auditory hallucinations.

## 1.8. Hypotheses

1. There is a relationship between beliefs about threat and beliefs about malevolence.
2. There is a relationship between beliefs about threat and beliefs about benevolence.
3. There is a relationship between beliefs about threat and the use of safety behaviours.

## 1.9. Clinical Relevance

It is proposed that the study would add to clinical knowledge about the experience of hearing hallucinatory voices and more importantly, to understanding differences in that experience. It would investigate the relationship between an individual's beliefs about their voices' intent and their perceptions about the threat posed by the voice. It will also investigate any link between perceptions of threat and engagement in safety behaviours. These may then be used to inform therapies for individuals with hallucinatory voices.

In understanding the different interpretations of the auditory hallucinatory experience the clinician can explore these in therapy. If an individual engages in safety behaviours (which are hypothesised as maintaining hallucinatory voices) because they perceive their voice as threatening, then therapy could focus on assessing and challenging the individual's perceptions of threat. This provides a different approach to treatments for hallucinatory voices. This could be informed by post-traumatic stress disorder (PTSD) literature and may suggest further links between the two experiences (Frame & Morrison 2001).

The role of safety behaviours as part of disconfirmation of threat may lend credence to existing ideas that these behaviours are a consequence of the hallucinatory experience and not part of a syndrome of "schizophrenia". Therapy for hallucinatory voices may also then target

these behaviours in order to interrupt a cycle, as with therapies for panic disorder, obsessive-compulsive disorder (OCD) and generalised anxiety disorder (GAD). This kind of cognitive approach to the treatment of auditory hallucinations may also allow therapy to be more time-limited and therefore would be more cost-effective.

## **2. METHOD**

### **2.1. Overview**

This chapter will illustrate how the study was designed and implemented and it will start by outlining the design of the study and will provide details about the participants who took part in the study and the measures that were selected. The method section will then present information regarding ethical and procedural issues to enable replication of the study.

### **2.2. Design**

A correlational design was adopted to investigate the relationships between the degree of threat associated with the participants' experience of hearing their voice and 1) the beliefs they hold about their voice's malevolence 2) beliefs about their voice's benevolence and 3) their use of safety behaviours. The selection of this design was prompted by the research hypotheses, which predicted relationships between these three variables, but could not postulate any cause and effect.

### **2.3. Participants**

Participants were recruited through mental health professionals within acute and rehabilitation services. A self-help hearing voices group was also accessed. Participants were identified who had heard voices within six months of being approached, irrespective of diagnosis and who were able to complete the research interview.

In total 36 people were approached regarding participation in the study. Nine declined to take part, two failed to complete the research interview, two did not meet the criteria and two participants experienced deterioration in their psychosis after initially agreeing, so were unable to take part.

Twenty-one people completed the interview procedure, 13 men and eight women, aged between 20 and 62 years (mean age 40.6; standard deviation 10.6). Ten of the 21 participants lived in supported accommodation, eight lived independently and three were in inpatient settings at the time of the interview. One participant was colour-blind and was therefore not able to complete the emotional Stroop test. One other participant only completed part of the emotional Stroop test; the rest of their data was not excluded as they had completed the other measures. More detailed descriptive statistics are given in appendix H.

### 2.3.1. Power analysis

It was hoped that a sample of 30 participants would be interviewed, which would have enabled a correlation of 0.5 and above to be detected with 80 per cent power at the five per cent significance level. However, it was only possible to interview 21 participants due to time constraints and this enabled the detection of correlations of 0.57 and above, with 80 per cent power at the five per cent significance level.

## 2.4. Measures

### 2.4.1. Psychotic Symptom Rating Scale (PSYRATS): Auditory Hallucinations scale

#### 2.4.1.1. Rationale for choice of measure

This measure was not adopted to examine the hypotheses, but had two important functions. It served as a gentle introduction into the interview, asking about frequency and volume of the voice, progressing to more emotive questions about negative content. It is recommended in interview and questionnaire design to begin with easy questions, leaving more personal questions for when a rapport is more established (Oppenheim, 1984). Due to the vulnerable nature of the client group it would have been unethical to start the interview with the next measure, which assessed beliefs about voices. The PSYRATS also allowed the researcher to assess the type and severity of the participants' hallucinations, which was important for the safety of the researcher who was often alone with the participant. This particular measure was

selected on the basis that there are few scales to measure the severity of different aspects of hearing voices. In addition to this it was hoped that this measure would provide some interesting information about the participants (see appendix H).

#### 2.4.1.2. Description of the measure

The PSYRATS was designed to measure the severity of different dimensions of auditory hallucinations and delusions and is a multiple-choice questionnaire (Haddock, McCarron, Tarrier & Faragher, 1999; see appendix A). For the purpose of this study, only the auditory hallucinations scale was administered. The auditory hallucinations scale of the PSYRATS has 11 items. These include frequency, volume and location of voices, as well as amount of negative content and controllability. Each item is measured using a five-point scale (0-4) and a total score was calculated relating to severity of the symptoms.

The auditory hallucinations scale was found to have good inter-rater reliability with estimates of reliability of above 0.90 for nine of the 11 items. The items of this scale showed few inter-item correlations. This suggests that the items on the scale are independent of each other, and therefore contribute a unique assessment of each symptom characteristic. In the current study the Cronbach's alpha was 0.71, indicating good reliability. A score 0.7 is recommended as a minimum for measures with more than ten items (Nunnally, 1978); the PSYRATS has 11 items.

#### 2.4.2. Beliefs About Voices Questionnaire – Revised (BAVQ-R)

##### 2.4.2.1. Rationale for choice of measure

The original Beliefs About Voices Questionnaire (BAVQ) was devised by Chadwick and Birchwood (1994) and was derived from their cognitive theory of hearing voices. It was designed to measure the hearer's beliefs about their voices' intent (malevolent or benevolent) and the affective and behavioural response to their voice (resistance or engagement). Chadwick & Birchwood (1995) found the BAVQ to be reliable (mean alpha coefficient 0.85; mean test-retest correlation 0.89) and valid (principal-components analysis revealed single and strong factors for each sub-scale).

Chadwick, Lees & Birchwood (2000) subsequently criticised the BAVQ for the dichotomous response scale ('yes' / 'no') which prevented identification of small changes over time and the limited number of questions related to omnipotence (power of the voice), which was identified as an important construct. Chadwick, Lees & Birchwood (2000) therefore developed the revised version (BAVQ-R) with an additional subscale measuring omnipotence. This measure was developed to assess for beliefs about malevolence and benevolence, identified by Chadwick and Birchwood (1994) and has been shown to be reliable. This was therefore the obvious choice of measure to assess for beliefs about malevolence and benevolence for the present study.

#### 2.4.2.2. Description of the measure

The revised Beliefs About Voices Questionnaire (Chadwick, Lees & Birchwood, 2000) is a 35-item scale comprised of five subscales and is designed as a multiple-choice questionnaire (see appendix B). Three scales measure the beliefs about the voice (malevolent, benevolent and omnipotence) and two measure emotional and behavioural responses to the voice (resistance or engagement). In this version responses are rated on a four-point scale (0-3). The respondent can select from four options in response to each statement: disagree; unsure; slightly agree; strongly agree. Subscale totals can be calculated for the five subscales.

Reliability for the BAVQ-R was high. The mean Cronbach's alpha for the five sub-scales was 0.86 (range 0.74-0.88). Correlations between subscales suggested construct validity. With respect to the four subscales of the original BAVQ (Chadwick & Birchwood 1994, 1995; Birchwood & Chadwick 1997) strong relationships were found between malevolence and resistance and benevolence and engagement. The new omnipotence scale in the BAVQ-R strongly positively correlated to malevolence and resistance and strongly negatively correlated with engagement. No significant relationship was found between omnipotence and benevolence.

This study was primarily concerned with the malevolence and benevolence subscales. The Cronbach's alpha for both of these subscales was therefore examined; each subscale contained six items.

#### 2.4.2.3. Malevolence subscale

The Cronbach's alpha for the malevolence subscale in the current study was 0.6. For well-established measures, if the Cronbach's alpha is less than 0.7, the alpha value can be calculated without individual items in the scale (Pallant, 2001). If the alpha value is higher without an item, then Pallant (2001) recommends it be removed from the scale. Without item BAVQ-R1 the Cronbach's alpha for this subscale was 0.7 (see appendix C for table of values). However, the researcher decided not to remove this item, as this would make the results of this study less comparable with other research. The reader is therefore cautioned about the low reliability (0.6) of this subscale and any findings obtained. This is further reviewed in the Discussion section.

#### 2.4.2.4. Benevolence subscale

In the present study the Cronbach's alpha for this subscale was 0.89. This indicates very good reliability.

### 2.4.3. Safety Behaviours Semi-structured Interview

#### 2.4.3.1. Rationale for choice of measure

Morrison & Nothard (in press) designed this semi-structured interview aimed to gather information regarding the behaviours used by voice hearers to cope with their voices. This questionnaire was selected in the absence of any suitable quantitative questionnaires. The questionnaire is semi-structured due to the typically idiosyncratic nature of safety behaviours and the researcher was advised to favour a measure that accounted for these idiosyncrasies (Morrison, 2004, personal communication).

#### 2.4.3.2. Description of the measure

This measure guides the interviewer through a series of questions designed to explore how and what the individual might do when they hear their voice. For the purpose of this study, the data needed to be quantitative, so the semi-structured interview was used to explore the

various safety behaviours used by the participant and facilitate the selection of the preferred behaviour. The participant was then asked to rate this one behaviour on four different scales, using a visual analogue scale (0-100, where zero is low and 100 is high). These four scales were: effectiveness, frequency, need and distress if behaviour could not be used. Effectiveness was measured by asking the participant ‘How helpful is the behaviour?’; frequency was measured by asking ‘How often do you use the behaviour when you hear the voice?’; need was assessed by the question ‘How much do you need the behaviour?’; and distress was measured by asking ‘How distressed would you feel if you could not use the behaviour?’. The quantitative data gathered from these four scales was then used in the data analysis. (See appendix D for interview and four rating scales).

This questionnaire has no reliability or validity data from previous studies. However, in the present study the Cronbach’s alpha was high (0.82) indicating good internal consistency. This suggests that the four scales are all assessing the same attribute, in this instance, safety behaviours. There were two medium size correlations (0.40 and 0.42) between the scales ‘distress if the behaviour could not be used’ and ‘frequency’ and ‘effectiveness’. Four large correlations were found between the remaining subscales (range, 0.52-0.77). This indicates adequate construct validity.

#### 2.4.4. Objective Measure of Threat – Emotional Stroop Test

##### 2.4.4.1. Rationale for choice of measure

An emotional Stroop test was selected as a measure of threat for two reasons: firstly, advice was sought from the author of the model being explored that implicated threat (Morrison, 2004, personal communication); secondly, it is a well-established finding in the literature that people with emotional disorders show greater Stroop interference in colour-naming words with relevant emotionally salient content (Watts, McKenna, Sharrock & Trezise, 1986).

The Stroop test has existed since 1935 and has many versions (Trenerry, Crossen, DeBoe & Leber, 1995). It was designed to assess the cognitive ability to shift between conflicting verbal response modes (Lezak, 1983). Stroop (1935) introduced the basic format based on earlier reports that reading colour names required less time than naming colours (Cattell,

1886) and that this remained even with practice implicating different cognitive mechanisms for each (Brown, 1915). In the original version (Stroop, 1935) the subject was asked to name the colour ink in which an item is printed whilst attempting to ignore the item itself. The items in question were meaningless stimuli (such as, rows of Xs) or actual colour names. In the latter case the words would appear in different colour ink (for instance *red* would appear in green ink). It has been repeatedly found that it takes subjects longer to name the colour of the item when it is a colour word rather than meaningless stimuli (Stroop, 1935; Jensen & Rowher, 1966). This has become known as Stroop interference (Marshall, 2002).

Subsequent research has found that other words can also cause interference (Klein, 1964) and many studies have found that there is latency in colour naming of words with negative affect (Gotlib & McCann, 1984; Watts, McKenna, Sharrock & Trezise, 1986). This type of Stroop test is known within the literature as an emotional Stroop test. A common finding amongst the research on emotional Stroop tests is that people with emotional disorders show greater Stroop interference for words with negative emotional content than for neutral words (Marshall, 2002). The Stroop effect becomes stronger when the words are salient to the specific emotional disorder (Williams, Mathews & MacLeod, 1996). For example, Watts, Sharrock & Tresize (1986) found that spider-avoidant individuals showed latency in colour-naming words related to spiders, such as “hairy” or “crawl”. This effect has been demonstrated across a number of emotional disorders, including depression (Williams & Nulty, 1986), anxiety (Mathews & MacLeod, 1985), obsessive-compulsive disorder (Foa, Ilai, McCarthy, Shoyer & Murdock 1993) and eating disorders (Channon, Helmsley and de Silva, 1988).

More recently the emotional Stroop test has been used with clients with psychosis. Bentall & Kaney (1989) adapted the Stroop to assess attentional bias in patients with persecutory delusions. They found that participants with delusions showed latency on the words related to threat / paranoia. An emotional Stroop test was designed for the present study to assess for the presence of threat. The researcher adopted the same design as that used by Bentall and Kaney (1989) as they referred to their fourth word card as ‘*threat-related* or paranoid’ words.

The Stroop can be scored in a variety of ways: the time taken to complete the task; the number of errors; or the number of correct responses within a given time limit (Marshall, 2002). However, a popular technique used by many authors, is to calculate an interference

score (e.g. Richards & Millwood, 1989; Dawkins & Furnham, 1989; and Martin, Williams & Clark, 1991). The interference score is the time taken to colour-name a given number of neutral words, subtracted from the time taken to colour-name the same amount of emotionally salient words. This score represents the latency effect in responding caused by the emotional words – the Stroop interference. The researcher decided to adopt this latter method of scoring for this study; the time taken to complete the neutral words would be subtracted from the time to complete the threat-related words. This method fitted best with the correlational design of the study and also removed any differences between participants, as each participant creates their own baseline score (neutral words). The neutral words were selected as a baseline, as opposed to the meaningless stimuli (Os) in this study as this was the preferred method used in the literature.

#### 2.4.4.2. Description of the measure

The design of the cards was the same as those used by Bentall and Kaney (1989). The first card consisted of a series of Os of different lengths, three, six, six, seven and nine characters. The second card consisted of neutral words (bud, recipe, number, diamond, collector), the third of five words of depressive content (sadly, defeat, afraid, reject, hopelessly) and the fourth card of potentially threat-related or paranoid words (spy, threat, follow, whisper, persecute). Each card contained 50 items in five colours (red, blue, green, yellow and brown) and each colour occurred 10 times on each card (see appendix E for word cards). The lengths of the words were matched for Thorndike & Lorge (1944) length and frequency.

Each participant reads aloud the colour that each word was printed in as fast as they could, for all 50 words on each of the four word cards. Each participant therefore had four reaction time scores, for each of the four word cards. These were recorded using a stopwatch. A Stroop interference score was calculated for each participant by subtracting the neutral words reaction time from the threat-related words reaction time. This meant that the depressive words and meaningless stimuli reaction times did not contribute to the final Stroop interference score.

## 2.4.5. Subjective Measure of Threat

### 2.4.5.1. Rationale for choice of measure

In addition to the emotional Stroop test the researcher decided to use a more subjective measure. A rating scale was designed to assess levels of threat, based on a visual analogue scale (where zero was 'no threat' and 100 was 'in fear of your life'). This was used as an adjunct to the Stroop and had the advantage of asking participants directly about their beliefs about the threat posed by their voice. It was felt that, as beliefs about threat are a subjective construct, it was important to have a subjective measure as well as the more objective emotional Stroop test to assess for threat.

### 2.4.5.2. Description of the measure

Firstly, participants were asked two questions: "Is your voice threatening?" and "Do you feel threatened by your voice?" This was used to ensure that each participant understood the meaning of the word 'threatened'/ 'threatening' and was further explained with the Oxford dictionary definition of the words. This describes threat as 'an expression of intention to punish or hurt' or 'a person or thing liable to bring danger or catastrophe'. These data were not used in the hypothesis testing but served to ensure that the participant understood the meaning of the term 'threat' (Oxford Dictionary, 1984).

Participants were then asked to rate how threatened they felt on a visual analogue scale (0-100, where zero is 'none' and 100 is 'in fear of your life'). This rating was based on a specific example given in the safety behaviour interview that asked the participant to recall their most recent experience of voice hearing. The aim of this example is to aid the memory of the emotions experienced at the time of hearing the voice and thus maximise the accuracy of the ratings. The participant was asked to recall this recent experience and was then asked to rate out of 100 how threatened they had felt by their voice (see appendix F for questions and rating scale).

## 2.5. Procedure and Ethical Considerations

### 2.5.1. Ethical Approval

Leicestershire Research Ethics Committee approved the research procedure (see appendix G for letter). This included seeking approval from relevant Heads of Specialty for permission to approach clients for participation. The researcher was granted all of the relevant approval.

### 2.5.2. Consent

The researcher was aware that this client group might find it difficult to decline to take part in the study. The client's key worker therefore always made the initial approach and it was felt that this made it easier for the client to discuss any concerns. The key worker passed on an information sheet to each participant and gained preliminary consent to be approached by the researcher. The approval of a member of staff was also always sought before approaching any clients.

The participants were asked at the interview if they had received an information sheet and had read and understood it. The researcher took care to point out three main points: that participation was voluntary; information was confidential; and data were anonymous. The participant was also given the opportunity to ask further questions. If the participant was able to understand the main points of the information sheet and signed the consent form, this was considered adequate consent.

### 2.5.3. Pilot

A pilot interview was conducted. A colleague role-played a patient with hallucinatory voices and the interview was completed. Although it would have been more realistic to conduct the pilot interview on a real client, participants were scarce, and the pilot data cannot be used if any changes are made to the procedure. This would have effectively meant losing data from a limited source.

The only changes made as a result of the pilot were amendments to the wording of the PSYRATS, removing the word 'patient' or the phrase 'the patient'. This label was not considered appropriate for the research, as the clients are referred to as 'participants' on the information sheet and letter of invitation.

#### 2.5.4. Procedure

##### 2.5.4.1. Recruitment

The researcher visited day hospitals and multi-disciplinary teams in both Adult Mental Health Services and Rehabilitation Services in Leicester. The researcher also contacted the small homes and units within the Rehabilitation Service, as well as two of the Consultant Psychiatrists. A local independent self-help group for voice hearers was also contacted via this service.

All potential participants were contacted through a key worker, who passed on a letter of invitation and an information sheet to the client and gained the clients' consent to be contacted by the researcher and verbal consent to participate. The researcher then contacted the participant directly to set up an interview and written consent was taken by the researcher at the beginning of the interview.

##### 2.5.4.2. Order of administration of questionnaires

The questionnaires were presented in the following order: PSYRATS, BAVQ-R, safety behaviours interview, subjective threat questions, emotional Stroop test. The rationale for this order was to present the multiple-choice questionnaires first (PSYRATS and BAVQ-R) and the PSYRATS was specifically selected as a suitable measure to begin the interview. The semi-structured interview was introduced once the participant had begun to talk about their experience, as this requires more collaboration. The Stroop test was administered last, as it was potentially the most emotive test and may have influenced any subsequent questionnaires. The subjective threat questions were asked before the Stroop test, as these were an appropriate lead in to the objective threat measure.

#### 2.5.4.3. Interview Procedure

An interview procedure was adopted for the study as it was felt this was most appropriate due to the sensitive nature of the subject material and the needs of the client group. Interviews were designed to be completed within 45-minutes to avoid overwhelming the participants and maximise concentration and cooperation. Participants were offered the opportunity to break at any time and scheduled breaks were organised with some individuals. The option to complete the interview over two appointments was also made available.

Participants were interviewed in a variety of locations, including day hospitals, group homes and their own homes and this was arranged for the convenience of the participant. Clinical back up was made available for each participant after the interview and a member of clinical staff within their existing care team provided this. Alternatively, interviews were arranged prior to groups or other appointments. Participants were only interviewed in their own homes if they were known to the team in which the researcher was based. This was then only agreed after discussion with the key worker and a check-in procedure was adopted for all interviews to ensure the safety of the researcher.

At the start of the interview participants were asked when they last heard voices; if this was more than six months ago the interview would have been terminated. They were then asked whether they heard more than one voice and if so, they were asked to choose the more important voice. The word 'important' was used rather than 'dominant' or 'powerful' so as to avoid influencing the participant into selecting a malevolent rather than benevolent voice, as this study was interested in exploring both malevolent and benevolent voices. It was then stated that for the duration of the interview all questions would relate only to the chosen voice. Participants were then asked to complete two multi-choice questionnaires (PSYRATS and BAVQ-R). The researcher read the questions aloud to the participant and gave the choice of answers. These were also provided with the multiple-choice responses in written format. The researcher then conducted the semi-structured interview to select the desired safety behaviour; the participant then rated that behaviour according to the four scales. Again, the researcher both read aloud the scales as well as providing it in a visual format. The participants were then asked whether their voice was threatening and asked to complete the rating scale about threat based on the most recent experience of hearing voices, again they

were shown the scale in visual format. Finally, they were administered the adapted emotional Stroop test.

#### 2.5.4.4. Administration of the Stroop test

Firstly, the participant was asked whether they were aware if they suffered from colour-blindness. A short practice test was also conducted to ensure colour discrimination, the participants were asked to read out the colours of five neutral words not used in the test printed in the five colours used in the main Stroop test ('and', 'every', 'when', 'this' and 'then', printed in red, blue, green, yellow and brown, respectively). If the participant was not able to correctly identify these five colours then the emotional Stroop test was not administered. The participant was then instructed to read aloud the colour names of all 50 words on each of the four cards in turn, as quickly as possible without making any mistakes. The time taken to complete each card was measured using a stopwatch. To avoid any practice effects, the order of presentation was rotated, so an equal number of participants were administered each card first, keeping the cards in the same order (see table 1).

**Table 1. Stroop card presentation order**

Order No.	1 <sup>st</sup> card	2 <sup>nd</sup> card	3 <sup>rd</sup> card	4 <sup>th</sup> card
1	Os	Neutral	Threat	Depressive
2	Neutral	Threat	Depressive	Os
3	Threat	Depressive	Os	Neutral
4	Depressive	Os	Neutral	Threat

## **3. RESULTS**

### **3.1. Overview**

This section will examine the data collected from the measures outlined in the previous chapter, this includes: Psychotic Symptom Rating Scale – auditory hallucinations scale (PSYRATS) total scores; Beliefs About Voices Questionnaire – Revised (BAVQ-R) subtotal scores (malevolence and benevolence); safety behaviour ratings; subjective threat rating; and the emotional Stroop interference scores. The data type, normality and descriptive statistics will be presented for each data set. The results section will then present the statistical tests chosen to examine the hypotheses as well as discussing the rationale for this choice.

### **3.2. Preliminary analysis**

A pairwise comparison of the Stroop reaction times was carried out and revealed a significant difference between reaction times for threat-related words and meaningless stimuli (Os) ( $t=-3.67, df=18, p<0.01$ ) and for threat-related words and neutral words ( $t=-2.74, df=18, p<0.05$ ). There was no significant difference between threat-related words and depressive words ( $t=1.96, df=18, p<0.1$ ). Stroop interference scores were calculated for each participant by subtracting their reaction time to complete the neutral word card, from their reaction time to complete the threat-related word card. This created a latency score that represents the interference caused by the threat-related words.

### **3.3. Normality and Descriptive Statistics**

#### **3.3.1. Psychotic Symptom Rating Scale (PSYRATS) total score**

The PSYRATS total score represents a measure of symptom severity. This measure consisted of 11 items: frequency; duration; location; loudness; beliefs about voice origin; amount of negative content; degree of negative content; amount of distress; intensity of distress; disruption to life; and controllability. The items can be calculated to form a total score of symptom severity, however the frequencies for each of the 11 items allows the reader to learn

more about the demographics of the participants. As mentioned previously, this measure was not used as part of the analysis of the hypotheses, so will not be covered in the main results section, but the descriptive statistics for these items are summarised in appendix H.

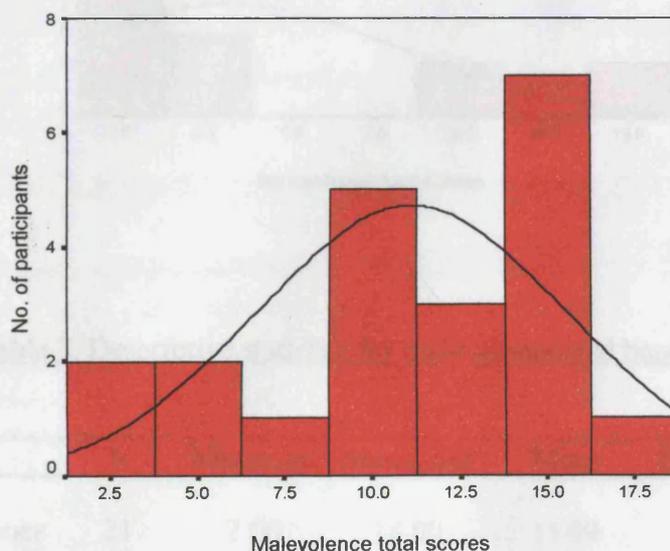
### 3.3.2. Beliefs About Voices Questionnaire – Revised (BAVQ-R) subscale total scores

This measure yielded subscale total scores and this type of data would be recognised as interval (continuous) data. Only the subscale scores for malevolence and benevolence will be presented, as only these two were pertinent to the hypotheses.

#### 3.3.2.1. Malevolence subscale

The data for the malevolence subscale are presented in the graph in figure 1. It appears slightly negatively skewed (towards the high end), however when the mean (11.09, range 2-18 ) is compared to the five per cent trimmed mean (11.21, range 2-18) there is little difference and this confirms that there are no outliers affecting the data. The descriptive statistics for this subscale are presented in table 2.

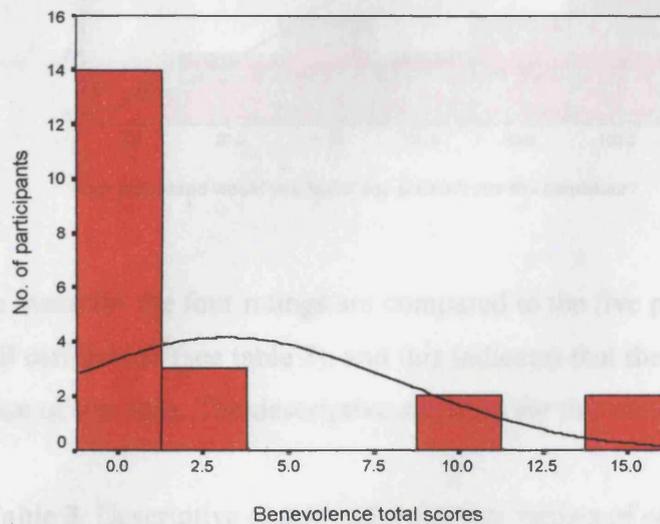
**Figure 1.** Graph of distribution for malevolence subscale scores



### 3.3.2.2. Benevolence subscale

The graph in figure 2 indicates that the data for the benevolence subscale is positively skewed (towards the low end). There are two outliers within this subscale, but these two scores represent those participants at the top end of the range (range 0-16) who considered their voice to be benevolent. As this subscale was designed to measure beliefs about benevolence it was important to include these two data points as they represent the minority of individuals who rated high for beliefs about benevolence. The difference between the mean (3.19, range 0-16) and the five per cent trimmed mean (2.65, range 0-16) illustrates that these outliers are not having a great impact on the overall mean. It was therefore decided that the data analysis would benefit from including these outliers. The descriptive statistics for this data are presented in table 2.

**Figure 2.** Graph of distribution for benevolence subscale scores



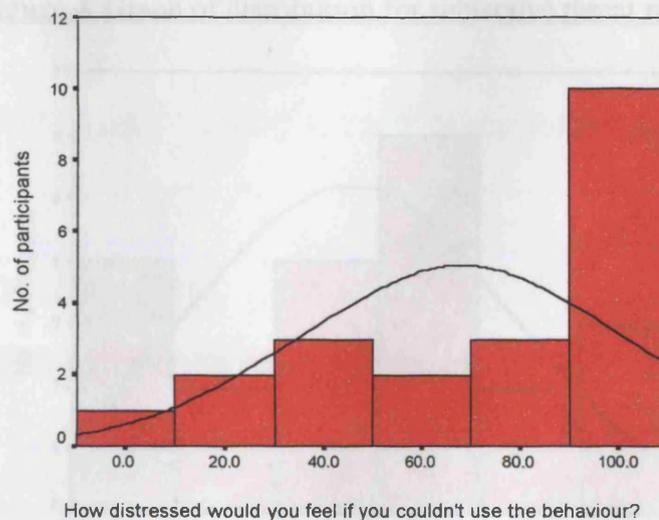
**Table 2.** Descriptive statistics for malevolence and benevolence subscale scores

	N	Minimum	Maximum	Mean	Std. Deviation
Malevolence	21	2.00	18.00	11.09	4.42
Benevolence	21	.00	16.00	3.19	5.01

### 3.3.3. Safety Behaviour subscale ratings (0-100)

This measure yielded four ratings out of 100, where zero is low and 100 is high and this type of data would also be recognised as interval (continuous) data. The four subscales ratings of this measure are all negatively skewed, an example is given in the graph in figure 3; this represents the distribution of one of the four ratings.

**Figure 3.** Graph of distribution for safety behaviour rating scale



When the mean for the four ratings are compared to the five per cent trimmed mean, there are only small differences (see table 3), and this indicates that there are no outliers influencing the distribution of this data. The descriptive statistics for this measure are also presented in table 3.

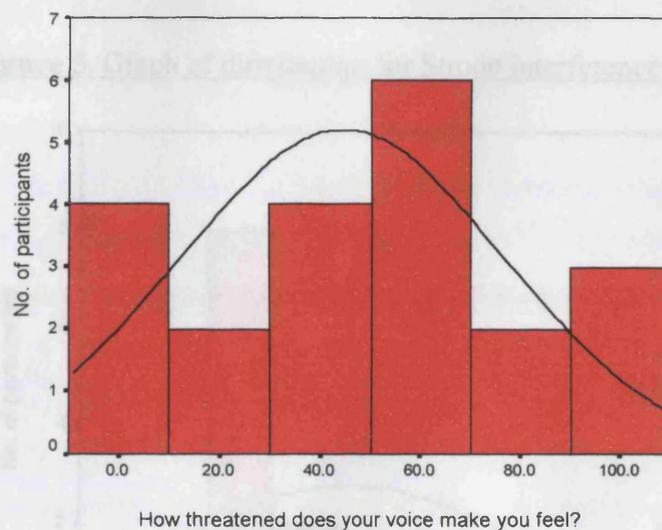
**Table 3.** Descriptive statistics for the four ratings of safety behaviours

	N	Minimum	Maximum	Mean	5% trimmed mean	Std. Deviation
How helpful is the behaviour?	21	0	100	76.10	78.86	25.64
How often do you use the behaviour?	21	0	100	64.43	65.98	32.18
How much do you need to use the behaviour?	21	0	100	70.24	72.46	31.00
How distressed would you feel if you couldn't use the behaviour?	21	0	100	68.10	70.05	33.07

### 3.3.4. Subjective threat rating (out of 100)

This measure also yielded a rating score out of 100, where zero is equal to ‘none’ and 100 is equal to ‘in fear of your life’. This type of data would also be recognised as interval (continuous) data. The data for this rating is normally distributed, as seen in the graph in figure 4, and there are no outliers. The descriptive statistics for this measure are presented in table 4.

**Figure 4.** Graph of distribution for subjective threat rating scale



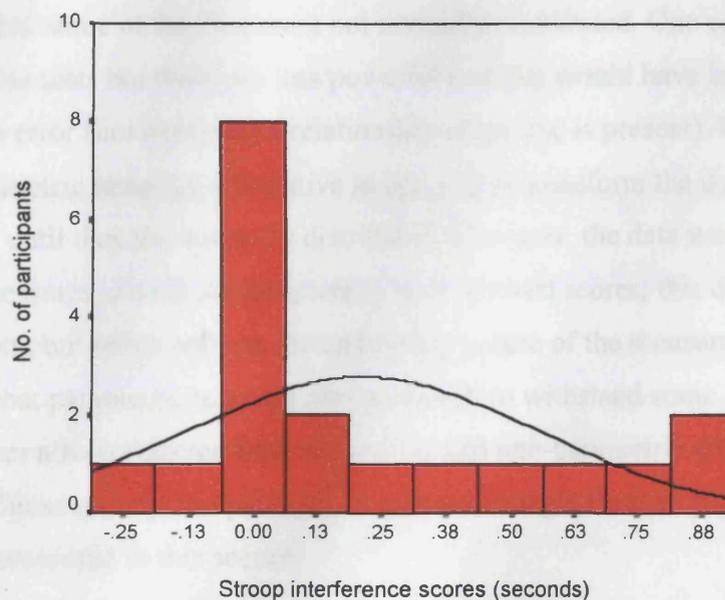
**Table 4.** Descriptive statistics for subjective threat rating scale (out of 100)

	N	Minimum	Maximum	Mean	Std. Deviation
How threatened does your voice make you feel?	21	0	100	44.57	32.13

### 3.3.5. Objective Threat Measure - Stroop interference scores

This measure yielded a Stroop interference score for each participant. This type of data would be recognised as interval (continuous) data. The data for the Stroop interference scores was normally distributed, as shown in the graph in figure 5. There were no outliers and the comparison between the mean (0.21, range -0.28 - 0.86) and the five per cent trimmed mean (0.20, range -0.28 - 0.86) supports this. The descriptive statistics for this measure are presented in table 5.

**Figure 5.** Graph of distribution for Stroop interference scores



**Table 5.** Descriptive statistics for Stroop interference scores

	N	Minimum	Maximum	Mean	Std. Deviation
Interference score (seconds)	19	-0.28	0.86	0.21	0.34

### 3.4. Choice of statistical tests

The design of the study and choice of statistical tests is governed by the research hypotheses. These all postulated a relationship between two variables, but did not imply any causal relationships and these relationships can therefore be explored using correlations. If the data fulfil criteria for parametric data, then a Pearson product-moment correlation would be the most suitable test.

#### 3.4.1. Selection of a parametric test

The data met all the assumptions for the parametric test Pearson product-moment correlation, except that some of the data were not normally distributed. One option would be to use non-parametric tests but these are less powerful and this would have increased the likelihood of a type two error (not detecting a relationship when one is present). It was therefore preferable to use parametric tests. An alternative to this was to transform the data, which entails modifying the data until they are normally distributed. However, the data were only slightly skewed and many measures used in social sciences have skewed scores; this does not necessarily indicate a problem, but rather reflects the underlying nature of the measure (Pallant, 2001) and it is argued that parametric tests are robust enough to withstand some skewness in the data. The researcher also conducted both parametric and non-parametric analyses and no difference was found. Consequently, the parametric analyses, using a Pearson product-moment correlation will be presented in this section.

### 3.5. Hypotheses Testing

There were two stages to the analysis of each hypothesis, as there were two measures of threat. The first stage involved using the Stroop interference scores and the second using the subjective threat ratings; a Pearson product-moment correlation was used to test all of the hypotheses. A correlation is designed to examine the relationship between two continuous variables and provides a numerical summary of the strength and direction of the relationship. A correlation of one indicates a perfect relationship and zero would indicate no relationship; the direction of the correlation is represented by a plus or minus sign. A correlation is limited

to revealing a relationship and cannot infer causality. Cohen’s (1988) guidelines on categorising correlation sizes were used. These suggest that r-values of between 0.1 and 0.29 are small correlations; r-values between 0.3 and 0.49 are medium and r-values greater than 0.5 represent a large correlation.

**3.5.1. Hypothesis 1 “There is a relationship between beliefs about threat and beliefs about malevolence.”**

**3.5.1.1. Hypothesis 1a “There is a relationship between emotional Stroop interference scores and malevolence scores.”**

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the emotional Stroop interference score) and malevolence (as measured by the BAVQ-R malevolence subscale score). There was a small positive correlation, but it was not significant ( $r=0.243$ ,  $n=19$ ,  $p<0.5$ ).

**3.5.1.2. Hypothesis 1b “There is a relationship between subjective ratings of threat and malevolence scores.”**

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the subjective ratings of threat, ‘How threatened does your voice make you feel?’) and malevolence (as measured by the BAVQ-R malevolence subscale score). There was a large, significant positive relationship ( $r=0.571$ ,  $n=21$ ,  $p<0.01$ ) between subjective ratings of threat and malevolence scores. Table 6 presents the correlation coefficient.

**Table 6. Pearson correlation coefficients between subjective ratings of threat and malevolence scores**

Measure	Malevolence
Subjective rating of threat (out of 100)?	.571**

N = 21

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Hypothesis 1:** There was only a small, non-significant correlation between Stroop interference scores and malevolence scores. However, there was a large, significant positive correlation between subjective threat rating scores and malevolence scores. Hypothesis one can therefore be supported.

### 3.5.2. Hypothesis 2 “There is a relationship between beliefs about threat and beliefs about benevolence.”

#### 3.5.2.1. Hypothesis 2a “There is a relationship between emotional Stroop interference scores and benevolence scores.”

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the emotional Stroop interference score) and benevolence (as measured by the BAVQ-R benevolence subscale score). There was no correlation for this relationship ( $r=-0.009$ ,  $n=19$ ,  $p<0.1$ ).

#### 3.5.2.2. Hypothesis 2b “There is a relationship between subjective ratings of threat and benevolence scores.”

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the subjective ratings of threat, ‘How threatened does your voice make you feel?’) and benevolence (as measured by the BAVQ-R benevolence subscale score). There was a large, significant negative correlation between subjective ratings of threat and benevolence scores ( $r=-0.603$ ,  $n=21$ ,  $p<0.01$ ). The correlation coefficient is presented in table 7.

**Table 7.** Pearson correlation coefficients between subjective ratings of threat and benevolence scores

	Benevolence
Subjective rating of threat (out of 100)	-.603**

N = 21

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Hypothesis 2:** There was no correlation between Stroop interference scores and benevolence scores. However, there was a large, significant negative correlation between subjective threat rating scores and benevolence scores. Hypothesis two can therefore be supported.

### 3.5.3. Hypothesis 3 “There is a relationship between beliefs about threat and the use of safety behaviours.”

#### 3.5.3.1. Hypothesis 3a “There is a relationship between emotional Stroop interference scores and safety behaviour ratings.”

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the emotional Stroop interference score) and the use of safety behaviours (as measured by the four safety behaviour ratings). There was a small, but non-significant negative correlation between the Stroop interference score and the rating of distress without the behaviour (measured by the question ‘How distressed would you feel if you could not use the behaviour?’ [ $r=-0.215$ ,  $n=19$ ,  $p<0.5$ ]). There were two medium, but non-significant negative correlations between Stroop interference scores and ratings of effectiveness (measured by ‘How helpful is the behaviour?’ [ $r=-0.335$ ,  $n=19$ ,  $p<0.5$ ]) and need (measured by ‘How much do you need to use the behaviour?’ [ $r=-0.409$ ,  $n=19$ ,  $p<0.1$ ]). There was one medium, significant negative correlation between Stroop interference and ratings of frequency (measured by ‘How often do you use the behaviour?’ [ $r=-0.479$ ,  $n=19$ ,  $p<0.05$ ]). Table 8 presents the correlation coefficients for these relationships.

**Table 8.** Pearson correlation coefficients between Stroop interference scores and safety behaviour ratings (scores out of 100).

	Effectiveness	Frequency	Need	Distress without behaviour
Interference score	-.335 <sup>NS</sup>	-.479*	-.409 <sup>NS</sup>	-.215 <sup>NS</sup>

N = 19 \* Correlation is significant at the 0.05 level (2-tailed).  
<sup>NS</sup> = Correlation is non-significant (2-tailed).

**3.5.3.2. Hypothesis 3b “There is a relationship between subjective ratings of threat and safety behaviour ratings.”**

A Pearson product-moment correlation coefficient was used to examine the relationship between threat (as measured by the subjective ratings of threat, ‘How threatened does your voice make you feel?’) and the use of safety behaviours (as measured by the four safety behaviour ratings). There was a large, significant positive relationship between subjective ratings of threat and the rating of distress without the behaviour (measured by ‘How distressed would you feel if you could not use the behaviour?’ [ $r=0.783$ ,  $n=21$ ,  $p<0.01$ ]). There were also three small but non-significant positive correlations between subjective ratings of threat and ratings of frequency (measured by ‘How often do you use the behaviour?’ [ $r=0.282$ ,  $n=21$ ,  $p<0.5$ ]), need (measured by ‘How much do you need to use the behaviour?’ [ $r=0.286$ ,  $n=21$ ,  $p<0.5$ ]) and effectiveness (measured by ‘How helpful is the behaviour?’ [ $r=0.188$ ,  $n=21$ ,  $p<0.5$ ]). The correlation coefficients are presented in table 9.

**Table 9.** Pearson correlation coefficients between subjective ratings of threat and the four safety behaviour ratings (scores out of 100).

	Effectiveness	Frequency	Need	Distress without behaviour
Subjective ratings of threat	.188 <sup>NS</sup>	.282 <sup>NS</sup>	.286 <sup>NS</sup>	.783**

N = 21 \*\* Correlation is significant at the 0.01 level (2-tailed).  
<sup>NS</sup> = Correlation is non-significant (2-tailed).

**Hypothesis 3:** There was one medium, significant negative correlation between the Stroop interference scores and the safety behaviour rating scale measuring how often the participant used their behaviour. There was also a large and significant positive correlation between subjective ratings of threat and the safety behaviour rating measuring how distressed the participant would feel if they could not use their behaviour.

Hypothesis three is partially supported, as there are some significant relationships between threat scores and safety behaviour ratings.

### 3.6. Additional analysis

#### 3.6.1. Relationship between omnipotence and threat

Chadwick and Birchwood (1994; 1995; Birchwood and Chadwick, 1997) found that the power of the voice (omnipotence) was as influential as beliefs about malevolence and benevolence. The researcher therefore considered it valuable to examine this relationship as part of the additional analyses. A Pearson product-moment correlation coefficient was used to explore the relationship between threat (as measured by both Stroop interference scores and subjective threat ratings) with omnipotence (measured by the omnipotence subscale of the BAVQ-R). The correlations were small positive correlations, both non-significant. The coefficients are presented in table 10. It should be noted by the reader that the Cronbach's alpha for this subscale was low (0.59), so any results should be interpreted with caution.

**Table 10.** Pearson correlation coefficients between omnipotence, Stroop interference scores and subjective ratings of threat

Measure	Stroop interference scores	Subjective threat ratings
Omnipotence	.220 <sup>NS</sup>	.213 <sup>NS</sup>
N	19	21

<sup>NS</sup> = Non-significant

## 4. DISCUSSION

### 4.1. Overview

The discussion will begin by reminding the reader of the aims and hypotheses of the study; the results will then be summarised and interpreted in light of the literature presented in the introduction. Discussion of the results will be structured around the research hypotheses, with hypotheses one and two presented together in the interpretation section, to aid readability. A methodological critique of the study will be outlined and the implications of the findings will be considered. Finally, the researcher will present ideas for future research.

### 4.2. Research Aims and Hypotheses

The first aim of this study was to explore the relationship between beliefs about malevolence and benevolence, as presented by Chadwick and Birchwood (1994) in their ABC model of hearing voices and beliefs about threat, as implicated by Morrison (1998). This led to hypothesis one, '**there is a relationship between beliefs about threat and beliefs about malevolence**' and hypothesis two, '**there is a relationship between beliefs about threat and beliefs about benevolence**'.

The second aim of the study was to explore the relationship between threat and the use of safety behaviours, as proposed by Morrison's (1998) model of the maintenance of auditory hallucinations. This yielded the third hypothesis; '**there is a relationship between beliefs about threat and the use of safety behaviours**'.

### 4.3. Summary of Results

Two measures were used to assess levels of threat in participants: the emotional Stroop interference score, which reflected the amount of delay or latency that was caused by threat-related words on an emotional Stroop test; and a subjective rating scale from zero to 100, where an increased rating represented increased levels of threat. This meant that there were

two sets of data that contributed to each of the three hypotheses and were presented by dividing each hypothesis into part A and part B.

Hypothesis 1a revealed a non-significant correlation between Stroop interference scores and malevolence scores, this relationship was not strong enough to support hypothesis one, that there is a relationship between threat and malevolence. Hypothesis 1b however, revealed a significant ( $p < 0.01$ ) positive correlation between subjective ratings of threat and malevolence scores. This correlation suggests there is a relationship between participants' subjective ratings about how threatened their voice made them feel and their scores reflecting their beliefs about the malevolent intentions of their voice, thus supporting hypothesis one. The direction of this correlation suggested that as ratings about threat increased so did scores about malevolent intent.

The results relating to hypothesis 2a revealed no relationship between Stroop interference scores and benevolence scores and did not therefore support hypothesis two, that there was a relationship between threat and benevolence. Hypothesis 2b however was used to support hypothesis two as the results revealed that there was a significant ( $p < 0.01$ ) negative correlation between subjective ratings of threat and benevolence scores. This correlation was strong enough to infer a relationship between participants' subjective ratings about how threatened their voice made them feel and their scores reflecting their beliefs about the benevolent intentions of their voice. The direction of the correlation suggested that as ratings about threat increased, scores about benevolent intent decreased.

Within hypothesis three, only two of the eight correlations were significant. Hypothesis 3a revealed a significant ( $p < 0.05$ ) negative correlation between Stroop interference scores and the rating about frequency of use of safety behaviours. This correlation was strong enough to suggest a relationship between the latency effects of colour-naming threat-related words, compared to neutral words and the frequency of use of the participants' idiosyncratic safety behaviour and thus partially supported hypothesis three. The direction of this relationship suggested that the greater the level of threat the lower the frequency of use of the safety behaviour. The results also revealed non-significant correlations between Stroop interference scores and ratings of effectiveness, need and distress if the behaviour could not be used. Therefore, these correlations did not support hypothesis three.

Hypothesis 3b revealed a significant ( $p < 0.01$ ) positive correlation between subjective ratings of threat and ratings about the distress if the safety behaviour could not be used. This correlation is strong enough to infer a relationship between participants' subjective ratings about how threatened their voice made them feel and their ratings on how distressed they would feel if they could not use their safety behaviour and thus partially supported hypothesis three. The direction of this correlation suggested that as ratings about threat increased so did ratings about distress. There were also three non-significant correlations between subjective ratings of threat and ratings about effectiveness, frequency and need of safety behaviours. These three correlations do not support hypothesis three.

## 4.4. Interpretation of the Results

### 4.4.1. Hypotheses one and two

The first aim of the present study was to explore the relationship between beliefs about threat and beliefs about voice's intent. This led to the development of hypotheses one and two and was assessed using two measures of threat. The interpretation of the results for these two hypotheses will be presented together and will examine the findings of the Stroop interference score first followed by the subjective ratings of threat, for both hypotheses. It is hoped this will avoid unnecessary repetition. It is noted that Morrison (1998) refers to a misinterpretation of threat in his model of auditory hallucinations. Whilst acknowledging that this could be defined just as an interpretation, this term, which is consistent with the terminology used in the model, will be used throughout.

#### 4.4.1.1. Stroop interference scores

Hypothesis one was designed to examine the relationship between the voice hearers' beliefs about how threatened they felt by their voice as well as their beliefs about its malevolent intentions. The Stroop interference scores did not correlate significantly with malevolence score and this means that the latency of colour-naming the threat-related words, compared to the neutral words in the emotional Stroop test was not significantly related to the participants' malevolence scores on the BAVQ-R. The malevolence score represents the participants'

beliefs about the malevolent intentions of their voice. Hypothesis two was designed to examine the relationship between the voice hearers' beliefs about how threatened they felt by their voice as well as their beliefs about its benevolent intentions. The Stroop interference scores did not correlate with benevolence scores and this suggests that these two variables were not related. To summarise, neither malevolence or benevolence subscales scores were strongly correlated with Stroop interference scores and there may be a number of reasons for these two results.

It is possible that there were relationships but the data had insufficient power to detect them; however, it may be that the emotional Stroop test was not sensitive enough to detect subtle differences in relation to changes in malevolence or benevolence scores. The emotional Stroop test was designed to measure the distracting effect of five threat-related words and thus reveal the presence of threat-related difficulties, based on empirical findings that participants are more distracted by words related to their specific psychological difficulties (Williams, Mathews & MacLeod, 1996). The test therefore assumes that only those individuals who feel threatened by their voice will be distracted by the threat-related words. The pairwise comparisons presented as part of the preliminary analysis revealed that there was a significant difference between reaction times for threat-related words compared to neutral words, across the whole sample of participants. This suggests that the emotional Stroop test was measuring some distracting effect of threat-related words, but this was not related to changes in malevolence or benevolence scores.

The lack of a significant relationship between Stroop interference scores and malevolence and benevolence scores may be due to the nature of the Stroop test. It was demonstrated, in the preliminary analysis, that there was a significant distracting effect of the threat-related words for the whole sample, but this may be because the words relate to the experience of hearing voices rather than threat. All participants may be sensitised to the threat-related words used in the Stroop test (*spy, follow, whisper, threat* and *persecute*) and this may also reflect the common use of these sorts of words with individuals reporting hallucinatory voices, regardless of any presence of feelings of threat. Indeed, the word 'threat' and 'persecute' had already been mentioned earlier in the interview and this in itself may have had a priming effect on the participants' performance. Sensitivity to these words may be enough to cause a latency effect on the emotional Stroop test, perhaps without the presence of threat. It is also

worth noting that the subjective rating of threat came before the emotional Stroop test and this may also have primed the participants to the threat-related words.

It is possible that the Stroop interference scores were affected by other confounding variables, for example the influence of other voices. Many of the participants in the present study reported hearing more than one voice but the interviewer asked them to select only one voice about which to answer the research questions. The voice selected may not necessarily have been a threatening or bad voice as they were asked to choose the most important one, but the selection of one voice for discussion does not preclude the presence and influence of other voices. It is possible that a participant with a threatening voice may be more distracted by the threat-related words, even if this voice was not the subject of questions within the research interview and consequently the questions relating to malevolence. This would then mean that the Stroop data would not necessarily correlate with the data about malevolence, as the Stroop test was open to influence from other voices and it may have assessed for the general presence of threat. In addition, Morrison's (1998) model predicts that the distress and disability associated with a misinterpretation of threat is the precipitant to contact with services, which would presuppose that all the participants perceived some threat in their voices, as they were recruited through Mental Health Services. Other confounding variables such as poor reading ability as well as fluctuations and variations in concentration and motivation will be discussed further in the critique of the emotional Stroop test.

#### 4.4.1.2. Subjective ratings of threat

Hypotheses one and two were supported by two significant correlations found between subjective ratings of threat and both malevolence and benevolence scores. There was a significant positive correlation ( $p < 0.01$ ) between subjective ratings of threat and malevolence scores. This therefore suggests that there is a relationship between threat and malevolence scores and that the greater the perceived threat the greater the beliefs about malevolent intentions. There was also a significant negative correlation ( $p < 0.01$ ) between subjective ratings of threat and benevolence scores. This suggests that there is a relationship between threat and benevolence scores and that the greater the perceived threat the lower the scores were for benevolence.

The relationship between malevolence and threat may be understood by examining the six items of which the malevolence subscale comprised. These consist of questions relating to

feeling punished, persecuted or harmed, about the voice being evil and wanting the individual to do bad things or a belief that the voice wanted to corrupt or destroy them. It seems likely that if an individual holds these beliefs about their voice then they would also feel threatened by that voice. Indeed, the dictionary definition given to participants in this study described threat as ‘an expression of intention to punish or hurt’ or ‘a person or thing liable to bring danger or catastrophe’ (Oxford Dictionary, 1984). The nature of the beliefs that make up the construct of malevolence are inherently the same as that which constitutes a definition of threat. The relationship between these two misinterpretations identified by two separate cognitive models of auditory hallucinations (Chadwick & Birchwood, 1994; Morrison, 1998) appears to be describing very similar phenomena.

The relationship between benevolence and threat suggests that the more benevolent the voice is believed to be, the less threatening it is. The six items that the benevolence subscale comprised of relate to feeling helped and protected by the voice, as well as feeling grateful for the voice. It also reflects beliefs that the voice is helping the individual to maintain sanity, develop special powers or achieve goals. When one examines these questions it also seems reasonable that an individual who holds these beliefs about their voice would not find it threatening. Indeed, the qualities described seemed to protect against that which is defined as threatening (intention to harm, potential danger or catastrophe (Oxford Dictionary, 1984)). The benevolent voice is believed to protect the individual and help them to develop powers, achieve goals and ward off insanity; these voices seem to bring about positive events as opposed to any harm or danger, which would be perceived as threatening. It is therefore predictable that these two constructs should be related in this inverse way.

The relationships found between threat, malevolence and benevolence further support the constructs measured within Chadwick and Birchwood’s (1994) model and suggest that they are closely related to the misinterpretation of threat implicated in Morrison’s (1998) model. Furthermore, the findings also highlighted that the relationship between threat and benevolence are negatively correlated. The nature of this relationship fits with Chadwick and Birchwood’s (1994) model, which presents malevolence and benevolence as opposing constructs. Furthermore, if the distribution of scores for malevolence and benevolence are examined, they lend support to Morrison’s (1998) proposal that people with a diagnosis of ‘schizophrenia’ are likely to be those who negatively appraise the experience of hallucinations.

The scores for malevolence and benevolence in the present study can be examined using proposed cut-off scores (Chadwick and Birchwood, 1995). For malevolence a score of four or more out of 18 is considered clinically relevant and for benevolence a score of three or more out of 18 is clinically significant. This study found that 19 of the 21 participants scored above the cut-off for malevolence, compared to only seven participants who scored above the cut-off for benevolence. This reveals that the majority of the individuals interviewed for this study had notable levels of malevolent beliefs about the voice they chose to discuss. All of the participants were recruited through Mental Health Services and this may support Morrison's (1998) proposal that individuals who present to Mental Health Services have more negative appraisals about their voice. It could also reflect the type of voice chosen for the interview and therefore the incidence of malevolent beliefs in predominant voices in the client group.

Another interesting additional finding revealed that there was no such relationship in the present study between threat and omnipotence scores. Chadwick and Birchwood (1995) found that omnipotence, or power, was an 'endemic feature of patients' construction of their voices', but neither the subjective ratings of threat nor the Stroop interference scores correlated strongly with omnipotence scores in the present study. This is an interesting finding as it might suggest that threat and power are not related in the voice hearers in this study, or that the sample size was not large enough to detect any relationship. It is also interesting to consider the items that make up the omnipotence subscale. These reflect beliefs that the voice is powerful, all knowing, uncontrollable, rules their life and that it makes the individual do bad things and will punish them for disobedience. It may be important to note that eight participants in the study were able to live independently and many participants had engaged in some form of therapy. It is speculated that these individuals may have learned coping strategies and whilst they still hold beliefs that their voice intends them harm they may believe less strongly that the voice has the power to do so. However, all of this is speculative and further research would be needed to explore these ideas.

In summary, the presence of a relationship was found between threat and malevolence and threat and benevolence, where threat was represented by the subjective ratings of threat, as opposed to the Stroop interference scores. Hypotheses one and two were therefore supported.

### 4.4.2. Hypothesis three

Hypothesis three was designed to explore the relationship between perceptions of threat and the use of safety behaviours. Threat was assessed using the Stroop interference scores and subjective ratings of threat and safety behaviours were measured by four rating scales about effectiveness, frequency, need and distress if the safety behaviour could not be used. The findings from the Stroop interference scores will be presented first, followed by those from the subjective rating scale.

#### 4.4.2.1. Stroop interference scores

Hypothesis 3a yielded a significant correlation ( $p < 0.05$ ) between the Stroop interference scores and ratings for frequency of safety behaviour use. This correlation was strong enough to support hypothesis three, that there is a relationship between threat and the use of safety behaviours, however it only postulates a relationship between threat and how often the participants used their safety behaviour. The direction of the correlation indicated that as perceived threat increased, then the use of safety behaviours decreased. This is not in line with Morrison's (1998) model, as he suggested that misinterpretations of threat would lead to the use of safety behaviours, which was implicated in the maintenance of the hallucination.

It was previously speculated that the Stroop interference scores might be influenced by other voices than the one chosen for the interview. The Stroop interference score may therefore represent a more global measure of threat and this may mean that as the overall threat felt by an individual increased, their use of safety behaviours decreased. It is interesting to consider the meaning of this relationship.

One reason that safety behaviour frequency may decrease with increased levels of perceived threat could be that individuals felt overwhelmed or powerless against the voice or perhaps too frightened to disobey it and thus their safety behaviours were used less often. Increased threat may also have led to a negative mood, which could evoke feelings of helplessness or hopelessness, common symptoms of depression (Fennell, 2001). This may also have had the effect of reducing the individuals' motivation and thus their ability to use their safety behaviours. Indeed this would fit with Morrison's (1998) model that a negative appraisal (*e.g.*

misinterpretation of threat) leads to negative mood. It is therefore worth considering in future research, the impact that negative mood has on motivation and safety behaviour use and incorporating this into models of auditory hallucinations.

Within hypothesis 3a there were three non-significant correlations between Stroop interference scores and ratings of effectiveness, need and distress if safety behaviour could not be used. There may be several explanations why these correlations were not significant, for example, it is possible that there were relationships but the study did not have enough power to detect them. Ratings for effectiveness were not strongly correlated to threat and this may be because the use of safety behaviours may not necessarily be based on whether it is 100 per cent effective. In fact, it seems likely that effectiveness may be more related to frequency and need of the safety behaviour, because if a behaviour is only partially effective then it may only be used some of the time and the individuals may rely on additional safety behaviours as well. For instance, the majority of participants had more than one behaviour that they used to cope with their voice, therefore ratings relating to the one selected for the interview may be influenced by the knowledge that other ways of coping are available to them. Similarly, this may influence the relationship between ratings about need and distress if the behaviour could not be used. The participants' need for that particular behaviour and distress felt without it may not have increased as perceptions of threat increased, if they had other safety behaviours to rely on. These findings highlight the complicated nature of safety behaviours and further research is needed to explore this area.

It is also worth noting that if the Stroop interference scores were measuring a more global level of threat, including that posed by other voices, these data may not have directly correlated with safety behaviour ratings, as these were based on one voice. Indeed, the researcher is cautious in over-interpreting these results, as the Stroop interference scores did not detect relationships between threat, malevolence and benevolence when there were strong correlations for these relationships using the subjective threat ratings. This may support suspicions that the Stroop interference scores were not measuring threat in the same way as the subjective rating. The emotional Stroop test was also subject to various confounding variables, mentioned in the critique of the measure.

#### 4.4.2.2. Subjective ratings of threat

Hypothesis three was also partially supported by a significant correlation between subjective ratings of threat and ratings of distress if the safety behaviour could not be used. This relationship suggests that as perceptions of threat increased then levels of distress if the behaviour could not be used also increased. Interestingly, the same relationship was not detected when Stroop interference scores measured threat and this further supports the researcher's suspicions that the subjective ratings of threat and the Stroop interference scores were perhaps measuring different parameters of threat.

The relationship between subjective threat ratings and ratings of distress if safety behaviour could not be used suggests that the more threatening the voice is perceived to be the more reliant the participant was on their safety behaviour. This could mean that the safety behaviour is important in coping with a threatening voice and the perceived distress without it increased as the perceived threat increased. It may indicate that the safety behaviour is believed to have a role in dealing with the threat and perhaps has a protective function. Such an explanation would fit with Morrison's (1998) model that the maintenance of hallucinations involves the use of safety behaviours to prevent the disconfirmation of the threat. However, it is possible that the participants were reliant on their behaviours because they were genuinely helpful in challenging the threat posed by the voice and this study did not distinguish between those behaviours that helped the participant to avoid the threat and those that helped to challenge it.

Morrison (1998) implicated the use of avoidance and escape-based behaviours in preventing disconfirmation of threat and thereby maintaining hallucinations and other research recognises that there are helpful and unhelpful thought control strategies (Morrison & Wells, 2000; Morrison, Wells & Nothard, 2000). This study may have benefited from defining the type of safety behaviours used by the individual, for instance whether it helped them to challenge the voice or whether it was an avoidance-based behaviour. It is important to make this distinction and then assess the relationship with threat before the model can be fully supported; this would be a good area for further research. It would also be interesting to investigate the relationship between these behaviours and beliefs about malevolence and benevolence.

Hypothesis 3b also found three non-significant correlations between subjective ratings of threat and effectiveness, frequency and need. There could be various explanations for these results, for example the study may not have had enough power to detect significant relationships, or there may be other factors influencing the variance of the scores. One possible explanation for these results could be that the nature of the questions used to assess for effectiveness, frequency and need were too broad or difficult to quantify; this seemed likely when these questions were examined.

Effectiveness was assessed by asking the participant 'how helpful is the behaviour?'. Problems may have arisen firstly as it is difficult to determine how the behaviour may be 'helpful'. The term 'helpful' could be described in several ways: as a reduction in frequency of hearing the voice; feeling more in control; feeling less distressed; and even just reducing the volume of the voice. This was likely to have been idiosyncratic to each participant. The question used to assess effectiveness was very broad and cannot necessarily be quantified by just one question and this may have made it more difficult to detect a relationship with threat.

Frequency was assessed by asking 'how often do you use the behaviour when you hear your voice?'. The nature of the question did not make this difficult to quantify, but participants had to quantify how often they used their behaviour as a proportion of time that they heard their voice. For example, those participants who heard their voice twice a week and only used their behaviour once a week would need to rate 50 out of 100 to accurately quantify the frequency of their safety behaviour use. It is speculated that this would require some degree of cognitive manipulation, as it is a more abstract concept and it may also rely on having a reasonably accurate memory. Those participants who used their safety behaviour every time they heard their voice may have found this very easy to answer, whilst those who use it only some of the time may have found it more difficult to convert this into a percentage.

Need was assessed by asking 'how much do you need the behaviour?'. This question was also broad and therefore more difficult to quantify. It is also hypothesised that need is a difficult concept to describe. It is therefore proposed that the need of the behaviour may be better measured by the distress question 'how distressed would you feel if you could not use the behaviour?', as this may represent need in a more indirect way. It is also proposed that the distress rating scale correlated more strongly with threat as this question was more specific and thereby more easily quantified.

To summarise, the interesting findings within hypothesis three are that subjective ratings about the threat of the chosen voice were strongly related to distress if the safety behaviour could not be used, increasing as threat increased. Secondly, the Stroop interference scores that may represent a more global measure of threat were significantly related to the frequency of use of safety behaviour, decreasing as the threat increased. Both of these findings were used to partially support hypothesis three.

## 4.5. Methodological Critique

### 4.5.1. Critique of the measures

#### 4.5.1.1. The emotional Stroop test

For this study the researcher wanted to examine the participants' beliefs about threat of one particular voice and an emotional Stroop test was adapted to measure this. The present study has speculated that the emotional Stroop was likely to have been influenced by other hallucinatory voices that were not the subject of the interview. This then made it difficult to examine the relationship between beliefs about voices' intent and beliefs about threat using the Stroop interference scores. The researcher concluded that the subjective threat rating was a preferable measure of threat when assessing a specific voice, but that Stroop interference scores may have represented a more global measure of threat.

The emotional Stroop test is a standardised measure but it assumes a certain level of cognitive ability as well as good concentration and motivation skills. It has already been highlighted that individuals who negatively appraise the hallucinatory experience are likely to experience negative mood and this has direct implications for reducing motivation (Fennell, 2001). High dosages of medication were common in this sample and this has implications for participants' ability to concentrate, as many have sedative properties (British National Formulary, 2004). It would be important to consider these limitations when considering the use of the emotional Stroop test with this client group.

The cognitive ability of the client group cannot be commented upon as no cognitive tests were completed, however it was noted that one participant had poor reading skills and this not only influences the distracting effect of the words, as it is assumed that reading is automatic, but it suggests that the cognitive ability of this one individual may have been lower than average. The Stroop test was designed and often based on normative data from university students and individuals with above average cognitive abilities. This may have affected the results of this test with this client group.

However, an emotional Stroop test was selected as a measure of threat for the present study as it is a well recognised test with a wealth of empirical support for the distracting effect of emotionally salient words relevant to a client's particular emotional difficulty (Watts, Sharrock & Tresize, 1986; Williams, Mathews & MacLeod, 1996). In addition to this, a leading academic in the field recommended the use of this measure (Morrison, 2004, personal communication).

Two improvements to the procedure involving the Stroop test were acknowledged. First the researcher concluded that the use of the fourth word card in the emotional Stroop test of depressive words was not needed for this study. In addition, in light of the potential priming effect of the subjective threat measure on the emotional Stroop test, it would have been advisable to reverse the order of administration of these two measures so the Stroop test was administered first.

#### 4.5.1.2. BAVQ-R

The reliability of the malevolence subscale (Cronbach's alpha of 0.6) was lower than recommended (a Cronbach's alpha of 0.7 is recommended by Nunnally (1978)). It was highlighted that one question in the subscale was not assessing malevolence in the same way as the other five questions, so was lowering the internal consistency of the subscale. This one question asked participants if they believed their voice was punishing them for something they had done and seemed to be in opposition to the next question, which asked if they believed they were being persecuted for no good reason. The researcher found that participants were not likely to answer consistently to these two questions. Indeed punishment (suffering for something one has done wrong) and persecution (suffering in spite of not doing anything wrong) are opposing concepts. It therefore, seems likely that individuals would not

respond consistently to these two questions and this would result in lowering the internal consistency of the malevolence scale.

However, consultation with one of the authors revealed that they had not found the same problem due to larger sample sizes (Chadwick & Birchwood, 1994; Birchwood & Chadwick, 1997) and they had devised the two questions to assess ‘bad me’ and ‘poor me’ paranoia (Chadwick, 2004, personal communication). It may be that the present study simply needed a larger sample size to improve the reliability of this subscale. It is suggested, however that the internal consistency of the malevolence subscale may benefit from assessing beliefs about punishment and persecution, without asking about reasons for this and creating a separate scale to assess for the poor me / bad me beliefs in the BAVQ-R. Further research would be necessary to clarify this.

#### 4.5.1.3. The safety behaviour semi-structured interview

A limitation of the safety behaviour measure was identified and recommendations for improvements were made. It was suggested that three of the questions for the four rating scales may not have been specific or detailed enough to measure the elements of safety behaviour use that the present study was aiming to assess, *e.g.* effectiveness, frequency and need. Some changes to the way these were assessed were proposed to improve the efficacy of the measure. For example, effectiveness may need to be assessed by a series of questions, as opposed to just one used in the present study. This may focus on what constitutes as effective for that individual, *e.g.* reduction in frequency, power or volume of voice, then concentrate on how their behaviour helps them to achieve this goal.

Frequency could be assessed in a more concrete way, for instance asking about the last week only, to avoid the influence of memory. The participants could be asked how many times have they heard their voice in the last week and how many times they used that particular behaviour in response to it. The researcher also hypothesised that the fourth rating about ‘distress if the behaviour could not be used’ may have measured need in an indirect way. The distress without the behaviour may represent how much the individual relies on it and therefore how much they might need it. This question is more specific and would be the preferred way to assess how important a behaviour is. To summarise, effectiveness would need to be assessed in more detail, frequency may need to focus on the use of the safety

behaviour over just the last week and need could be assessed by substituting this question with the fourth rating about distress without their behaviour as this may indirectly represent need.

It should however be acknowledged that this measure is designed as a semi-structured interview and there were no suitable quantitative measures available to assess safety behaviour use. The researcher was advised regarding the quantitative rating scales (Morrison, 2004, personal communication) but this was the first time that these scales had been used. This study has therefore made recommendations for improvements and it is hoped this can inform further research on safety behaviours in this field.

#### 4.5.2. Critique of the sample size

The generalisability of the findings is limited by the nature of the sample, which was recruited through mental health services within the Leicestershire region. This study was also limited by a sample size of 21 participants and a larger sample size may allow significant relationships to be detected that this study was not able to identify. However, the present study was able to detect four significant correlations and tentative conclusions were drawn, which are hoped to be further explored by future research.

#### 4.5.3. Critique of a correlational design

The present study used a correlational design to explore the hypotheses and whilst correlations can detect relationships between variables, one limitation of this design is that it cannot infer causality. However, the aim of this study was only to investigate the relationship between the two cognitive models and establish the presence of any relationships between the beliefs about voice intent (malevolence and benevolence) and beliefs about threat. It was hoped that the findings of this study could highlight these relationships that could then be the subject of more rigorous investigation in future research.

## 4.6. Implications

The findings of the present study have a range of implications, including theoretical, clinical and some methodological. These will be presented, but should be considered in light of the identified limitations.

### 4.6.1. Theoretical Implications

#### 4.6.1.1. Beliefs about threat, malevolence and benevolence

Threat and malevolence are constructs that represent a negative appraisal of the hallucinatory experience, within their respective models. Chadwick and Birchwood (1994) proposed that beliefs about voices' malevolent and benevolent intentions are more important than the content of the voice on physiological, affective and behavioural responses; they also found empirical support for this proposal. Similarly, Morrison (1998) also implicated misinterpretations of the hallucination in the maintenance of the symptom, but he postulated that an interpretation of the voice as threatening was most important. The present study found a positive relationship between threat and malevolence and an inverse relationship between threat and benevolence, which suggests the misinterpretations described by these two models are related.

Integration of these models was suggested, as a strong relationship was found between threat and malevolence and it was postulated that these two terms were describing very similar ideas, e.g. intent to harm or punish. The researcher tentatively proposed that the two models could be combined in such a way as to add Morrison's (1998) ideas to Chadwick and Birchwood's (1994) ABC model, as there is more empirical data to support the latter model.

When examined, the two models proposed similar mechanisms for the development of negative affect and avoidance behaviours in response to a negative appraisal of the auditory hallucination. For instance, Chadwick and Birchwood (1994) proposed and found empirical support for relationships between malevolent beliefs about a voice and resulting negative mood and behaviours that resist or avoid the voice (Birchwood &

Chadwick, 1997). Those items that make up the resistance subscale of the BAVQ-R, designed to test their theory, described behaviours that help the individual to either avoid listening to their voice or avoid doing what it says, it is suggested that resistive behaviours are avoidance-based behaviours.

Morrison's (1998) model proposed the same process, whereby a negative appraisal of the hallucination occurs, he proposed one of perceived threat, and this results in both negative mood and avoidance-based behaviours. The present study has already proposed that the constructs of malevolence and threat as very similar and both models propose similar processes resulting from these two negative beliefs. The researcher therefore speculated that these two models could be combined to produce an enhanced model.

Morrison's (1998) model has the added component of proposing a maintaining role for the resulting behaviours and affect in contributing to further hallucinations. This was outlined in the introduction and so will not be reiterated here. The researcher would therefore tentatively suggest that Morrison's ideas about the role of mood and behaviour in the maintenance of the hallucinations could be incorporated into Chadwick and Birchwood's ABC model. The combined model would then examine the role of both positive and negative appraisals of voice hearing and the resulting mood and behaviours, as Chadwick and Birchwood's (1994) model does. The maintenance of the symptom could be incorporated by examining the effect of low mood and avoidance-based behaviours on the recurrence of hallucinations, as proposed by Morrison (1998).

#### 4.6.1.2. Beliefs about threat and the use of safety behaviours

The findings also found some relationships between threat and the use of safety behaviours, in particular the perceived distress at not being able to use the safety behaviour, which may suggest the perceived importance of these behaviours in coping with threat. There was also an indication that increased threat was related to reduced frequency of safety behaviour use. The effect of negative mood due to perceived threat was discussed earlier and it was speculated that this might reduce the use of safety behaviours because of hopelessness, helplessness or poor motivation. Both of these findings support Morrison's (Morrison, Haddock & Tarrier,

1995; Morrison, 1998) models that a negative appraisal of the hallucinatory experience is likely to lead to negative mood and the importance of safety behaviours in relation to a misinterpretation of threat. The present study also highlighted a need for further exploration into the function of the safety behaviour and the relationship of those behaviours that prevent disconfirmation of threat compared to behaviours that challenge the threat, and the relationship of these to beliefs about threat.

Another theoretical implication of this study is the generalisation of Morrison's findings to another geographical area. This model has found relationships between beliefs about voices' threat and use of safety behaviours in a new area of the country, thereby lending further support to the model.

#### 4.6.2. Clinical Implications

The clinical implications of the findings of this study should be considered in terms of assessment, treatment, service delivery and training issues. The dissemination of the findings will also be presented.

##### 4.6.2.1. Assessment,

The findings of the present study might reasonably influence the assessment of individuals with psychosis as the clinical importance of beliefs about voices is further supported. It would therefore be important to assess these at an initial contact with a voice hearer and these may allow further exploration of physiological, affective and behavioural consequences in relation to these. In particular it would be important to incorporate an assessment of perceived threat and to identify any behaviours that prevent this from being challenged. Literature of post-traumatic stress disorder could be used to inform assessments for psychosis, as well as pre-existing cognitive-behavioural assessments for panic and anxiety (Clark, 1986; Salkovskis, 1991).

#### 4.6.2.2. Treatment

If the findings are valid and reflect a true relationship, then people who believe their voice has malevolent intentions are also likely to feel threatened by that voice and this has several implications for clinical practice. Many of the clinical strategies pioneered in treatments for anxiety and panic (Clark, 1986; Salkovskis, 1991) could be applied to the field of auditory hallucinations. The use of cognitive challenging and restructuring could be of use for beliefs about threat and malevolent intent and behavioural strategies to reduce the use of safety behaviours may allow the misinterpretation of threat to be disconfirmed. For example, an individual who believes that by shouting back at their voice they avoid going mad would be encouraged to challenge the threat to sanity posed by the voice. In addition, behavioural experiments could be set up to reduce the amount they shout back at the voice in order to test out the belief. The findings of the present study support those of Chadwick and Birchwood (1994) as well as Morrison (1998) and therefore further endorse the use of cognitive behaviour therapy for auditory hallucinations.

The findings would also support Morrison's (1998) recommendations that therapy for patients with auditory hallucinations should not focus on the symptom but concentrate on targeting the misinterpretations about the voice and thus help to reduce the distress and disability associated with hallucinations. These recommendations are in line with those of Chadwick, Birchwood and Trower (1996) and Romme and Escher (1989)

#### 4.6.2.3. Service delivery.

Service delivery is already undergoing changes in its approach to psychosis, for example with the creation of Early Intervention Services (National Institute for Mental Health in England, 2003). These services would help to support individuals in the early stages of their psychosis and hopefully reduce long-term distress and disability. This research further supports cognitive models that suggest that misinterpretations play an important role in the distress and disability common in this client group. A cognitive approach to psychosis would aim to target these misinterpretations rather than the symptom itself and this philosophy also fits with the recovery model developed by service users, which focuses on the person not the symptom.

#### 4.6.2.4. Training.

Mental health professionals can benefit from training in a cognitive approach to the symptoms of psychosis, which views these symptoms as part of a continuum with normal experience. This can help to foster hope and optimism within staff and also in clients and normalising the experience can be very empowering for clients. The general public would also benefit from further education in this approach, as it would help to reduce stigma of people with auditory hallucinations. One possible way this could be done would be by displaying leaflets in Primary Health Care settings.

#### 4.6.2.5. Dissemination

The findings of this study will be published in a relevant journal and short summary reports will also be sent to teams and small homes within the service from which participants were recruited. This ensures dissemination to both those individuals involved in the development of the research as well as the wider academic public.

#### 4.6.3. Methodological Implications

The findings of the Stroop interference score and the subjective threat rating highlighted the difference in these two measures of threat. It was recommended that the Stroop test be used with caution with clients with auditory hallucinations and noted that it was likely that this assessed a more global level of perceived threat. The researcher speculated that the subjective rating of threat was more able to measure threat relating to one particular voice and this measure should be considered as an alternative measure of threat to an emotional Stroop test.

### 4.7. Ideas for Future Research

Several areas for further research have been identified. Firstly, more research is needed to further explore Chadwick & Birchwood's (1994) model and Morrison's (1998) model and the relationships between threat, malevolence and benevolence. The field of auditory

hallucinations would also benefit from research into how these two models could be integrated and the implications of this for treatment.

The present study highlighted the need for further research into the relationship between interpretations of threat, as proposed by Morrison (1998) and beliefs about voice power, which Chadwick and Birchwood (1994; 1995) found to be important. It was also proposed that more research is required to investigate the influence of therapy on beliefs about voice power.

The findings of this study found a relationship between increased beliefs about threat of the participant's voice and reduced frequency of safety behaviour use. It was hypothesised that low mood may result from the perceived threat and this may contribute to feelings of helplessness or hopelessness, which may account for the reduction in safety behaviour use. It is proposed that further research into the role of low mood in the maintenance of auditory hallucinations be explored. This may be of particular relevance to Morrison's (1998) model as this incorporated mood and physiology in the maintenance of auditory hallucinations.

Further research is needed into the role of safety behaviours in maintaining hallucinations, as proposed by Morrison (1998). The function of safety behaviours, whether it helps to avoid or challenge the voice, needs further exploration and how these relate to negative beliefs about voices, such as malevolence or threat. This is of particular importance when investigating Morrison's (1998) model as the model implicates the role of avoidance-based behaviours in the maintenance of auditory hallucinations. If the current measure was used to assess safety behaviours then further research would be needed to clarify the accuracy of the rating scales in measuring the elements of effectiveness, frequency and need of safety behaviour use.

#### 4.8. Conclusions

The two aims of the present study were to explore the relationships between: beliefs about hallucinatory voices' malevolent and benevolent intent with beliefs about threat posed by the voice; and the relationship between beliefs about threat and the use of safety behaviours.

First the study found a strong relationship between participants' subjective ratings about threat and beliefs about malevolence and hypothesis one was supported. The relationship between threat and malevolence suggested that as threat increased, beliefs about malevolence also increased; this study also highlighted that the definition of these two constructs was very similar. It was therefore proposed that these two constructs, originating from different models, were describing similar ideas and the two models might be integrated in some way.

The study also found a relationship between participants' subjective ratings about threat and beliefs about benevolence and hypothesis two was supported. This relationship suggested that as ratings of threat increased, then beliefs about benevolence decreased. This not only supports the idea that malevolence and benevolence are opposing constructs, but also highlights that those individuals who believe their voice to be benevolent are less likely to feel threatened by it.

A relationship was also found between Stroop interference scores and the frequency of safety behaviour use, suggesting that as threat increased, then frequency decreased. This was used to partially support hypothesis three. The researcher concluded that it was possible that the emotional Stroop test was influenced by other voices that the participants may have heard and was therefore representing a more global level of threat. It was therefore proposed that this relationship highlighted the possible effect of mood on the use of safety behaviours, in that increased threat may lead to low mood and this may have caused a reduction in safety behaviour use due to feelings of hopelessness or helplessness.

A strong relationship was also detected between threat and ratings of distress if the participant could not use their safety behaviour and this was also used to partially support hypothesis three. It was proposed that this might represent the increased dependency or reliance on the safety behaviour when levels of perceived threat increased. All of these findings lend support to the models presented by Chadwick and Birchwood (1994) and Morrison (1998).

As with all studies there were some limitations that were noted, the most important being that the Stroop test was limited in measuring threat for one specific voice as it is subject to several confounding variables. However the subjective rating scale was identified as a good alternative. The safety behaviour ratings were found to need improvements, as the questions

used to assess the four items were perhaps too broad for three of the four items, making it difficult for participants to quantify these.

Ideas for future research were suggested to further investigate the relationships between threat and voice intent and power and further explore both Chadwick and Birchwood's (1994) model and Morrison's (1998) model and how these could be combined. More research is also recommended into the role of low mood and the use of safety behaviours as well as further investigating the relationship between safety behaviours and threat. It was recommended that the function of the behaviour be identified, to distinguish between helpful and avoidance-based behaviours. The present study would also benefit from research to further explore the possible relationships identified with a larger cohort of participants. Replication of the results would allow some of the current tentative indications to be asserted with greater confidence.

With the development of Early Intervention Services it is important to continue research into theories that will help to reduce distress and disability in people with psychosis, which is one aim of these services. Cognitive models propose that auditory hallucinations are normal phenomena (Morrison, 1998) and it is the misinterpretations of these phenomena that lead to distress and disability. If these models can be better understood this could inform both treatment and service delivery and help reduce the distress and disability common in this client group.

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## **6. APPENDICES**

- 6.1. Appendix A - Psychotic Symptom Rating Scale (PSYRATS)– Auditory hallucinations scale.
- 6.2. Appendix B - Beliefs About Voices Questionnaire – Revised (BAVQ-R).
- 6.3. Appendix C - Alpha values for malevolence subscale of BAVQ-R
- 6.4. Appendix - D Semi-structured interview and rating scales
- 6.5. Appendix E - Emotional Stroop test word cards
- 6.6. Appendix F - Threat questions and scale
- 6.7. Appendix G - Letter from Ethics Board
- 6.8. Appendix H – Descriptive statistics from the PSYRATS

## 6.1. Appendix A

Psychotic Symptom Rating Scale (PSYRATS)

– Auditory hallucinations scale.

## **PSYCHOTIC SYMPTOM RATING SCALES**

### **Introductory questions**

Thank you for agreeing to take part in the study. It should take about an hour – ask about structure/breaks.  
Info about the interview – 2 questionnaires (pick one of four/five options), another with more open questions, all of which I read out to you. Then there will be a short timed test involves you reading out colour names –  
?explain more when we do it.

\*The questions will be asking about you voices in detail and some of them may feel a bit intrusive or personal. It is okay to leave questions if you don't want to answer them and we can take a break whenever you need. I will ask you throughout the interview if you are feeling distressed.

- 1 When did you last hear voices? (Must be within the last 6 months)
2. How many voices do you hear? (Note to researcher – Ask if the participant is currently hearing voices. Say if at any time throughout the interview they do and if feel distressed, to feel free tell the researcher)
3. (*If more than one voice*) Can you tell me about one of the more important voices?  
Can you give your (*chosen*) voice a name or some other identifying feature?

“We will now focus on this particular voice for the course of the interview, all questions will relate to this voice (use name)”.

### **A Auditory hallucinations**

#### **1 Frequency**

- 0 Voices not present or present less than once a week
- 1 Voices occur for at least once a week
- 2 Voices occur at least once a day
- 3 Voices occur at least once a hour
- 4 Voices occur continuously or almost continuously  
i.e. stop for only a few seconds or minutes

#### **2 Duration**

- 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**

- 0 No voices present
- 1 Voices sound like they are inside head only
- 2 Voices outside the head, but close to ears or head.  
Voices inside the head may also be present
- 3 Voices sound like they are inside or close to ears  
and outside head away from ears
- 4 Voices sound like they are from outside the head  
only

#### **4 Loudness**

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

#### **5 Beliefs re-origin of voices \*\* "some people find this an odd question"**

- 0 Voices not present
- 1 Believes voices to be solely internally generated and related to self
- 2 It is possible that voices originate from external causes
- 3 It is most probable (but not definite) that voices originate from external causes
- 4 Believes voices are definitely due to external causes

#### **6 Amount of negative content of voices**

- 0 No unpleasant content
- 1 Occasional unpleasant content (<10%)
- 2 Minority of voice content is unpleasant or negative (<50%)
- 3 Majority of voice content is unpleasant or negative (>50%)
- 4 All of voice content is unpleasant or negative

#### **7 Degree of negative content ( if more than one option is appropriate, most common)**

- 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's 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 self or family, extreme instructions or commands to harm self or others

#### **8 Amount of distress**

- 0 Voices not distressing at all
- 1 Voices occasionally distressing, majority not distressing
- 2 Voice is somewhat distressing
- 3 Voice is usually distressing, but not always
- 4 Voices always distressing

#### **9 Intensity of distress**

- 0 Voices not distressing at all
- 1 Voices slightly distressing
- 2 Voices are distressing to a moderate degree.
- 3 Voices are very distressing, although subject could feel worse
- 4 Voices are extremely distressing, feel the worst he/she could possibly feel

## **10 Disruption to life caused by voices**

0 No disruption to life, able to maintain social and family relationships (if present)

1 Voices causes 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 while 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 hospitalization. The patient is unable to maintain any daily activities and social relationships. Self-care is also severely disrupted.

## **11 Controllability of voices**

0 Subject believes they can have control over the voices 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 voices but only occasionally. The majority of the time the subject experiences voices which are uncontrollable

4 Subject has no control over when the voices occur and cannot dismiss or bring them on at all

## 6.2. Appendix B

Beliefs About Voices Questionnaire – Revised (BAVQ-R).

## 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 which best describes the way you have been feeling in the *past week*.

If you hear more than one voice, please complete the form for the voice which is dominant.

Thank you for your help.

Name: .....

Age: .....

		Disagree	Unsure	Slightly Agree	Strongly Agree
1	My voice is punishing me for something I have done				
2	My voice wants to help me				
3	My voice is very powerful				
4	My voice is persecuting me for no good reason				
5	My voice wants to protect me				
6	My voice seems to know everything about me				
7	My voice is evil				
8	My voice is helping to keep me sane				
9	My voice makes me do things I really don't want to do				
10	My voice wants to harm me				
11	My voice is helping me to develop my special powers or abilities				
12	I cannot control my voices				
13	My voice wants me to do bad things				
14	My voice is helping me to achieve my goal in life				
15	My voice will harm or kill me if I disobey or resist it				

		Disagree	Unsure	Slightly Agree	Strongly Agree
16	My voice is trying to corrupt or destroy me				
17	I am grateful for my voice				
18	My voice rules my life				
19	My voice reassures me				
20	My voice frightens me				
21	My voice makes me happy				
22	My voice makes me feel down				
23	My voice makes me feel angry				
24	My voice makes me feel calm				
25	My voice makes me feel anxious				
26	My voice makes me feel confident				

When I hear my voice, usually ...

		Disagree	Unsure	Slightly Agree	Strongly Agree
27	I tell it to leave me alone				
28	I try and take my mind off it				
29	I try and stop it				
30	I do things to prevent it talking				
31	I am reluctant to obey it				
32	I listen to it because I want to				
33	I willingly follow what my voice tells me to do				
34	I have done things to start to get in contact with my voice				
35	I seek the advice of my voice				

## **Scoring guidelines**

All items have a four point response range, Disagree (score 0), Unsure (score 1), Agree slightly (score 2) & Agree strongly (score 3).

The questionnaire has three scales measuring meaning given to the voice

Malevolence (items 1, 4, 7, 10, 13, 16)

Benevolence (items 2, 5, 8, 11, 14, 17)

Omnipotence (items 3, 6, 9, 12, 15, 18)

These three scales therefore have a range of possible scores 0-18.

Following the original BAVQ, the questionnaire also measures Resistance and Engagement, two ways of relating to the voices. Resistance and Engagement both contain emotional and behavioural items.

### **Resistance**

- Emotion (items 20, 22, 23, 25): Range 0-12
- Behaviour (items 27, 28, 29, 30, 31): Range 0-15

### **Engagement**

- Emotion (items 19, 21, 24, 26): Range 0-12
- Behaviour (items 32, 33, 34, 35, 36): Range 0-12

Emotion and behaviour scores can either be totalled to give one overall score for Resistance (Range 0-27) and Engagement (Range 0-24), or looked at separately, or both.

## 6.3. Appendix C

Alpha values for malevolence subscale of BAVQ-R

Table of alpha coefficients for malevolence subscale if item was deleted.

Items in malevolence scale	Alpha if deleted
BAVQ-R 1	0.70
BAVQ-R 4	0.43
BAVQ-R 7	0.57
BAVQ-R 10	0.62
BAVQ-R 13	0.58
BAVQ-R 16	0.33

## 6.4. Appendix D

Semi-structured interview and rating scales

## **SEMI STRUCTURED INTERVIEW**

### **1. SUMMARY**

**Thank you for answering my questions and completing the questionnaires. From what you have described it appears that you hear .....**

.....

### **2. FEARED OUTCOME**

**Does the voice worry you? .....**

**If yes, What is the worse thing that could happen**

**?.....**

.....

**So, it sounds as though you are worried about .....(specific feared outcome) happening when you hear the voices. (NB feared outcome needs to be as specific and concrete as possible)**

### **3. FIVE SYSTEMS & SAFETY BEHAVIOURS**

**Can you tell me about the last time you heard the voice/s and believed this (specific feared outcome).**

**(When was this?**

**Where were you?**

**What were you doing and**

**Who with) Use these as prompts to set the scene.**

**And what did you do?**

**How did you cope?**

**Did you do anything to stop ..... (feared outcome) happening or to avoid it happening? .....**

**And why do you think .....(feared outcome) hasn't happened yet?**

#### **4. AVOIDANCE**

**If people are avoiding situations ask them:**

- a. When was the last time you were actually in that situation?**
  
- b. What did you do then?**
  
  
- c. And what if you had to be in that situation, what would you do?**

#### **5. OTHER SAFETY BEHAVIOURS**

**Prompts** physiological arousal- relax, lie down, sleep, alcohol, loud music, walk

cognitive – ignore them, pray, sing, talk to the voices

behavioural – seek interaction, activity, isolation

### Additional Quantifiable Questions

Client and investigator will choose the most frequently used safety behaviour for further investigation.

1. *Effectiveness* "How helpful is it to (specify behaviour)"?

0 \_\_\_\_\_ 100

No use  
effective

Totally

2. *Frequency of use* "How often do you use (specify behaviour) when you hear your voice"?  
(Frequency as a proportion of the time the client hears the voice)

0 \_\_\_\_\_ 100

Never  
time

All the

3. *Need* "How much do you feel that you need to use (specify behaviour)"?

0 \_\_\_\_\_ 100

None

Always

4. *Feared outcome* "How distressed would you be if you could not use (specify behaviour)"?

0 \_\_\_\_\_ 100

No distress  
distressed

Extremely

## 6.5. Appendix E

Emotional Stroop test word cards

Practice card

And  
Every  
When  
This  
Then

Meaningless stimuli card (Os)

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Neutral word card

Bud  
Recipe  
Number  
Diamond  
Collector

Number  
Diamond  
Bud  
Collector  
Recipe

Diamond  
Recipe  
Collector  
Bud  
Number

Collector  
Recipe  
Bud  
Number  
Diamond

Number  
Bud  
Diamond  
Recipe  
Collector

Bud  
Collector  
Recipe  
Number  
Diamond

Recipe  
Bud  
Diamond  
Collector  
Number

Bud  
Collector  
Recipe  
Number  
Diamond

Recipe  
Diamond  
Collector  
Bud  
Number

Collector  
Number  
Bud  
Diamond  
Recipe

Threat word card

Spy  
Threat  
Follow  
Whisper  
Persecute

Follow  
Whisper  
Spy  
Persecute  
Threat

Whisper  
Threat  
Persecute  
Spy  
Follow

Persecute  
Follow  
Spy  
Threat  
Whisper

Follow  
Spy  
Whisper  
Threat  
Persecute

Spy  
Persecute  
Follow  
Threat  
Whisper

Follow  
Spy  
Whisper  
Persecute  
Threat

Spy  
Persecute  
Follow  
Threat  
Whisper

Threat  
Whisper  
Persecute  
Spy  
Follow

Persecute  
Threat  
Spy  
Whisper  
Follow

Depressive word card

Sadly  
Afraid  
Reject  
Defeat  
Hopelessly

Reject  
Defeat  
Sadly  
Hopelessly  
Afraid

Defeat  
Afraid  
Hopelessly  
Sadly  
Reject

Hopelessly  
Afraid  
Sadly  
Reject  
Defeat

Afraid  
Sadly  
Defeat  
Reject  
Hopelessly

Sadly  
Hopelessly  
Afraid  
Reject  
Defeat

Afraid  
Sadly  
Defeat  
Hopelessly  
Reject

Sadly  
Hopelessly  
Afraid  
Reject  
Defeat

Reject  
Defeat  
Hopelessly  
Sadly  
Afraid

Hopelessly  
Reject  
Sadly  
Defeat  
Afraid

## 6.6. Appendix F

Threat questions and scale

# PERCEPTIONS OF THREAT

**Do you believe that your voice is threatening?**

**Do you feel threatened by your voice?**

**Can you think of the last time you heard a voice? Think about that (details)  
How threatening did your voice feel (out of 100)? (1 being no threat and 100 being in fear of your life)**

0 \_\_\_\_\_ 100  
**No threat** **In fear of your**  
**life**

## **Results of Emotional Stroop Test**

**#Order ..... card first**

**Reognise colours?**

**1.....seconds response time**

**2.....seconds response time**

**3 .....seconds response time**

**4 .....seconds response time**

## 6.7. Appendix G

Letter from Ethics Committee



LPT Iptadmh0283, Ethics ref: 7106

## Leicestershire Local Research Ethics Committees

Lakeside House  
4 Smith Way  
Grove Park  
Enderby  
Leicester  
LE19 1SS

Ethics Administration  
Direct dial: 0116 295 7591/2

21 October 2003

Tel: 0116 295 7591  
Fax: 0116 295 7582

**7106 Please quote this number on all correspondence**

Miss Victoria Watkins  
Trainee Clinical Psychologist  
University of Leicester  
Dept. of Clinical Sciences (Ken Edwards Building)  
University Road  
Leicester  
LE1 7RH

Dear Miss Watkins

**Re: An investigation into hallucinatory voices (MAY 2003), ethics ref: 7106**

The Chair of the Leicestershire Local Research Committee (Committee One) has considered the amendments submitted in response to the Committee's earlier review of your application on 05 September 2003 as set out in our letter dated 12 September 2003. The documents considered were as follows:

*Amended application form*  
*Patient Information Sheet, Iptadmh0283is-p030925*  
*Protocol, Iptadmh0283rp030925*

*As requested in our letter of 12 September 2003, please either remove mention of SHA approval or use the standard wording (available from R & D)*

The Chair, acting under delegated authority, is satisfied that these accord with the decision of the Committee and has agreed that there is no objection on ethical grounds to the proposed study. I am, therefore, happy to give you the favourable opinion of the committee on the understanding that you will follow the conditions set out below:

### Conditions

- You do not recruit any research subjects within a research site unless favourable opinion has been obtained from the relevant LREC.
- You do not undertake this research in an NHS organisation until the relevant NHS management approval has been gained as set out in *the Framework for Research Governance in Health and Social Care*.

- You do not deviate from, or make changes to, the protocol without prior written approval of the LREC, except where this is necessary to eliminate immediate hazards to research participants or when the change involves only logistical or administrative aspects of the research. In such cases the LREC should be informed within seven days of the implementation of the change.
- You complete and return the standard progress report to the LREC one year from the date on this letter and thereafter on an annual basis. This form should also be used to notify the LREC when your research is completed and in this case should be sent to this LREC within three months of completion.
- If you decided to terminate this research prematurely you send a report to this LREC within 15 days, indicating the reason for the early termination.
- You advise the LREC of any unusual or unexpected results that raise questions about the safety of the research.
- The project must be started within three years of the date on which LREC approval is given.
- You should be able to assure the Ethics Committee that satisfactory arrangements have been made for the labelling, safe storage and dispensation of drugs and pharmaceutical staff are always willing to provide advice on this.

**Your application has been given a unique reference number. Please use it on all correspondence with the LREC.**

Yours sincerely



Dr PG Rabey

**Chairman**

**Leicestershire Local Research Ethics Committee One**

(N.B. All communications related to Leicestershire Research Ethics Committee must be sent to the LREC Office at Leicestershire, Northamptonshire and Rutland Health Authority. If, however, your original application was submitted through a Trust Research & Development Office, then any response or further correspondence must be submitted in the same way).

## 6.8. Appendix H

Descriptive statistics from the PSYRATS

Descriptive statistics from the PSYRATS

Table 11 Frequencies for the PSYRATS item Frequency (n=21)

	Frequency
Not present or present less than once a week	2
At least once a week	8
At least once a day	6
Almost continuously	5

Table 12 Frequencies for the PSYRATS item Duration (n=21)

	Duration
A few seconds	5
Several minutes	6
At least one hour	4
Hours at a time	6

Table 13 Frequencies for the PSYRATS item Location (n=21)

	Location
Inside head only	6
Outside head, close to ears, may also be inside head	4
Outside head close to or far away from ears	2
Outside head far away from ears	9

Table 14 Frequencies for the PSYRATS item Loudness (n=21)

<u>Loudness</u>	
Quieter than own voice	7
Same loudness as own voice	7
Louder than own voice	4
Extremely loud / shouting	3

Table 15 Frequencies for the PSYRATS item Beliefs about Origin (n=21)

<u>Beliefs about Origin</u>	
Solely internally generated	5
Possibly external	3
Probably external	4
Definitely external	9

Table 16 Frequencies for the PSYRATS item Amount of Negative Content (n=21)

<u>Amount of Negative Content</u>	
None	2
<10%	2
<50%	1
>50%	7
All	9

Table 17 Frequencies for the PSYRATS item Degree of Negative Content (n=21)

Degree of Negative Content	
None	4
Some, but not personal	1
Personal verbal abuse on behaviour	1
Personal verbal abuse on self	8
Personal threats	7

Table 18 Frequencies for the PSYRATS item Amount of Distress (n=21)

Amount of Distress	
None	1
Occasionally	2
Somewhat	3
Usually	7
Always	8

Table 19 Frequencies for the PSYRATS item Intensity of Distress (n=21)

Intensity of Distress	
None	1
Slightly	5
Moderate	3
Very	6
Extremely	6

Table 20 Frequencies for the PSYRATS item Disruption Caused to Life (n=21)

<u>Disruption Caused to Life</u>	
Minimal	7
Moderate	8
Severe	4
Complete disruption	2

Table 21 Frequencies for the PSYRATS item Controllability (n=21)

<u>Controllability</u>	
Control majority of the time	4
Control half the time	3
Occasional control	6
No control	8