

**Auditory hallucinations in
schizophrenia: an interpersonal analysis**

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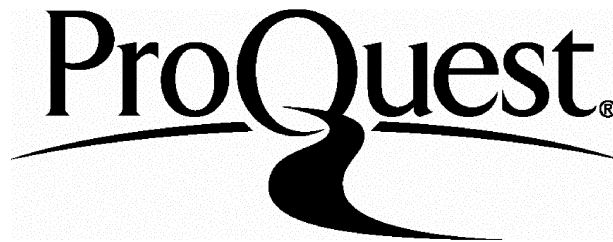
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Abstract

In schizophrenia, auditory hallucinations usually take the form of heard speech or 'voices'. It appears that patients frequently interpret this experience in terms of a separate entity interacting with them, and will sometimes actively engage with their voices as if they were real people. This suggests that patients may have meaningful interpersonal relationships with the voices they hear. There also appear to be varied individual differences in how patients react to hallucination, emotionally and behaviourally, and it seems that the meaning that patients attach to their hallucinatory experience may mediate this. It is possible that the nature of the interpersonal relationships that patients have with their voices can be used to conceptualise these individual differences.

The interpersonal aspects of hallucinatory experience were examined by applying a model of interpersonal relating, termed the Structural Analysis of Social Behaviour (SASB; Benjamin, 1974), to patients' perceptions of their voices and their responses to them. 35 participants with auditory hallucinations and a diagnosis of schizophrenia or schizoaffective disorder completed a self-report measure of their relationships with their voices based on the SASB model. Results suggested that at least the majority of participants were able to see their hallucinatory experience in coherent interpersonal terms. The interpersonal ratings which participants made conformed to a similar structure to that found in everyday interpersonal relationships, with almost all aspects

of interpersonal relating appearing applicable within the voice-patient relationship. The main way in which interpersonal perceptions of voices differed between participants was in terms of the degree of affiliation versus hostility their voices were perceived to express towards them. This reliably predicted both how the participant responded to their voices, and how distressing they found them. It was also found that participants with depressive symptoms tended to see their voices as more controlling. These findings suggest that patients have an interpersonal understanding of their voices that organises their day-to-day experience of hallucination. Possible origins of this are discussed with suggestions for future research.

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Introduction

Auditory hallucinations are frequently regarded as being a hallmark symptom of schizophrenia and related psychotic syndromes (Talbot, Hales & Yodofsky, 1988). Indeed, if sufficiently disabling, certain types of hallucination may be sufficient to establish a diagnosis of the disorder alone (American Psychiatric Association, 1995). However, in spite of this prominence in schizophrenia, it has only been relatively recently that they have become the focus of systematic study in their own right. Traditionally, research in schizophrenia has been organised by an organic disease model. In this approach, auditory hallucinations have been considered mainly in terms of being symptomatic indicators of an underlying, presumably organic, pathology. Research efforts were predominantly directed at identifying biological features and aetiological markers of the syndrome as a whole. Meanwhile, psychosocial research focused on the aetiological significance of life events, family environment and epidemiological factors. At its most extreme, this approach has conceptualised auditory hallucinations as 'empty speech acts' (Berrios, 1991): epiphenomena of underlying disorder with no meaning in themselves.

However, since the 1980s there has begun a growth of interest in trying to understand the individual symptoms of psychosis. There have been a number of arguments proposed

for this approach, some calling into question the utility of schizophrenia as a unitary construct (e.g. Bentall, 1990). Bentall, Jackson and Pilgrim (1988) have pointed out that a common aetiology has yet to be found, and that there is significant variation in how individuals present and respond to treatment. This suggests that people with schizophrenia cannot be regarded as a homogeneous group, calling into question the usefulness of considering symptoms only as manifestations of a single underlying disorder.

As well as this, it has been pointed out that psychotic symptoms, including hallucinations, are not restricted to schizophrenia. As well as symptoms being experienced in other psychiatric syndromes, analogous experiences may be encountered within the normal population (Bentall *et al.*, 1988; Claridge, 1997). Simple hallucinatory experiences may occur in the general population (Slade & Bentall, 1988), and even the complex auditory hallucinations which form Schneider's first rank diagnostic indicators of schizophrenia (Schneider, 1959) are sometimes found in people who have no other pathology and would not be regarded as having a mental disorder (Romme & Escher, 1993). This indicates that auditory hallucinations are not necessarily the manifestation of a unitary pathological process, and, as such, may be understood in normal psychological terms.

A further argument for the study of symptoms has arisen from a growing interest in the subjective experience of psychosis. The traditional organic disease model has tended to neglect the impact of psychosis on the individual's experience, almost viewing individuals as being passive recipients of illness on the one hand, and treatment on the other. However, studies during the 1980s began to show that people take an active role in adapting to psychotic experiences such as hallucinations (Falloon & Talbot, 1981;

Brier & Strauss, 1983; Cohen & Berk, 1985; Tarrier, 1987; Carr, 1988). Researchers also began exploring patients' reported experiences using qualitative methodologies (e.g. Corin, 1990; Corin & Lauzon, 1992; Hooks & Levin, 1986; Lally, 1989). Importantly, such studies have indicated that people vary greatly in the ways in which they perceive they cope with symptoms such as auditory hallucination, suggesting clinically important individual differences in the experience of illness, worthy of study.

Finally, the study of individual symptoms is of growing importance because of developments in psychological treatments for psychosis. A range of cognitive-behavioural treatment techniques, which had been developed for mood and anxiety disorders, have recently been applied to psychosis (e.g. Chadwick & Birchwood, 1994; Nelson, 1997; Tarrier, 1992). These treatments emphasise the value of helping people cope with or understand the symptoms they experience. This is often necessary as residual symptoms frequently continue following recovery from acute episodes of psychosis, despite pharmacological intervention. Some individuals may fail to respond to antipsychotic medication at all. Consequently, the aim of treatment has been to alleviate the distress experienced by patients as a result of symptoms that cannot be controlled by medication. Psychological treatments also have the potential advantages of involving patients actively in their treatment, and helping them to develop a subjectively meaningful understanding of their illness. In order to inform the continuing development of such treatments, it is important to advance the psychological understanding of symptoms such as auditory hallucination.

This thesis utilises a novel conceptualisation of auditory hallucinations in schizophrenia and related psychoses. It proposes that the experience of auditory hallucinations can be

conceptualised in terms of an interpersonal relationship, and that this can be formally understood using an established model of interpersonal behaviour termed the Structural Analysis of Social Behaviour (Benjamin, 1974). Furthermore, it is suggested that this model can be used to understand the person's emotional and behavioural responses to auditory hallucination, incorporating ideas that relate to current clinical models of hallucinatory experience, underpinning developing psychological interventions for psychosis.

The experience of auditory hallucination

Definitions of hallucination

In understanding the experience of hallucination, it is worth beginning by establishing a definition of them. Definitions have tended to focus upon them having the same quality as 'real' perceptions. For example, DSM-IV describes hallucination as 'A sensory perception that has the compelling sense of reality of a true perception but that occurs without external stimulation. (p. 785)'. This is also found in Slade & Bentall's (1988) definition, which also distinguishes hallucinations from vivid mental imagery by stressing their involuntary nature.

'Any percept like experience which (a) occurs in the absence of an appropriate stimulus, (b) has the full force or impact of the corresponding actual (real) perception, and (c) is not amenable to direct and voluntary control by the experiencer' (Slade & Bentall, 1988, p. 23)

The 'real' quality of hallucinations therefore distinguishes them from experiences such as intrusive thoughts, which may be experienced as involuntary and ego-dystonic, yet are

still experienced as *internal* mental phenomena, as opposed to true perceptions.

This also appears to be important in terms of the mechanism by which they occur. Bentall (1990) reviewed a number of studies that have attempted to develop a psychological understanding of the mechanism by which hallucinations occur. Such studies have variously suggested hallucinations arise from abnormally vivid mental imagery (e.g. Mintz & Alpert, 1972), sub-vocalised inner speech (e.g. Johnson, 1978), disordered linguistic programming (Hoffman, 1986), and self-monitoring deficits (Frith, 1987). Bentall concluded that all of these theories suggest that there is essentially a misattribution occurring whereby mentally generated experiences are experienced as true perceptions.

Because of this perceptual sense of reality, patients are likely to *believe* that their 'false' perceptions are, indeed, real. Indeed, the majority of patients with schizophrenia do not appear to have insight into the hallucinatory nature of their experiences. Given an assumption that people actively try to make sense of their experience (e.g. Kelly, 1955), the unusual quality of hallucinations may lead to complicated and bizarre explanations of how they occur. Maher (1974) has proposed that the delusional beliefs that are frequently found in people with psychosis can be thought of as attempts to understand anomalous experiences such as hallucination. Although it now appears that there are also abnormalities of reasoning involved in delusion formation and maintenance, Maher's proposal remains a central idea in psychological treatments for psychosis (e.g. Nelson, 1997).

The phenomenology of hallucination

In schizophrenia, hallucinations can be experienced in all modalities, and may take many

forms. However, they are most commonly experienced in the auditory modality. In reviewing a number of studies, Slade and Bentall (1988) estimated approximately 60% of people with schizophrenia experience auditory hallucinations, compared with around 30% who experience visual hallucinations.

Auditory hallucinations can involve hearing noises and music, but most frequently involve the person hearing speech sounds, or 'phonemes' (Hamilton, 1985). There is even evidence that people with a diagnosis of schizophrenia who have been deaf since early infancy may have voice-like auditory hallucinations (Critchley *et al.*, 1981). The prevalence of verbal auditory hallucinations over other types of hallucinatory experience appears to be something which distinguishes hallucinations in functional psychotic disorders from those in other disorders, such as organic syndromes. This is reflected in Schneider's description of the defining 'first-rank' features of schizophrenia. He identified three main types of hallucinatory experience: (a) hearing a running commentary on one's actions, (b) hearing voices speaking about oneself in the third person, (c) hearing one's own thoughts spoken aloud (Schneider, 1959). This was examined in more detail by the World Health Organisation International Pilot Study of Schizophrenia (WHO, 1975). This studied symptoms in 876 people with schizophrenic and paranoid psychoses. 172 (20%) heard voices talking about them in the third person, and 136 (16%) heard a running commentary on their behaviour. In addition, 332 (38%) heard voices directly addressing them in the second person. These three features were all highly associated with schizophrenic and paranoid psychoses, but tended not to be associated with bipolar disorder or affective or neurotic disorders. Similarly, it appears that hearing a continuous flow of speech, as opposed to isolated phrases, is characteristic of schizophrenia (Hamilton, 1985; Sims, 1995).

The exact content of what voices say tends to be highly variable from person to person (Lowe, 1973). However, hostile and abusive content is common (Hamilton, 1985), as are advice and explicit commands to do things (Junginger, 1990). This adds to the compelling nature of the voices, and can lead the content of the voices to influence the person's behaviour (Lowe, 1973; Rogers *et al.*, 1990).

Reported experiences of voice hearers

There are relatively few studies of the subjective experience of schizophrenia (Williams & Collins, 1999). A number of papers have been published since the late 1980s, drawing on qualitative methodologies, but these have tended to focus on the experience of psychosis as a whole, rather than focusing on hallucinations in their own right (e.g. Corin, 1990; Corin & Lauzon, 1992; Cutting & Dunne, 1989; Hooks & Levin, 1986; Lally, 1989). The exception is an influential study focusing on auditory hallucinations, published by Romme and Escher (1989, 1993). This study originated when Romme appeared on a popular Dutch television programme, discussing auditory hallucinations with a patient, and invited other people who heard voices to get in touch with them to discuss their experiences. Several hundred people replied, leading to a congress being held which was attended by 300 people, 20 of whom agreed to be speakers. Romme and Escher conducted an exploratory qualitative analysis of issues discussed, with the main conclusions that people's experiences of hearing voices could be considered in terms of three phases. In the first phase, people tended to be startled by the experience, and were often frightened and confused. This was followed by a second phase in which people attempted to find ways of adapting to the experience. The third and final stage involved the person finding a more stable and continuous way of dealing with the experience.

During this process they found that people developed diverse explanations for their experiences, ranging from medical explanations to mystical or parapsychological explanations.

Romme and Escher's study also emphasised the affect-laden nature of the person's experience of hearing voices. They described feelings of fear and powerlessness often arising, particularly in the first phase of startlement, and sometimes feelings of anger towards the voices. Most patients appear to find the experience of hallucination distressing in some way (Tarrier, 1987; Farhall & Gehrke, 1997, Miller, O'Conner & DiPasquale, 1993). However, Miller, O'Conner and DiPasquale (1993) found that hallucinations may be seen in both positive and negative terms. In a series of 50 in-patients, they found patients may report both positive and negative effects on mood (i.e. tension vs. relaxation), companionship (vs. loneliness), a sense of protection (vs. threat) and self-concept.

Individual differences in adjusting to hearing voices

Individual differences in adjusting to hallucinations were also examined by Romme and Escher (1989; Romme *et al.*, 1992), using questionnaire data from 173 participants of their conference. From this they identified two groups, one who felt they could cope with their voices, and one who felt they could not. These two groups were different in both the way that they viewed the voices and the way they adapted to them. The group who felt they could cope with their voices tended to experience them as positive, to feel 'stronger' than their voices, and to adapt to them by selectively listening to them, e.g. by listening to some of their voices and ignoring others. Some people in this group directly

negotiated limits on when they listened to the voices, i.e. put aside specific times for listening to them. In contrast, the group who felt they could not 'cope' with their voices tended to experience them as 'negative', felt that their voices were stronger than themselves, and tended to adapt to their voices by trying to distract themselves from them. It is unclear from their study how the content of the voices, their perceived strength, attempts to adapt to them and perceived effectiveness of coping may be inter-related. However, drawing on this questionnaire data and the reported experiences of their participants, Romme and Escher (1989, 1993) have been keen to emphasise that acceptance of voices may be a positive means of adjusting to hallucination, as opposed to trying to suppress or ignore them.

Systematic studies of coping

There have been a few systematic studies of the ways in which people attempt to adjust and react to their voices. In these, hallucinations have been conceptualised as a stressful experience, which would be expected to elicit coping behaviour. Falloon and Talbot (1981) examined the spontaneous coping strategies adopted by 40 schizophrenic outpatients, conducting a qualitative analysis of unstructured interviews about how people react to their voices. They identified a wide range of behavioural coping strategies adopted by patients, including engaging in activities, seeking the company of others, trying to relax, blocking out sensory stimulation, increasing sensory stimulation, physical exercise and sleeping. They also identified cognitive coping strategies such as trying to ignore the voices or think of other things as a means of distraction. However, they also found that interacting with voices was a prominent means of coping, e.g. telling them to go away, reasoning or debating with them, or listening to them. They found that 35% of

their sample reported listening to their voices and reflecting upon what they had to say, often accepting their guidance. Falloon and Talbot were, however, unable to find any clear differences in the strategies adopted by patients they rated as having good or fair adjustment and those rated as having poor adjustment to their voices.

A similar range of coping strategies have been identified in 25 in-patients with schizophrenia interviewed by Tarrier (1987), and in 28 hallucinating schizophrenic patients interviewed by Carr (1988). However, again, there has been a failure to find any coping strategies consistently rated by patients as successful (Tarrier, 1987).

Farhall and Gehrke (1997) have pointed to these studies lacking an organising conceptual framework in examining coping. In their study they used the model of coping developed by Lazarus and Folkman (1984), which states that coping strategies may function to either address the problem giving rise to stress, or the emotional consequences of stress. Using this model, together with findings of previous studies with psychosis, they developed a structured interview, which they administered to 81 patients with schizophrenia. They found that patients reported coping strategies representative of the range of strategies incorporated by Lazarus and Folkman's framework, plus some hallucination-specific strategies. Conducting a factor analysis of coping strategies endorsed by participants, they found three factors. These appeared to relate to (1) 'active acceptance of voices', e.g. listening to them and accepting what they say, (2) 'passive coping', i.e. relying on external sources of support, and (3) 'resistance coping', e.g. directly trying to suppress or ignore hallucinations using hallucination-specific strategies. Although the second factor appeared to relate to emotion-focused coping in Lazarus and Folkman's model, it was unclear how the other two factors relate to this model. Hallucination-specific 'resistance coping' strategies are difficult to fit within this model,

as in one sense they may be problem-oriented – by trying to reduce the occurrence of hallucination – but in another sense they may be problem-avoidant – by trying to avoid the content of what the voices say.

In a regression analysis, the use of passive coping was associated with patient report of reduced distress, whereas resistance coping was *negatively* associated with reduced distress, in line with the suggestions of Romme and Escher (1989, 1993). However, although there was a non-significant trend for active acceptance of voices to be associated with being able to control the experience of hallucination, it was not associated with reduced distress, as might have been expected from Romme and Escher's findings. The authors concluded that effectiveness of accepting voices in adjusting to the experience of them requires further study.

Beliefs about voices

More recently, there has been application of the cognitive therapy model, developed in the treatment of affective and neurotic disorders (e.g. Beck *et al.*, 1979), to understand emotional and behavioural responses to hearing voices (Chadwick & Birchwood, 1994; Chadwick, Birchwood & Trower, 1996). Chadwick and Birchwood (1994) conceptualised experiencing an hallucination as an antecedent event, to which the emotional and behavioural consequences would be mediated by the person's cognitive appraisal of that experience. In this way they predicted that beliefs the person holds about their voices are important in determining how they react to them emotionally and behaviourally.

Interviewing 26 psychotic patients within a cognitive framework, Chadwick and Birchwood (1994) concluded that they appeared to have well formed beliefs about whose voices they heard. Beliefs ranged from people the person knew – e.g. a boyfriend, a

previous employer, a dead friend – to supernatural beings, e.g. the Devil, God, spirits. Evidence for the voice's identity often came from the sound or content of the voice, and also from inferences based upon the voice appearing to know the person's thoughts and past. Chadwick and Birchwood, were, however, particularly interested in specific beliefs the person held about the voices. They proposed that two types of belief were particularly important: those regarding the intent of the voices, i.e. whether they were malevolent or benevolent; and those regarding the power of the voices. They suggested that if voices were believed to be malevolent, then hearing them would be likely to elicit appraisals of threat, leading to distress. They found clear evidence of this in their sample: all voices that were assessed to be malevolent were associated with negative emotional responses such as anger, fear, depression and anxiety, whilst benevolent voices tended to be associated with positive emotional responses such as amusement, reassurance, calmness and happiness. Categorising patients' behavioural responses, they found that malevolent voices tended to elicit resistance (e.g. arguing with voices, trying to distract oneself from them). Benevolent voices tended to elicit engagement (e.g. actively listening, seeking voices out).

These findings appear to correspond to Romme and Escher's questionnaire data which showed that people who described having negative voices reported coping less well with them, and trying to distract themselves from the experience (Romme & Escher, 1989).

The importance of malevolence and benevolence beliefs has been further supported by the development of the Beliefs About Voices Questionnaire (BAVQ; Chadwick & Birchwood, 1995), which assesses the extent to which patients view their voices as malevolent or benevolent, and their responses on hearing them (resistance or

engagement). In two studies, with 60 and 76 participants respectively, Chadwick and Birchwood have confirmed that malevolence is highly correlated with resistance, and benevolence is highly correlated with engagement (Chadwick & Birchwood, 1995; Birchwood & Chadwick, 1997). Birchwood and Chadwick (1997) have also found that whether voices are classified as malevolent, neutral or benevolent using the BAVQ predicts ratings of how distressing voices are on a simple 5-point scale developed by Hustig and Hafner (1990).

The second type of belief thought to be important by Chadwick and Birchwood (1994) concerns the degree of power attributed to voices. They reported that all participants in their initial sample were found to hold beliefs that their voices were incredibly powerful or omnipotent. Reasons participants gave for these beliefs were often related to the voices' perceived identity (e.g. God, the Devil). Participants frequently seemed to interpret collateral symptoms or medication side-effects as having been caused by the voice, suggesting them to be powerful. It also seemed that because of the content of hallucination, voices were often thought of as seeming to know everything about the patient, hence appearing omniscient. Chadwick and Birchwood argued that beliefs that voices are omnipotent might lead to additional appraisals of threat, leading to further distress. This ties in with Romme and Escher's finding that people who reported they could not cope with their voices tended to report their voices were 'stronger' than themselves (Romme & Escher, 1989).

However, the association between beliefs about the power of voices and adjustment has been more difficult to assess empirically. In Chadwick and Birchwood's initial sample, all patients believed their voices to be incredibly powerful, providing no variance to compare with distress or behaviour. Furthermore, although the BAVQ has good

psychometric properties for measuring malevolence and benevolence beliefs (Chadwick & Birchwood, 1995), it only measures voice power with the single item 'My voice is very powerful (yes/no)'. This item is of unestablished validity, and might be interpreted by patients in different ways. In using this BAVQ item as a measure of voice power, Birchwood and Chadwick (1997) failed to find a correlation with ratings of how distressing voices were, although it was correlated with depressive symptoms measured by the Beck Depression Inventory. They also reported the apparently contradictory finding that 70% of participants endorsing this item stated could stop their voices in some way, compared with only 22% of those who did not endorse the item.

Research discussed in this section has examined individual differences in adjustment to hallucination, in terms of subjective experience (e.g. distress, perceived coping) and objective behaviour (e.g. coping strategies, resistance-engagement). It appears that there is wide variation in terms of both of these. Subjectively, it appears that the majority of patients experience hallucinations as distressing, whilst a proportion are either indifferent to the experience, or find it pleasant. These individual differences may be accounted for to a large part by the content of hallucinations, although Chadwick and Birchwood have also highlighted the role of appraisals of the experience as a factor that may mediate the type of affect and degree of distress experienced. In terms of the person's behavioural reaction to voices, the theme of acceptance versus resistance of voices has come up in a number of studies (Chadwick & Birchwood, 1995; Farhall & Gehrke, 1997; Romme & Escher, 1989). Again it appears that whether the person accepts or resists his or her voices may be related to their content (Romme & Escher, 1989), and appraisals about the nature of the voices (Birchwood & Chadwick, 1997).

It is noteworthy that studies of the person's subjective and behavioural reactions to voices have not tended to utilise conceptual models from other areas of psychology. Subjective response to hallucination has been variously conceptualised as perceived ability to 'cope' (Romme & Escher, 1989), participant ratings of 'distress' on hearing voices (Birchwood & Chadwick, 1997), symptoms of depressive disorder (Birchwood & Chadwick, 1997), and clinician ratings of 'adjustment' (Falloon & Talbot, 1981). Whilst it appears that negative emotional responses may involve emotions including anxiety, anger and depression (Chadwick & Birchwood, 1994), it is unclear how these different emotional responses may relate to voice content or appraisals of this experience.

Similarly, examinations of the person's responses to hallucinations appear to have involved concepts such as acceptance, resistance and engagement, which have not been clearly operationalised in terms of psychological models. The exception to this is the work of Farhall and Gehrke (1997) which examined the person's response to hallucination in terms of Lazarus and Folkman's (1984) model of stress and coping. However, the use of this model was only partially successful, as they were unable to find a factor structure of coping which clearly related to this model.

Finally, Chadwick and Birchwood's suggestion of a role of the perceived power of voices on the person's reaction to hallucination, has not been clearly shown. The impact of beliefs about voice power on distress is a central assumption of cognitive therapy for voices, as this tends to focus on power beliefs, which are more amenable to evaluation than malevolence beliefs (Chadwick, Birchwood & Trower, 1996). Furthermore, the exact psychological processes by which beliefs about voice power lead to greater distress have not been clearly spelt out. A possible mechanism is mentioned by Chadwick *et al.* (1996) who suggest that depressive symptomatology may be due to being 'in the presence

of a controlling other from whom they cannot escape' (p. 21), in turn leading to a sense of helplessness. This suggests that how one perceives oneself in relation to the voices is as important as beliefs about voice power *per se*. Thus it may be that the perceived *relationship* between self and voice is more clearly related to distress. Clinically, this means that therapy may be as effective by boosting self-efficacy for coping with what voices say, as by disputing beliefs about voice power.

In conclusion, it appears that there is wide variation in the content of voices and in the way in which they are viewed. There appears to be some indication that voices perceived as negative or malevolent are more distressing than voices that are perceived as positive or benevolent. However, it remains unclear how this relates to specific emotional responses to their occurrence, or to the person's behavioural response. Furthermore, the role of perceived voice power on adjustment has yet to be established, and the person's perception of their relationship with their voices may be as important as perceived voice power *per se*.

The argument for an interpersonal analysis of voices

This thesis proposes that a valid and useful way of examining the person's subjective and behavioural adjustment to auditory hallucination is in terms of the interpersonal relationship they have with their voices.

There are a number of reasons suggesting that the experience of verbal auditory hallucinations may be validly considered in interpersonal terms. Firstly, the 'real' quality of auditory hallucinations, which appears to be their defining feature, means that they are likely to be understood as true perceptions rather than being internally generated. This,

together with the fact that auditory hallucinations usually take the form of speech, suggests they are likely to be interpreted as somebody talking. Furthermore, as the voices often have content using the imperative (i.e. commands), or talking in the second person, this will be experienced as being addressed by somebody. This means that rather than being a relatively neutral stimulus, the auditory hallucination brings with it the associations of there being another person interacting with them.

The content of hallucinations also corresponds to that which might be found in everyday interpersonal relationships. This is illustrated by Larkin's study of the content of hallucinations (Larkin, 1979), in which she found voice content can involve voices telling the patient to do things, giving opinions on others, giving advice, threatening the patient, watching the patient, acting 'as a friend' and sexually arousing the patient.

That the person appears to experience hallucination as somebody *talking* to them, is borne out by studies, described above, which have found people frequently have well-formed beliefs about the identity of their voices, and also draw conclusions about whether their intent is malevolent or benevolent (Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1994, 1995).

An interpersonal relationship also suggests that the person reciprocates the interaction in some way. This is clearly apparent in some patients who may be observed actively listening to their voices, and sometimes answering back to them. Many of the studies described above suggest that people often actively engage with the voices they hear (Chadwick & Birchwood, 1994, 1995; Falloon & Talbot, 1981; Farhall & Gehrke, 1997; Romme & Escher, 1989). It is also possible to conceptualise responses such as trying to disattend or suppress hallucination interpersonally, as attempts to ignore or control the voices.

The studies described above have highlighted that there are individual differences in the ways in which people feel when they hear their voices, and react to them behaviourally. An interpersonal conceptualisation provides an overall model in which these individual differences may be better understood.

Adopting an interpersonal approach allows the person's perception of their voices to be more clearly linked with their own responses to them, by conceptualising them both in terms of an interpersonal relationship. Studies of the person's responses to hallucination have not tended to conceptualise responses within a broader psychological model, so considering these responses as part of an interpersonal relationship would allow the application of theories of interpersonal behaviour to better understand them. In particular, the issue of acceptance and engagement with voices, versus resistance of voices – which does not easily correspond to psychological models of coping (Farhall & Gehrke, 1997) – can be thought of in interpersonal terms.

Furthermore, an interpersonal analysis provides a context for examining emotional responses to voices. Plutchik (1997) and Gilbert (1992) have argued that some emotions may have evolved to perform a function in regulating social behaviour. Thus, emotional responses can be thought of as being triggered by the interpersonal behaviour of others, and as a concomitant of one's own interpersonal behaviour. There already appears to be evidence that voices seen as hostile, abusive or malevolent are associated with distress, and this would place this association within a clearer framework. The suggestion that being in the presence of a controlling voice may also contribute to distress, and depressive responses in particular (Chadwick *et al.*, 1996), could also be evaluated using an interpersonal model.

Models of interpersonal behaviour

In order to consider what types of relationship people have with their voices, there needs to be reference to ways in which interpersonal relationships are generally structured. A series of models have been developed for systematising this, sometimes subsumed under the title of 'interpersonal theory'. These models have been developed to help understand both the dynamics of dyadic interactions, and more stable aspects of interpersonal behaviour such as the structure of interpersonal relationships and interpersonal aspects of personality.

Models within interpersonal theory have been heavily influenced by the development of a statistical model termed the circumplex (Guttman, 1954). A circumplex is a form of two-dimensional model, which allows different items to be represented within two-dimensional space, according to their association with two primary dimensions. However, in a circumplex, rather than items falling anywhere within two-dimensional space, they all fall in a circular array about the two dimensions. Thus a circle is produced in which neighbouring items are conceptually more similar, and items at opposite points of the circle are opposite conceptually. This produces statistical predictions, namely that the correlation between two items on the array is a function of their distance apart along the circumference of the circle, with high positive correlations between neighbouring items and high negative correlations between opposite items.

The Interpersonal Circle

The first interpersonal circumplex, termed the Interpersonal Circle, was developed by Freedman, Leary, Ossorio and Coffee (1951) and expanded upon by Leary (1957). This was, in fact, developed before the statistical properties of the circumplex had been described. However, the authors developed a circular model of the structure of personality, based upon an understanding of the conceptual relatedness between different types of interpersonal behaviour. The model was based upon an analysis of different English words which were descriptive of interpersonal behaviour. Words were identified from a number of informal surveys. Words which described conceptually similar behaviours were grouped together to define 16 forms of relating which were arranged as segments of a circle. The segments were arranged in a similar manner to a compass, with the opposing points of 'dominate' and 'submit' being placed at north and south, and the opposing points of 'love' and 'hate' at east and west. This resulted in two primary dimensions of control (domination-submission), running vertically, and affiliation (love-hate), running horizontally. The remaining 12 segments were then fitted in between the four defined poles of the compass-like circle. This was done according to how similar each one was to the four nodal points. For example, a segment corresponding to forms of relating involving placing trust in somebody was placed at the south-east position, midway between the submit and love poles. The 16 segments were identified by the letters A to P, although the authors gave them names which summarised the essence of what they related to (see figure 1). The circle was arranged in such a way that, for example, the segment J (Admire) was regarded as conceptually similar to the segments K (Trust) and I (Submit) and opposite to the segment B (Boast).

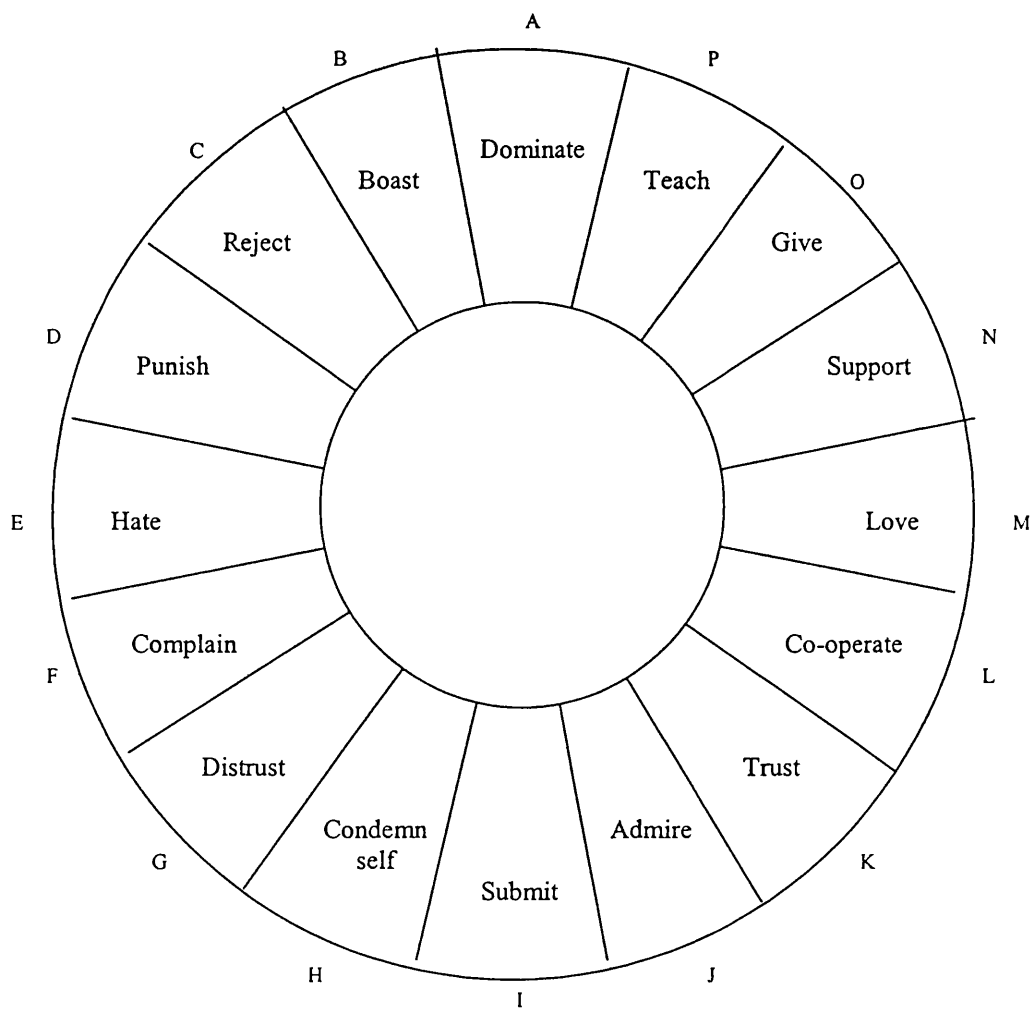


Figure 1. The Interpersonal Circle (Freedman *et al.*, 1951).

Since the publication of the Interpersonal Circle, it has been further developed and refined and its properties have been explicitly studied. Lorr and McNair (1963) developed a checklist of interpersonal behaviours from the circle, on which they asked therapists to rate the behaviour of their patients. Factor analysis of ratings on this measure revealed a circumplex structure which conformed roughly to the original Interpersonal Circle. Similar findings have been obtained by Wiggins (1979), Kiesler (1983) and Strong and Hills (1988). Each of these authors have made slight modifications to the Interpersonal Circle, in terms of the number of segments and their placement, but all have retained the two primary dimensions of love-hate and domination-submission.

There have also been attempts to determine ways in which different behaviours may elicit each other within the circular structure, creating the idea of complementary behaviours (Carson, 1969). It has been proposed that hostility elicits hostility, and love elicits love, whilst control and submission tend to elicit each other (Leary, 1957; Carson, 1969). Hence, complementary behaviours can be identified according to the position of their segments on the love-hate and control-submission dimensions. Studies examining the complementarity of different interpersonal behaviours in practice have lent support to this idea (Kiesler, 1983; Strong *et al.*, 1988; Gurtman, 2001).

Schaeffer's model of maternal behaviour

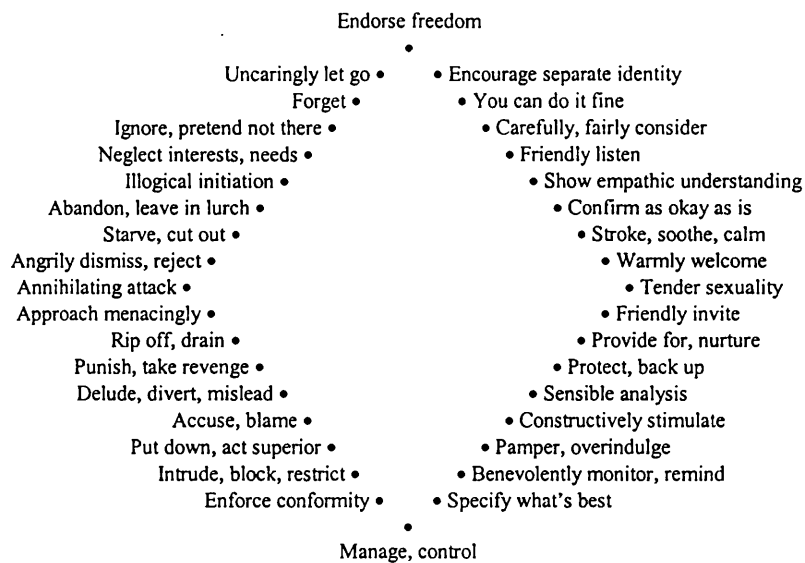
At around the same time as the Interpersonal Circle was being developed, another circumplex model was proposed by Schaeffer (1959). This was developed specifically to formalise different types of maternal behaviour. Schaeffer developed his circumplex from factor analyses of interviews with mothers and teachers, and children's descriptions of their mothers. Although developed independently, Schaeffer's circumplex bore close

resemblance to the Interpersonal Circle, with two dimensions of ‘love’ versus ‘hate’ and ‘control’ versus ‘autonomy’. The love-hate dimension directly corresponded to the horizontal axis of the Interpersonal Circle. However, whilst ‘control’ appeared to correspond to ‘dominate’ in the Interpersonal Circle, its opposite pole appeared significantly different, conceptualised as giving autonomy rather than submission.

Structural Analysis of Social Behaviour

Integrating the Interpersonal Circle and Shaeffer’s model, Benjamin (1974) proposed a further circumplex model, which she termed the Structural Analysis of Social Behaviour (SASB). Benjamin resolved the discrepancy between the models in how they viewed the dimension relating to control/domination by conceptualising domination as the *opposite* of allowing autonomy (‘emancipation’), but the *complement* of ‘submission’; she conceptualised ‘submission’ as being the *opposite* of taking autonomy, i.e. ‘separation’. In order to represent this in real space, she developed two separate circumplex planes, according to whether the focus of the interaction is on what is going to be done to or for the *other person*, or to or for *oneself*. In this way the two planes related to active parent-like roles and reactive child-like roles respectively. Each plane was based around a vertical dimension of autonomy versus control (‘emancipate-dominate’ on the first plane, and ‘separate-submit’ on the second), and horizontal dimension of affiliation versus hostility (‘active love-attack’ on the first, and ‘reactive love-protest’ on the second). Benjamin identified 36 interpersonal behaviours on each plane, which she represented as diamond-shaped rather than circular to simplify mathematical calculations (see figure 2). Conceptually opposite behaviours were represented at opposite points on the same

Active plane: Focus of the interaction on other (parent-like roles)



Reactive plane: Focus of the interaction on self (child-like roles)



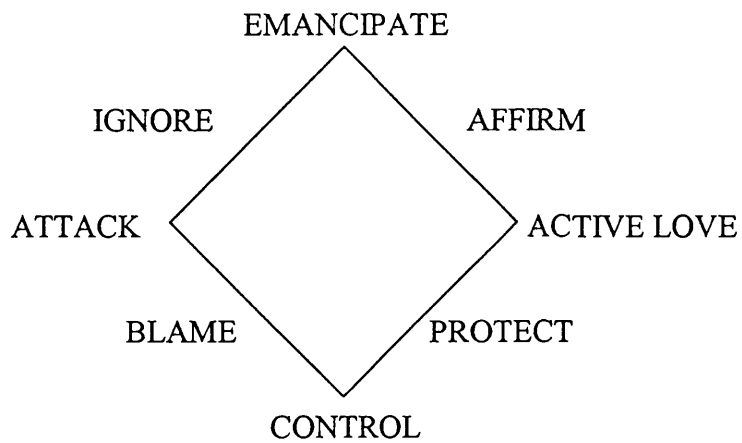
Figure 2. Item definitions for the active and reactive planes of the SASB model (from Benjamin, 1996a).

plane, and complementary behaviours represented at corresponding points across the two planes. She demonstrated that intercorrelations between items varied in a manner consistent with the statistical predictions of the circumplex – within-subjects item correlations varied as a function of distance between items around the circumplex, and between-subject correlations yielded a factor structure corresponding to the four dimensions, with items approximating a circular array. A simplified version of the SASB, reducing the 36 items on each plane to 8 main segments, is illustrated in figure 3.

Although the development of two planes in the place of one makes the SASB more complicated than the Interpersonal Circle, it has the advantages of systematising a wider range of interpersonal behaviours, whilst still incorporating those behaviours included in the Interpersonal Circle (Kiesler, 1983). It also makes explicit predictions about the complementarity of different interpersonal behaviours, predicting that behaviour at a given position on one plane would be expected to elicit behaviour at a corresponding position on the other plane. For example, Protection would be expected to elicit Trust from others, and *vice versa*. Similarly, ‘anti-complementary’ behaviours can be identified, i.e. those which would be expected to minimise certain types of behaviour exhibited by another person. The anti-complement to a given behaviour is represented in the model by the opposite position on the other plane. For example, Blame would be expected to minimise Disclosure, and *vice versa*.

Benjamin (1984) has developed measures for the observational coding of dyadic interactions and for the self-report of interpersonal relationships. A large number of research studies have been carried out using these measures, particularly in the areas of psychotherapeutic relationships, and personality disorder (Benjamin, 1996b). These have

Active plane: Focus of interaction on other (parent-like roles)



Reactive plane: Focus of the interaction on self (child-like roles)

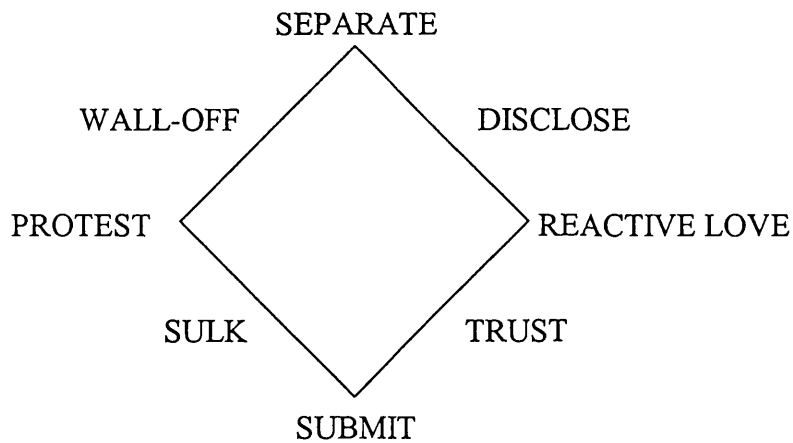


Figure 3. Simplified SASB model (Benjamin, 1996a).

lent support to the validity of the model in representing the structure of relationships, and the predictive principle that complementary behaviours tend to elicit each other (Benjamin, 1996b).

Applying an interpersonal model to auditory hallucination

It is proposed that an interpersonal analysis may be used to examine patients' emotional and behavioural responses to the experience of hallucination. This will be illustrated with reference to the SASB model. The content of hallucinations frequently involves abuse or hostility, which can be conceptualised in terms of Attack and/or Blame on the active plane of the simplified SASB in figure 3. The SASB model can also be used to conceptualise Larkin's descriptions of voices telling the patient to do things (Control), giving opinions on others (Protect), giving advice (Protect), threatening the patient (Attack), watching the patient (Control), as acting 'as a friend' (Love, Affirm, and/or Protect), and sexually arousing the patient (Active love) (Larkin, 1979).

Similarly, the reaction of the patient might be conceptualised using the SASB model. Reactions which have been documented have included willingly accepting their guidance (Trust), following commands (Submit), unwillingly complying (Sulk), trying to ignore voices (Ignore and/or Wall-off), shouting back at or resisting them (Protest), reasoning or debating with them (Disclose), and telling them to go away (Ignore/Attack). The SASB model suggests that such reactions may be elicited by the perceived interpersonal actions of the voice (e.g. Blame → Sulk, Control → Submit, Protect → Trust).

A particular dimension suggested to be important in patients' reactions to voices is

that of resistance versus engagement or acceptance (Chadwick & Birchwood, 1995; Farhall & Gehrke, 1997). Previous studies have been unable to clearly conceptualise this dimension in terms of wider models of behaviour. The SASB provides a possibility for doing this, in terms of the horizontal affiliation dimension of the reactive plane. For example, acts of resisting another can be conceptualised as Protest and Wall-off – hostile responses – and acts of reactively engaging with another can be conceptualised as Reactive love, Disclose and Trust – affiliative responses. Hence the overall tendency for resistance to, versus engagement with, voices can be considered in terms of the affiliation dimension. The complementarity principle indicates that how the voice-hearer reacts in terms of this dimension can be predicted by how the voice is perceived to act in terms of this dimension. Hence the SASB can be used to understand how voices perceived to be negative or malevolent (i.e. hostile) elicit resistance, and voices perceived to be positive or benevolent (i.e. affiliative) elicit resistance.

Additionally, the SASB model may be used to understand emotional responses to hallucination. It appears from the literature that voices seen as negative, hostile or malevolent are associated with distress. This, too, can be conceptualised in terms of the affiliation dimension in the SASB model. Additionally, Chadwick and Birchwood (1994) suggest that distress may be added to by the experience of being subjected to power and control by voices. This corresponds to the dimension of autonomy-control in the SASB model. Furthermore, Gilbert (1992) has proposed that depression is associated with submissive social behaviour (represented by autonomy-control on the reactive plane), and may be elicited by being exposed to control (represented by autonomy-control on the active plane). This suggests there may be a specific association between the degree of control in the relationship with voices and depression (Chadwick *et al.*, 1996).

The SASB has been applied once before to the experience of auditory hallucinations. As part of a large-scale study to validate the self-report version of the SASB (see Benjamin, 1994), Benjamin (1989) explored whether patients with auditory hallucinations would also be able to use her questionnaire to rate relationships with their voices. Asking 30 patients with a range of diagnoses to do this, she reported that patients were able to rate relationships with their voices relatively easily. She also provided some examination of whether the ratings given were organised in a meaningful way. She did this by exploring whether the profiles of ratings given would correlate with two theoretical profiles, which often occur when people complete the SASB¹. She found that a number of her participants, including those with schizophrenia, gave ratings that were correlated with one of these two profiles to an extent above that which would be expected by chance alone. This suggests that at least some of her participants were able to see their voices in meaningful interpersonal terms.

Although providing some indication of the validity of considering auditory hallucinations from an interpersonal perspective, Benjamin did not conduct a thorough investigation of how representative of everyday interpersonal relationships SASB ratings of voices were. For example, whilst showing that some participants gave ratings which matched characteristic interpersonal profiles, she did not examine whether ratings across all participants showed evidence of being structured in a manner similar to everyday relationships. Additionally, Benjamin did not systematically examine whether patients

¹ Benjamin (1984) described some 17 such profiles, each of which is defined by the rate of endorsement for SASB items varying as a mathematical function, with the highest ratings given for a specified segment or segments. Calculating correlations with such theoretical profiles to categorise the profile shown is one of a range of methods of scoring the SASB, the description of which is beyond the scope of the present discussion. See Pincus, Newes, Dickinson & Ruiz (1998) for a discussion and comparison of different methods of scoring the SASB.

exhibited complementary (hence reciprocal) relationships with their voices. She also studied a heterogeneous group of participants, of which only 14 had a diagnosis of schizophrenia. Since Benjamin's study, no further applications of the SASB (or other interpersonal models) to voices have been published.

The present study

As already stated, the central aim of this study is to examine whether voices can be seen validly in interpersonal terms. It will also examine whether this interpersonal conceptualisation of voices can be used to predict patients' behavioural and emotional responses to hallucination. The focus of this study will be on the experience of people with schizophrenia and related psychoses, in order to examine a relatively homogeneous sample.

The first stage of this will be to examine the validity of applying an interpersonal model to hallucinations. This will be done by determining the extent to which patients' descriptions of their relationships with their voices, using the SASB, conform to a structure which is qualitatively similar to that of normal interpersonal relationships. On the SASB model, the voice-patient relationship can be conceptualised in terms of four planes, which represent the active and reactive interpersonal behaviour of the voice, and the active and reactive interpersonal behaviour of the patient. Because each plane has a circumplex structure, predictions deriving from this statistical model can be used to determine if ratings of relationships with voices reproduce the expected structure of normal interpersonal relationships. It is noted that the descriptions of voice content, described above, tend to relate to interpersonal concepts on the *active* SASB plane, and

the descriptions of patients' responses to hallucination tend to relate to the *reactive* SASB plane. Hence, the voice-patient relationship may be most clearly characterised by the two planes for when interactions focus on the patient, i.e. the voice's active plane and the patient's reactive plane. However, in order to explore the proposed voice-patient relationship more fully, all four planes will be examined.

The next stage will be to examine whether patients' responses to hallucination can be understood as arising from their perception of their voices. This will be done by using the SASB predictive principle that complementary interpersonal behaviours will tend to elicit each other. Hence, the pattern of ratings of participants give of how they tend to relate to their voices would be expected to resemble a complementary pattern of relating by their voices. For example, it would be expected that voices with ratings centring around the Protect segment of the active plane, would elicit ratings of oneself centring around the Trust segment of the reactive plane.

Following this, emotional responses to hallucination will be mapped onto the relationships which people have described with their voices. In light of the limitations of previous studies in providing a clear conceptualisation of distress, distress will be considered in terms of the primary negative emotional responses of anxiety, anger and depression. Three specific hypotheses deriving from previous literature on hallucination will be tested. The first is that overall distress will be correlated with the active affiliation (versus hostility) dimension in ratings of the voice, with hostile voices being experienced as more distressing. The second is that overall distress will also be correlated with the dimension of control versus allowing autonomy, as suggested by the cognitive model which stresses the dimension of voice power as important in mediating distress. The third is that depression will be associated with being in a controlling

relationship with voices, conceptualised by the autonomy-control dimension for ratings of both the voice (allowing autonomy versus control) and individual (separating versus submitting).

Method

Participants

Recruitment

Participants were recruited from in-patient and outpatient services within a London Mental Health NHS Trust (see appendix 1 for details of ethical approval). The in-patient services included seven acute admissions wards, two open rehabilitation units and five locked rehabilitation wards. The Trust's regional secure and locked intensive care wards were not included. All patients using these wards during a four-month period of data-collection were considered as potential participants. The outpatient population consisted of patients in receipt of care from one of the Trust's community mental health teams.

Inclusion and exclusion criteria

Participants were included if they reported hallucinatory experiences in the form of voices, and had a clinical diagnosis of schizophrenia or schizoaffective disorder, given by their consultant psychiatrist according to ICD-10 criteria (World Health Organisation, 1992).

Patients with a primary diagnosis of affective disorder, dissociative disorder or personality disorder were not included, in order to provide a homogeneous sample.

Although some authors have argued for studying symptoms independently from diagnosis (e.g. Bentall *et al.*, 1988), there appears to be some indication in the literature that the form and content of hallucinations may differ according to diagnostic group. This is supported by the data of Benjamin (1989), which showed relationships with voices differed according to diagnosis. Hence the study aimed to focus on schizophrenic disorders in line with the majority of previous research on voices. Patients with a secondary clinical diagnosis of borderline personality disorder were also excluded, to avoid the emotional and interpersonal dysfunction associated with this diagnosis skewing results.

Similarly, participants were not included if they experienced only non-verbal auditory hallucinations, or if their hallucinatory experience appeared limited to hearing people in their immediate environment referring to them, as opposed to distinct voices.

These criteria yielded a pool of 100 potential participants. Of these, 10 were excluded due to not speaking sufficient English to complete the interview, leaving a final pool of 66 in-patients and 24 out-patients.

Resultant sample

Suitable in-patients were directly approached by the author on their ward. 5 were unable to be approached as they had either absconded or had been discharged before they could be approached. A further 5 were not approached on the advice of staff, as staff had been unable to engage with them due to them being too thought disordered. Of the remaining 56 in-patients, 43 agreed to be interviewed – 8 refused to talk to the interviewer outright, and a further 5 denied experiencing voices once the study had

been explained to them, even though they had reliably reported this to staff during the course of their admission.

Of the 43 in-patients who agreed to participate, interviews were completed for 27. 9 could not be completed due to the participant being too thought disordered, distractible or preoccupied with delusions to attend to the focus of the interview. 7 were abandoned for other reasons: 1 because the participant became worried about the voices' reaction to him discussing them, 2 because the participant became distressed during the interview because of other concerns, 1 because the participant reported being bored and started responding with the same answer to all questions, 1 because of fatigue related to medication side effects, and 2 because the participant changed their mind about participating without explanation.

Out-patients were first informed of the study by their community key-worker, and, if agreeable, were then contacted by the author. Of the 24 that were informed of the study, 10 agreed to participate. Of these, one participant was excluded as he denied experiencing voices when he was seen, and one was excluded as he was too distractible to be able to focus on the interview.

This resulted in a final sample of 35 participants, comprising 27 in-patients (16 from acute wards, and 11 from rehabilitation wards) and 8 out-patients. This represented 39% of the initial pool of suitable participants.

Participant demographics

22 participants were male, and 13 female. The mean age of participants was 34.9 (range 19 to 54, SD = 8.43). 18 were White British and 17 were from other ethnic backgrounds. 30 had a diagnosis of schizophrenia, and 5 had a diagnosis of schizoaffective disorder. Of the 27 in-patients, 14 were detained under section of the

Mental Health Act. All participants were being treated with antipsychotic medication at the time of the study.

Representativeness of sample

The final sample did not differ from potential participants who did not complete the interviews in terms of age ($t(88) = 0.640$, n.s.), sex ($\chi^2(1) = 0.373$, n.s.), or ethnic background ($\chi^2(1) = 0.00$, n.s.).

Although specific data on collateral symptoms such as formal thought disorder were not collected, participants who were severely thought disordered were under-represented in the final sample, as it was not possible to complete an interview with them. The patients who refused to participate or denied experiencing voices, were frequently reported to be guarded and difficult to engage with by staff. As this may be related to suspiciousness, this raises the possibility that comorbid symptoms of paranoia may also be relatively under-represented in the final sample.

The out-patient and in-patient samples did not differ in terms of the proportion of potential participants who completed the interviews ($\chi^2(1) = 0.425$, n.s.). However, it was noted that the reasons for non-completion were predominantly refusal to participate in the out-patient sample, whereas in the in-patient sample a number of interviews could not be completed because the patients were unable to focus on the interview. There were no statistically significant differences between the out-patient and in-patient samples in terms of sex ($\chi^2(1) = 0.001$, n.s.), age ($t(33) = 0.637$, n.s.) or ethnic background ($\chi^2(1) = 0.480$, n.s.).

Measures

Characteristics of and beliefs about voices

Participants were asked to rate how often they heard their voices using a five-point rating scale developed by Chadwick *et al.* (1996). This scale was anchored as follows: (1) every hour, (2) several times a day but not every hour, (3) once a day, (4) several times this week but not every day and (5) not at all lately.

In addition, the first 13 items from the Beliefs About Voices Questionnaire (Chadwick & Birchwood, 1995) were used to assess evaluative beliefs about the voices malevolence, benevolence and power (see appendix 2). The BAVQ yields separate scale scores for perceived voice benevolence and perceived voice malevolence, each with a range of 0-6. Both scales have high internal consistency and test-retest reliability (Chadwick & Birchwood, 1995). Cut-off scores can be used to indicate the presence of malevolence or benevolence beliefs, hence classifying participants as believing their voices to be malevolent, benevolent, or neither. Testing the BAVQ against the criterion of independent cognitive interviewing in 40 participants, Chadwick and Birchwood (1995) found that these cut-offs accurately classified 90% of participants who expressed malevolence beliefs and all participants who held benevolent beliefs.

Relationship between self and voice – Structural Analysis of Social Behaviour

To assess the interpersonal relationship between the patient and their voices, items from the long form of the Intrex questionnaire (Benjamin, 1984) were used. This is a checklist based upon Benjamin's SASB model, which consists of a series of items relating to each of the 36 points defined on each circumplex plane within the SASB,

e.g. '___ gives in to ___, yields and submits to him/her'. Each item is rated by the individual on a scale of 0 to 100 for how characteristic it is of a given person's behaviour towards another given person.

Items were worded to apply to the behaviour of the voice toward the participant, and the behaviour of the participant toward the voice, in terms of both the active and reactive SASB planes. Hence, four planes were assessed by the questionnaire as follows, with 36 items on each:

(1) Voice Acts towards person, e.g. 'With much kindness and good sense, the voice figures out and explains things to me'

(2) Person Reacts to voice, e.g. 'I willingly accept and go along with the voice's suggestions and ideas'.

(3) Person Acts towards voice, e.g. 'With much kindness and good sense, I figure out and explain things to the voice'

(4) Voice Reacts to person, e.g. 'The voice willingly accepts and goes along with my suggestions and ideas.'

Items corresponding to the SASB plane for introjected interpersonal behaviours were not included. The questionnaire consisted of 144 items in total (see appendix 2).

Emotional response to voices

Distress in response to hallucination was assessed using two measures. The first was the 5-point self-rating scale developed by Hustig and Hafner (1990), which has been used in the studies by Chadwick and Birchwood (1995; Birchwood & Chadwick, 1997). The five points were anchored as follows: (1) very distressing, (2) fairly distressing, (3) neutral, (4) fairly comforting and (5) very comforting.

To provide a more detailed measure of the strength and tone of emotional response to voices, an adapted version of the Profile of Mood States (POMS; McNair, Lorr & Droppleman, 1992) was used. The POMS is a well-established measure of emotional state, consisting of a checklist of a series of words relating to different feelings, which are rated according to how intensely they are felt. The items load on six scales, reflecting the measure's factor structure: Depression, Tension, Anger, Confusion, Vigour and Fatigue. The POMS was adapted so that participants were asked to rate how they usually feel in response to hearing voices. In order to shorten the questionnaire, only items for the Depression, Tension and Anger scales, corresponding to the primary negative emotions, were included. The resultant 36-item questionnaire is also presented in appendix 2.

Calgary Depression Scale

As a measure of symptoms of depressive disorder (as opposed to depressive responses to voices), the Calgary Depression Scale (CDS; Addington, Addington & Tyndale, 1993) was used. This is an interview-based measure designed to assess depressive symptoms in people with schizophrenia. The measure specifically assesses symptoms which distinguish depression from negative symptoms of schizophrenia. It consists of 9 4-point ratings scales completed by the interviewer, totalled to provide an overall score (see appendix 2). The CDS exhibits high inter-rater reliability and internal consistency, and correlates highly with other measures of depression whilst remaining uncorrelated with measures of negative schizophrenic symptoms (Addington *et al.*, 1993).

Procedure

After obtaining consent, participants were seen for an interview – in-patients being seen on the ward, and out-patients in their own home. Although it was expected that the interview might have needed to be split up, all but two participants completed the interview in one sitting, usually taking between 45 and 60 minutes. The two remaining participants both frequently digressed into delusional preoccupations, leading to the interview taking longer.

During the interview, the participant was first asked general questions about their hallucinatory experience. These included enquiries about the frequency of hallucinations, how many voices they heard, how long they had heard them for, whether they found them distressing, whose voices they thought they heard, and how they thought they occurred.

For the purposes of completing the ratings, participants were asked to think of one of the voices they heard, by selecting one that they heard most often or that otherwise stood out from the rest. Selecting a single voice for study is a method which has been adopted in the research by Chadwick and Birchwood (1995; Birchwood and Chadwick, 1997).

Following this, the measures detailed above were administered in the following order: (1) abbreviated BAVQ, (2) 5-point rating of distress, (3) Intrex, (4) Calgary Depression Scale, (5) POMS. To aid concentration with the questionnaire measures, participants were given a copy of the questionnaire, and the interviewer read out each question aloud. Participants gave responses verbally.

At the end of the interview, the interviewer summarised what had been said, and checked that this fitted with the participant's experience. It was also checked that

discussing voices did not bring up any issues that would play on the participant's mind. Participants were then thanked and given expenses for participating.

Results

Characteristics of voices

All participants had experienced voices in the last week, and had heard voices for at least one year. The mean number of years they reported they had heard voices for was 10.6 (range 1 to 31 years, SD = 8.98). On the 5-point ratings of the frequency of voices, 23 participants said they heard their voices every hour of the day, 5 several times a day, 3 once a day, and 4 not every day but at least once a week. In subsequent analyses on voice frequency, those participants reporting hallucinations every hour of the day have been grouped together as a continuous auditory hallucinations group ($n = 23$), and the remaining participants have been grouped together as an intermittent auditory hallucinations group ($n = 12$).

9 participants reported hearing a single voice, and 26 reported hearing a number of voices. All were able to identify a particular voice to rate for the study. All participants were addressed by their voices in the second person at least some of the time.

Beliefs about voices

On the BAVQ, participants had a mean malevolence score of 2.83 (SD = 2.39), and a mean benevolence score of 2.40 (SD = 2.21). Using the classificatory cut-off scores

recommended by Chadwick and Birchwood (1995), 13 participants regarded their voices as malevolent, 14 regarded them as benevolent and 7 as neither malevolent nor benevolent. One participant held a mixture of malevolence and benevolence beliefs.

32 of the 35 participants endorsed the BAVQ item stating that their voices were 'very powerful'. As the validity of this item was uncertain, participants were prompted to expand on their answer when they endorsed this item. Whilst most participants expressed beliefs about voices consistent with Chadwick and Birchwood's concept of omnipotence (Chadwick & Birchwood, 1994), this was doubtful in a number of cases. For example, one participant said that 'it has a strong personality', another said 'it has oomph, like a powerful car', another said 'because it's trying to get me well'. Each of these denied that the voice was more powerful than themselves. As further participants were unable to expand when prompted, the validity of this item as a measure of voice power, in the sense described by Chadwick and Birchwood (1994), was doubtful.

Structural validity of the interpersonal approach to voices

When the SASB measure was administered, all participants reported they understood the idea of rating the actions of their voices towards them, and their responses to their voices as if their voices were another person.

Although participants were explicitly told to make zero ratings whenever items did not apply or make sense, every participant rated a number of the items on the questionnaire as applying at least 50%, and 31 of the 35 participants gave at least one 100% rating. Similarly, every one of the 144 items was rated as applying 100% by at

least one of the participants, providing some indication that the full range of items could be meaningfully applied to voices.

How well ratings conformed to the structure of normal interpersonal relationships

In order to test the validity of the interpersonal approach more systematically, SASB ratings of voices were analysed to determine whether they were organised in a manner qualitatively representative of normal interpersonal relationships. Because the SASB is based on a circumplex structure, this can be tested by examining whether ratings participants gave of their relationship with voices conformed to statistical predictions deriving from this structure.

To recap, the relationship between person and voice can be represented in terms of four planes. The first two are for when the interaction focuses on the person experiencing the voices: one for how the voice acts towards the person (Voice Acts), one for how the person reacts to the voice (Person Reacts). These two planes would be relevant, for example, when the voice addresses the person in some way, e.g. commenting on him or her, or telling or advising them what to do. The second two planes are for when the focus of the interaction shifts to the voice, for example, when the person actively seeks out their voice, tells it to go away and so on. These two planes represent how the person acts towards the voice (Person Acts), and how the voice responds to this (Voice Reacts).

Each plane is assessed by 36 items organised as a circumplex. As discussed in the introduction, the circumplex is a circular ordering of items in which item inter-correlations vary as a direct function of their distance apart around the circumplex's circumference (Guttman, 1955). The correlations between a given item and the remaining items will reduce progressively from the highest positive correlation with

the closest items, through zero, to the highest negative correlations with the items furthest apart. This is found when the SASB is used to rate normal interpersonal relationships (Benjamin, 1974).

Hence, the extent to which participants' ratings were representative of normal interpersonal relationships can be assessed by examining whether item inter-correlations varied in a manner consistent with the predicted circular ordering. In the development of the SASB, Benjamin (1974) described two methods for assessing this. The first involves examining within-subject inter-item correlations, and the second involves comparing inter-item correlations between subjects. Both of these methods were used to determine the extent to which item ratings fitted the predicted ordering.

Within-subjects inter-item correlations

The within-subjects method involved taking each participant in turn, and examining the extent to which their ratings inter-correlated in a manner predicted by the given ordering. With 36 items on each plane, any two items can be between 1 and 18 items apart. This means that it is possible to calculate 18 product-moment correlation coefficients for each participant, with each coefficient relating to the correlation between items at a given different distance apart from 1 to 18. If the items were numbered around the plane from 1 to 36, each of the 18 correlation coefficients can be calculated by comparing the ratings for items 1 to 36 with ratings for items $1 + q$ to $36 + q$, where q represents the distance apart (from 1 to 18) for that coefficient. For example, the correlation between items 1 position apart would involve comparing ratings for item 1 with item 2, 2 with 3, 3 with 4 and so on until item 36 with item 1. Similarly the coefficient for items 2 positions apart would involve comparing item 1 with item 3, 2 with 4, etc. until item 35 with item 1, and 36 with 2.

It would be expected that the 18 correlation coefficients would steadily decrease from positive, through zero, to negative, as the value of q increased from 1 to 18. Averaged across subjects, this pattern can be seen clearly for all four planes in figure 4. However, a more systematic test of the degree to which inter-item correlations decrease in this manner is to rank the 18 inter-item correlation coefficients for each participant, and compare the obtained order with the expected order. This allows the calculation of a single rank correlation coefficient which represents the conformity of the participant's ratings to the expected circumplex structure.

Using this method to analyse ratings on the Voice Acts plane, the median rank coefficient was .82 (inter-quartile range: .38 to .98). Using a one-tailed significance test, correlations of .40 or above would be significant at $p < .05$. 27 of the 35 participants' coefficients were above this level. On the Person Reacts plane, 22 participants showed a coefficient of .40 or above, with an overall median of .76 (inter-quartile range: .18 to .95). 21 participants showed a statistically significant coefficient on both the Voice Acts and Person Reacts planes.

On the Person Acts plane, the median rank coefficient was .62 (inter-quartile range: .14 to .94), with 22 participants showing a statistically significant coefficient. On the Voice Reacts plane, statistically significant rank correlations were obtained for 21 of the 35 subjects, the median being .65 (inter-quartile range: .19 to .91).

Overall, only two of the 35 participants failed to give responses corresponding to a circumplex structure on any of the four planes (i.e. failed to show an $r_s > .56$, $p < .0125$ to correct for multiple tests). One of these participants, for whom English was a second language, was noted to ask a number of questions about the wording of the items, suggesting he may have had difficulties in comprehending how the items were written. There was not a clearly identifiable reason for the other participant failing to

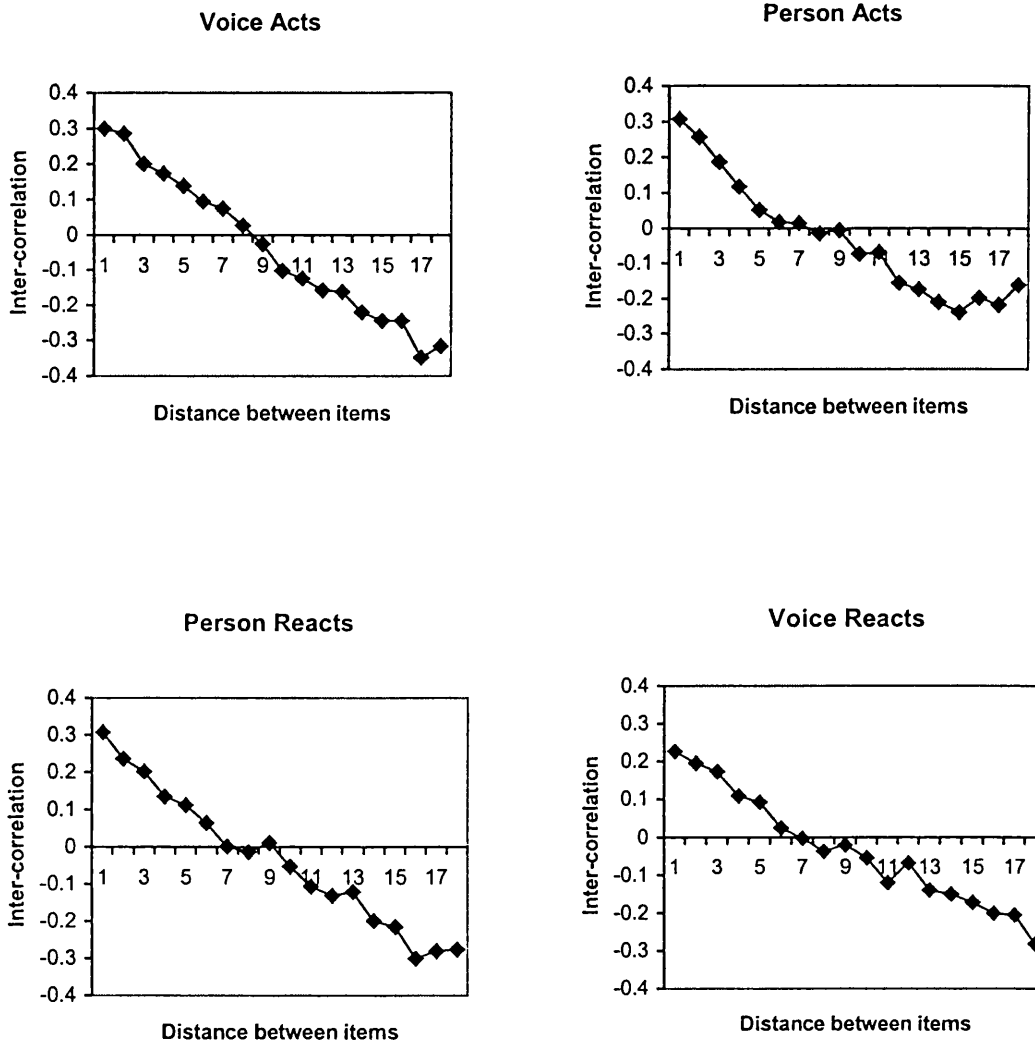


Figure 4. Mean within-subjects inter-item correlations as a function of distance between items.

produce this structure, although the interview with him tended to be dominated by a delusional preoccupation, and his engagement in the task appeared limited. It is plausible that this participant was not fully attending to the task.

Between-subjects inter-item correlations

The second method involves taking each *item* in turn, and examining its association with the remaining items on its plane by considering scores across all participants. With 36 items on each plane, 35 correlation coefficients can be calculated for each item's association with the other items on the plane. The circumplex structure predicts that the magnitude and direction of the coefficients for each of the 35 other items should vary according to their positions relative to the given item. Progressing clockwise around the plane from a given item, the 35 coefficients would be expected to reduce steadily from a high positive correlation with the first item to the highest negative correlation with the 18th item and then steadily rise again to a high positive correlation with the 35th item. The extent to which this order is obtained for each item can be determined by calculating a rank correlation coefficient for the conformity of the obtained rank order of the 35 correlation coefficients with the predicted ordering (i.e. 1st equal, 3rd =, 5th =, . . . 31st =, 33rd =, 35th, 33rd =, 31st =, . . . 5th =, 3rd =, 1st =).

On the Voice Acts plane, 34 of the 36 items had rank correlation coefficients which were statistically significant at $p < .05$ (one-tailed, $n = 35$: $r_s > .28$). The median coefficient was .57. This suggests that nearly all of the items for the voice acting towards the person approximately fitted the expected order. There was a similar pattern on the parallel plane, Person Reacts. On this plane, all but one of the

36 items yielded statistically significant rank correlations ($r_s > .28$, one-tailed $p < .05$).

The median rank correlation coefficient was .73.

On the Person Acts plane the median coefficient was .55, with 32 of the 36 coefficients being significant at $p < .05$ ($r_s > .28$). On its parallel plane, Voice Reacts, the median coefficient fell to .48. 27 of these 36 items had statistically significant coefficients at $p < .05$ ($r_s > .28$).

In total, 128 of the 144 items had inter-correlations with other items which corresponded to the expected order at a statistically significant level. The overall median correspondence with the expected orderings was .56.

Internal consistency of item clusters

Whilst it appeared that the majority of items fitted with the circumplex order to some degree, it is possible that some areas around the circumplex planes are less reliable than others, due to some aspects of interpersonal relationships being less readily applicable to the experience of hearing voices. To examine this, items were grouped together into clusters of four or five items to represent the eight segments of the simplified SASB model, i.e. Emancipate, Affirm, Active love, Protect, Control, Blame, Attack and Ignore on the active planes, and Separate, Disclose, Reactive love, Trust, Submit, Sulk, Protest and Wall-off on the reactive planes. Grouping items together in this way is frequently used as a method of scoring the SASB (Benjamin, 1984). Chronbach alpha coefficients were calculated for each cluster, to determine how well each cluster of neighbouring items inter-correlated. These are presented in table 1. The obtained coefficients can be compared with alpha coefficients obtained by Lorr and Strack (1999) for a series of 182 patient ratings of their childhood relationships with their mothers collected by Benjamin (1984).

Cluster	Voice Acts α	Person Reacts α	Person Acts α	Voice Reacts α
Emancipate/Separate	.60	.60	.60	.00
Affirm/Disclose	.88	.71	.74	.77
Active/Reactive love	.87	.82	.86	.84
Protect/Trust	.80	.75	.82	.79
Control/Submit	.66	.80	.82	.74
Blame/Sulk	.81	.84	.66	.47
Attack/Protest	.68	.70	.81	.50
Ignore/Wall-off	.73	.76	.73	.64

Table 1. Cronbach alpha coefficients for SASB item clusters.

On the Voice Acts plane, alpha coefficients ranged from .60 to .88, which was comparable with the range of .59 to .90 obtained by Lorr and Strack. The least reliable clusters were Emancipate ($\alpha = .60$), Control ($\alpha = .66$) and Attack ($\alpha = .68$). Emancipate was also found to be less reliable in Lorr and Strack's sample ($\alpha = .59$), although the alpha coefficients for Control and Attack were slightly higher ($\alpha = .74$ and .84, respectively).

There was a similar range of alpha coefficients on the Person reacts plane (.60 to .84), comparing with .66 to .85 found by Lorr and Strack. The only cluster with an alpha coefficient falling below .70 – Separate ($\alpha = .60$) – was also relatively less reliable than the other clusters in Lorr and Strack's sample ($\alpha = .66$).

The Person Acts plane also showed a range of alpha coefficients above .60 (.60 to .86). The only item which had an alpha coefficient below .70 was Emancipate ($\alpha = .60$). Unfortunately, Lorr and Strack did not provide any data for Self acting toward other, which would be analogous to this plane. However, in the data they did present the Emancipate/Separate cluster tended to have lower alpha coefficients than other clusters, ranging from .50 to .66. This suggests the relatively lower coefficient obtained for this cluster reflects properties of the items themselves, as opposed to diminished reliability because of their application to voices.

However, on the Voice Reacts plane, a number of lower alpha coefficients were obtained. Most problematic was the Separate cluster, which showed an alpha coefficient of .00. Only one of the items within this cluster ('Defy, do opposite') demonstrated a statistically significant fit with the predicted circular order. The remaining items within this cluster were 'Go own separate way', 'Freely come and

go', 'Own identity, standards' and 'Assert on own'. This suggests that the interpersonal concept of separating could not be reliably applied to voices.

Three other Voice Reacts clusters also had relatively low alpha coefficients. These were Sulk (.47), Protest (.50) and, to a lesser extent, Wall-off (.64). The Sulk cluster contained two items that did not fit with the predicted circular ordering at a statistically significant level. These were 'Sulk, act put upon' and 'Uncomprehendingly agree'. There was one item in each of the Protest and Wall-off clusters which did not inter-correlate with other items in line with the predicted circular ordering ('Sacrifice greatly' and 'Wall-off, non-disclose', respectively). As with the Person Acts plane, there was no analogous 'Self Acts' data available in the study of Lorr and Strack for direct comparison. However, alpha coefficients above .70 were obtained by Lorr and Strack for these clusters rated for in other contexts. Hence these clusters may also be less reliably applicable to voices.

The dimensions of Affiliation and Autonomy

Scores for individual items on each of the SASB planes can be used to calculate scores for the two primary dimensions of Affiliation (vs. hostility) and Autonomy (vs. control) (Benjamin, 1974; Pincus, Newes, Dickinson & Ruiz, 1998). Each item has a weighting for each of the two dimensions on its plane ranging from -9 to +9 according to its position around the diamond shaped circuplex. For example, the item 'Accuse, blame', representing a blend of hate and control on the active plane, is weighted -4 on the Affiliation dimension and -5 on the Autonomy-Control dimension. The item 'Annihilating attack' is weighted -9 on the Affiliation dimension and 0 on the Autonomy-Control dimension. These weightings are used to calculate dimension

scores by totalling the products of the item scores and weightings and dividing by a constant to produce scores ranging from -100 to +100. This gives two dimension scores for each of the four planes assessed.

It is worth reiterating that the active and reactive planes relate to interpersonal behaviours parallel to each other. Hence on the active planes, the Autonomy dimension relates to giving another freedom versus exerting control over them. On the reactive planes, the same dimension relates to separating from versus submitting to the other person.

The distribution of scores for each of the SASB dimensions

Scores on all eight of the dimensions appeared to be normally distributed, although the Voice Acts Autonomy (versus control) dimension was slightly skewed towards the control pole. The ranges of scores obtained, scale means and standard deviations are presented in table 2. It was found that on all four planes, the degree of variance on the Autonomy scales was smaller than that on the Affiliation scales. This suggests that the main way in which the relationships differed within this sample was in terms of the degree of hostility versus affiliation, as opposed to autonomy versus control.

The Affiliation and Autonomy dimensions are orthogonal in ratings of normal interpersonal relationships (Pincus, Newes, Dickinson & Ruiz, 1998). However, on the plane for the voice acting towards the person (Voice Acts), there was a moderate correlation of +.44 ($p = .01$) between the two dimensions. This indicates that hostile voices were more likely to be rated as controlling as well, and/or friendly voices were more likely to be rated as emancipating. The Affiliation and Autonomy dimensions appeared to remain independent on the other three planes (Person Reacts: $r = -.05$, n.s.; Person Acts: $r = +.21$, n.s.; Voice Reacts: $r = -.27$, n.s.).

Plane	Dimension	Range	Mean	Standard deviation
Voice Acts towards person	Affiliation	-82.1 to +80.2	-2.2	47.0
	Autonomy (i.e. freeing vs. controlling)	-49.4 to +32.7	-15.7	18.9
Person Reacts to voice	Affiliation	-70.1 to +95.4	-2.3	41.2
	Autonomy (i.e. separation vs submission)	-44.8 to +64.0	+3.6	28.2
Person Acts towards voice	Affiliation	-71.1 to +85.2	+9.8	35.9
	Autonomy (i.e. freeing vs. controlling)	-19.8 to +58.1	+15.6	20.3
Voice Reacts to person	Affiliation	-43.8 to +82.7	+14.0	32.7
	Autonomy (i.e. separation vs submission)	-46.4 to +35.7	+13.1	20.1

Table 2. Descriptive statistics for SASB dimension scores.

Effects of participant demographics and voice characteristics

There were no statistically significant differences on any of the dimensions according to sex, or between participants from ethnic minorities and the rest of the sample. Similarly, there were no significant differences between the in-patients and out-patients.

Continuous auditory hallucinations were associated with higher ratings of control exerted by the voice (Voice Acts Autonomy: mean = -22.0 vs. -3.6, $t(33) = 2.84$, $p < .01$). There were no other statistically significant associations between the interpersonal dimensions and the frequency of hallucination. The number of years the participants reported they had heard voices for was not significantly correlated with any of the interpersonal dimensions, although there was a trend for submission to voices to be associated with a longer history (Self Reacts Autonomy: $r = -.34$, $p = .06$).

Correspondence with beliefs about voices

The Voice Acts Affiliation dimension correlated $-.65$ ($p < .001$) with the BAVQ Malevolence scale and $+.63$ ($p < .001$) with the BAVQ Benevolence scale. Using the BAVQ scale scores to categorise beliefs about the intent of voices (as described by Chadwick and Birchwood, 1995), 12 of the 13 participants who had malevolent voices showed an Affiliation score in the direction of hostility (i.e. Voice Acts Affiliation < 0 ; mean = -32.4 , SD = 41.7). The remaining participant was noted to express complex beliefs about the intent of his voice during the interview – saying that it was deity who looked after and guided him, but wanted him to kill himself in order to become a deity himself. This may account for this anomaly. Similarly, all but one of the 14 participants who had benevolent voices showed a positive Affiliation score

(mean = +34.1, SD = 34.3). The other participant reported during the interview that his voices were raping and murdering people, suggesting he may also have held malevolence beliefs that were undetected by the BAVQ. The 7 participants who could not be classified as holding either malevolent or benevolent beliefs on the BAVQ had a mean Voice Acts Affiliation score of -9.7 (SD = 22.9).

Complementarity in relationships with voices

Interpersonal theory predicts that one person's behaviour towards another will tend to elicit the other person responding in a manner which is complementary. Complementary interactions are defined on the SASB as corresponding points on the active plane of one person and the reactive plane of the other person. For example, in a single interaction the position 'Friendly listen', midway between the love and emancipate poles of the active plane, would be expected to elicit the position 'Openly disclose, reveal', midway between the same poles of the reactive plane. In ratings of relationships as a whole, it would be expected that the overall profile of interpersonal behaviour coded on one person's active plane would be associated with a similar profile on the other person's reactive plane.

To determine whether the complementarity principle could be used to understand patients' responses to their voices, a method described by Gurtman (2001) was used. Scores on the Affiliation and Autonomy scales can be used as co-ordinates to calculate a vector (with an angle of 0 to 360 degrees), representing the central tendency of ratings within the circular array of a given plane. The complementarity principle predicts that, within a relationship, the angle of the vector representing the central tendency of ratings on one person's active plane will be associated with a

similar angle on the other person's reactive plane. Hence, the angular discrepancy between the two vectors can be used as an index of the degree of complementarity within a given relationship. A discrepancy of 0° would represent perfect complementarity, whereas a discrepancy of 180° would represent perfect 'anti-complementarity', i.e. one person acts in a way which is the opposite of what would be expected from the other person's behaviour. Gurtman (2001) indicates that this can be converted into a coefficient he terms the *A* statistic, as follows:

$$A = (90 - D)/90$$

where *D* is the discrepancy between angles in degrees. The *A* statistic ranges from -1 (perfect anti-complementarity) to +1 (perfect complementarity), with 0 representing neither complementary nor anti-complementary interactions.

A statistics were calculated for the association between the Voice Acts and Person Reacts planes. 29 of the 35 participants (83%) showed some degree of complementarity (i.e. $A > 0$) as opposed to anti-complementarity (i.e. $A < 0$). This proportion did not differ significantly from the proportion Gurtman found (91%) for Benjamin's series of 184 patients' ratings of their childhood relationships with their mothers (Benjamin, 1984) ($\chi^2(1) = 1.954$, n.s.). The median *A* statistic was +.60 (mean = +.44), which means that 50% of participants' responses to voices centred around a vector within 36 degrees of the vector which their ratings of their voices centred around. The mean *A* statistic was statistically significant using Gurtman's method of estimating the sampling distribution under the null hypothesis that the observed association occurs as an artefact of an uneven distribution of vectors around the two circumplex planes (Gurtman, 2001) ($z = 4.61$, $p < .0001$)¹. The median and

¹ Although this was not observed in the present study, SASB ratings are usually distributed unevenly between subjects around the circumplex planes, usually being heavily skewed towards the affiliative

mean A statistics compare with a median of +.78 and mean of +.64 obtained by Gurtman from Benjamin's data (Gurtman, 2001).

To explore the complementarity principle further, correlations between the plane's dimension scores were calculated. Hence, Voice Acts Affiliation was compared with Person Reacts Affiliation, and Voice Acts Autonomy with Person Reacts Autonomy. The Affiliation dimensions of the two planes were highly inter-correlated ($r = +.94, p < .001$). This suggests that the voice addressing the person with hostility very reliably predicts the person reacting with hostility, e.g. protesting. However, it did not appear that control exerted by the voice reliably predicted submission to it: the correlation between the two Autonomy dimensions failed to reach statistical significance ($r = +.27, n.s.$).

It is also possible to examine the degree of complementarity between the Person Acts and Voice Reacts planes, i.e. for interactions which focus on the voice. In spite of the reduced reliability of the Voice Reacts plane, this yielded a median A statistic of +.66 (mean = +.57, $z = 4.27, p < .0001$)², with only one of the 35 participants showing anti-complementarity. The Self Acts and Voice Reacts Affiliation dimensions were highly inter-correlated ($r = +.89, p < .001$), and there was also a smaller correlation between the Autonomy dimensions ($r = +.34, p < .05$).

pole. This means that vectors may coincide as an artefact of this uneven distribution. Hence Gurtman (2001) suggested the method of using random pairings from the same data set (with replacement) to develop an estimate of the sampling distribution for the null hypothesis. This method was used to estimate the sampling distribution from 1000 random pairings of Voice Acts and Person Reacts vectors. The mean of this sampling distribution was estimated to be 0.009, with a standard error of 0.0932.

² Estimated sampling distribution under the null hypothesis: mean = 0.1666, standard error = 0.0935.

Emotional responses to voices

On the 5-point 'distressing-comforting' rating scale, 22 participants indicated their voices were 'fairly distressing' or 'very distressing', 7 'fairly comforting' or 'very comforting', and 6 'neutral'. In subsequent analyses this scale has been used to split participants into two groups, one with distressing voices ($n = 22$) and one with neutral or comforting voices ($n = 13$).

All three POMS scales maintained high internal consistency, with alpha coefficients of .90 and above (Depression: $\alpha = .94$; Tension: $\alpha = .90$; Anger: $\alpha = .92$). The three scales were highly inter-correlated (Depression and Tension: $r = +.82$, $p < .001$; Depression and Anger: $r = +.72$, $p < .001$; Tension and Anger: $r = +.63$, $p < .001$). This suggested that it would be valid to combine the three scales to produce an overall distress score, produced by the overall mean of all items. This overall POMS score also had high internal consistency ($\alpha = .96$). All four scales differentiated between those participants who regarded their voices as distressing and those who rated them as neutral or comforting (see table 3), supporting the validity of using the POMS in this way.

Differences according to participant demographics and voice characteristics

Participants from ethnic minorities did not differ from the rest of the sample on any of the distress measures, and no differences were found according to the setting patients were recruited from.

Female participants had higher mean scores on the POMS Depression and overall scales than male participants, with non-significant trends for their Tension and Anger scales to be higher as well (see table 4). Such sex differences have been found when

	Voices distressing (<i>n</i> = 22)		Voices neutral or comforting (<i>n</i> = 13)		<i>t</i> (33)	<i>p</i>
	Mean	SD	Mean	SD		
POMS Depression	2.16	1.03	1.26	0.98	2.56	.015
POMS Tension	2.33	1.03	1.43	1.00	2.52	.017
POMS Anger	1.32	0.56	0.54	0.38	4.49	<.001
POMS Overall score	2.26	0.88	1.20	0.81	3.54	.001

Table 3. Differences between participants who rated their voices as distressing and those who rated them as comforting or neutral on POMS scales.

	Male (<i>n</i> = 22)		Females (<i>n</i> = 13)		<i>t</i> (33)	<i>p</i>
	Mean	SD	Mean	SD		
POMS Depression	1.58	1.11	2.58	1.00	2.69	.01
POMS Tension	1.59	0.95	2.19	0.97	1.80	.08
POMS Anger	0.90	0.57	1.25	0.67	1.66	.11
POMS Overall score	1.58	0.93	2.34	0.92	2.35	.03

Table 4. Differences between male and female participants on POMS scales.

using the POMS to rate mood state in general (McNair, Lorr & Droppleman, 1992). No statistically significant differences were found according to ethnic background.

None of the POMS scales differed for participants with continuous as opposed to intermittent auditory hallucinations. The number of years participants reported hearing voices for was not significantly correlated with any of the POMS scales.

Voice hostility and distress

Two specific hypotheses were made about how distress would be associated with the way the voices were viewed. The first was that the degree of hostility expressed by the voice, as measured by the Voice Acts Affiliation dimension, would show a positive correlation with distress. This hypothesis was supported on both measures. Voice Acts Affiliation was clearly related to whether voices were stated to be distressing as opposed to neutral or comforting (+32.2 vs. -33.7, $t(33) = p < .001$), and correlated $-.66$ ($df = 33, p < .001$) with the overall POMS score. Considering the POMS scales individually, all three correlated in the expected direction with the degree of hostility expressed by the voice on the Voice Acts plane (Depression: $r = -.56, p < .001$; Tension: $r = -.48, p = .003$; Anger: $r = -.74; p < .001$).

Voice control and distress

The second hypothesis was that the degree of control exerted by the voice over the individual, measured by the Voice Acts Autonomy dimension, would also show a positive correlation with the level of distress. Again this was found on both measures. Voice control was associated with whether voices were seen as distressing versus comforting or neutral (-22.7 vs. +5.4, $p = .01$). An association between distress and control was also shown by the POMS overall score ($r = -.40$). Considering the POMS

scales individually, all three showed the expected correlation with control (Depression: $r = -.37$, Tension: $r = -.41$, Anger: $r = -.31$).

However, given that voice control and voice hostility were inter-correlated, it was unclear to what extent this was an independent effect. Hence a multiple regression analysis was used, with the POMS overall score as the dependent variable, and entering the two Voice Acts scales as independent variables. Together the two scales accounted for 42% of variance in distress measured by the POMS ($R^2 = .45$, $R^2_{adj} = .42$, $F(2,32) = 13.1$, $p = .0001$). However, whilst a significant effect of Voice Acts Affiliation was found ($\beta = 0.60$, $t = 4.12$, $p < .001$), the effect of Voice Acts Autonomy was not significant ($\beta = 0.13$, $t = 0.93$, $p = .36$).

Cluster score profiles for distressing and non-distressing voices

SASB scores have so far been discussed in terms of dimension scores. A second way of presenting data from the SASB is to calculate eight 'cluster' scores for each plane. These cluster scores relate to the eight segments of the simplified circumplex model. Each cluster score is the mean of the four or five items within the segment it relates to. These cluster scores can be used to further illustrate the association between distress and the perceived interpersonal behaviour of the voice. Figure 5 shows profiles for distressing and non-distressing voices on the Voice Acts plane in terms of average cluster scores. It can be seen that distressing voices were associated with elevated ratings in the Ignore, Attack, Blame and Control clusters, whereas neutral and comforting voices were associated with elevated ratings for the Protect, Love, Affirm and Emancipate clusters.

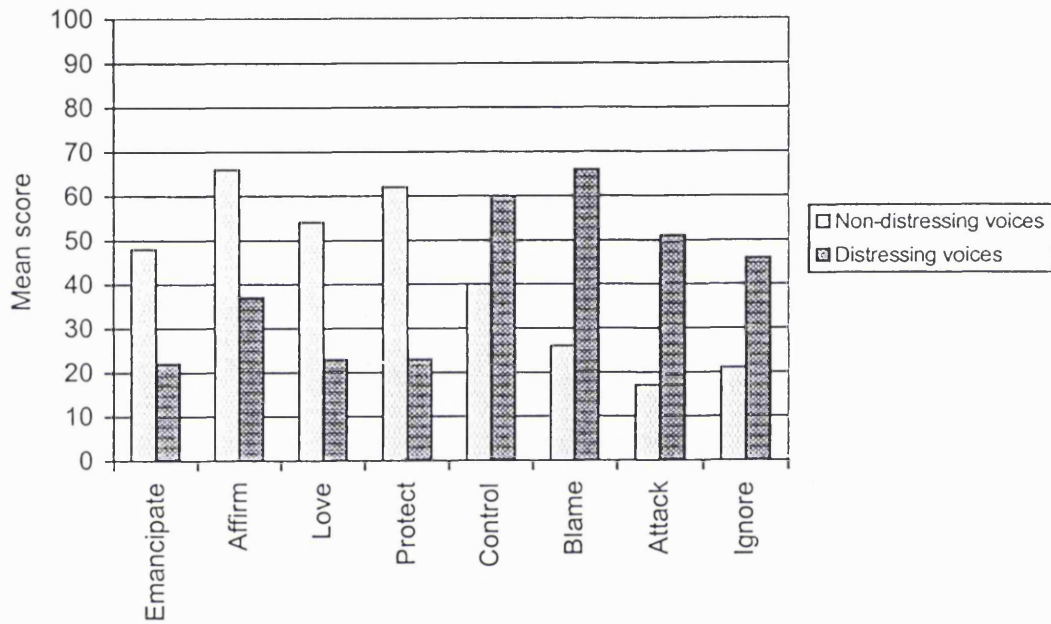


Figure 5. Voice Acts cluster score profiles for distressing voices compared with neutral or comforting voices. The differences between group means are significant at $p < .05$ for all clusters ($t(33) > 2.03$).

Depression and voice control

A further hypothesis was that there would be a specific association between depression and being in a controlling relationship with voices. Such a relationship would be represented on the SASB in terms of the Autonomy dimensions of the Voice Acts and Person Reacts planes. Depression was examined both as an immediate emotional response to hallucination, and in terms of symptoms of depression as a clinical syndrome.

Depression as a state in response to hallucination

Depression as an immediate emotional response to hallucination was assessed using the Depression scale of the POMS. As detailed above, this scale showed a positive correlation with the degree of control exerted by the voice. However, the specific effect of voice control on depression was confused by the inter-correlation between POMS Depression scores and scores on the other two POMS scales. Hence, it is unclear how much this is a specific effect on depressive emotional responses, or on negative emotional responses in general. The problem is enhanced by the dominance of the effect of voice hostility on overall distress, as shown by the ratings of whether the voices are distressing, and by the overall POMS score. This effect is so strong that, given the inter-correlation between the Voice Acts hostility and control scores, a specific effect on depressive emotional responses may be obscured.

In order to overcome these difficulties, a purer depression score was obtained by calculating the degree of variance within POMS Depression scores not accounted for by variance in the other two POMS factors. To do this, a regression analysis was performed to calculate the residual variance within Depression scores, after entering

POMS Tension and POMS Anger as dependent variables. The resultant residualised score correlated positively with submission to voices, as expected (Person Reacts Autonomy: $r = -.35, p = .04$). However, a significant correlation with control exerted by the voice was not found (Voice Acts Autonomy: $r = -.07, n.s.$).

The Affiliation dimensions of the Person Reacts and Voice Acts planes did not correlate with the residualised depression score (Person Reacts Affiliation: $r = -.06, n.s.$; Voice Acts Affiliation: $r = .00, n.s.$).

Depression as a syndrome

Current symptoms of depression as a syndrome were assessed by the Calgary Depression Scale. CDS scores were not normally distributed, being heavily skewed towards low scores, so a square-root transformation was used in statistical analyses.

On the Voice Acts plane, there was a moderate negative correlation between CDS scores and the Autonomy dimension ($r = -.43, p = .01$), suggesting that co-morbid depressive symptoms were associated with the experience of more controlling voices. This appeared to be independent of the influence of voice hostility, which showed only a non-significant trend to correlate with depression ($r = -.29, p = .10$).

However, submission to voices did not appear to be associated with depression, the Self-React's Autonomy dimension failing to correlate with CDS scores at a statistically significant level ($r = -.21, n.s.$). Instead, there was a non-significant trend for depression to be associated with hostile reactions to voices (Self React's Affiliation: $r = -.31, p = .07$).

Discussion

Validity of the interpersonal approach to voices

The first task of this study was to examine whether the experience of voices could be meaningfully conceptualised interpersonally. The circumplex-based SASB model was adopted, which makes explicit predictions about the ways in which interpersonal relationships are structured. This allowed these predictions to be tested when people rated their voices on this measure.

Inter-item correlations

Because the SASB was based on the statistical model of the circumplex, a first test of the interpersonal approach was to examine whether the pattern of inter-item correlations varied in the manner which would be predicted by this statistical model. If participants were able to consider their voices in meaningful interpersonal terms, it would be expected that a pattern of intercorrelations between items would be produced resembling that found in normal interpersonal relationships. Conversely, if participants were unable to conceptualise their voices interpersonally, the pattern of inter-item correlations would not be expected to reproduce the predicted ordering. In this case, a random pattern of inter-item correlations would be expected.

The way in which the SASB was expected to be most applicable to voices was in terms of the Voice Acts and Person Reacts planes. This is because the content of voices usually refers to the person experiencing them in some way, placing the focus of the interaction on the person rather than the voice. In other words, the voice addresses or talks about the patient, represented on the Voice Acts plane, to which the patient would have a reaction, represented on the Person Reacts plane.

Across these two planes, all but 3 of the 72 items showed a pattern of correlations with other items that related to the expected order at a statistically significant level. This indicates that the pattern of inter-item correlations was not randomly distributed, and that nearly all items at least approximately fitted the order that is predicted in ratings of relationships with 'real' people.

The few items which did not appear to intercorrelate with the predicted ordering might not have done so because of minor idiosyncrasies in the application of a questionnaire developed to describe everyday interpersonal relationships to voices. For example, when administering the item 'Openly disclose' ('I freely and openly talk with the voice about my innermost self'), a few participants remarked that they only talked to their voices in their head, i.e. not aloud. Hence, the reduced reliability of this item may have reflected how well the wording of the questionnaire, rather than the underlying interpersonal concept, could be applied to voices.

The applicability of concepts around the full circumference of the two planes was clarified by calculating alpha coefficients for clusters of neighbouring items, assumed to be measuring similar constructs. On both planes, the reliability of each cluster appeared comparable to that which has been found in other patients' ratings of analogous relationships with 'real' people (Lorr & Strack, 2001). This suggests that

the full range of interpersonal relating described by these two SASB planes could be applied meaningfully to voices.

Problems with Voice Reacts plane

In order to examine the relationship between patients and their voices more completely, the Person Acts and Voice Reacts planes were also considered. Conceptually, these planes correspond to the other side of the relationship: when interactions focus on the voice rather than the person experiencing it. This would apply whenever the content of hallucinations involves the voice talking about itself, or when the person actively initiates the interaction with the voice, rather than simply reacting to what the voice says.

The Person Acts plane appeared to behave similarly to the Voice Acts and Person Reacts planes, with the majority of items showing evidence of the predicted ordering, and clusters of items showing a similar degree of internal consistency. This suggests participants do actively initiate interactions with their voices, and do so with the full repertoire of interpersonal behaviour found in normal relationships.

However, there was a different picture on the Voice Reacts plane. Several items failed to show the predicted pattern of inter-correlations with the rest of the plane. Examining the location of these items showed that a number of these were located in the Separate segment, contributing to the lack of internal consistency of this cluster. This suggests a more fundamental problem than item wording, and that the concept of the voice separating from the person could not be reliably applied. If the concept of separation was applied to a 'real' person, it would correspond to them acting independently from the other, i.e. doing things away from them on their own, and asserting their own separate identity and views when with them (Benjamin, 1974);

this was reflected in item content. When applied to voices, it can be seen why this may be less readily applicable. To invoke a sense of separation, voices would have to be perceived as having an existence independent of the person experiencing them. However, within the sample, voices were usually experienced continually, providing little sense of them being 'apart' from the participant. Furthermore, the content of hallucinations usually appears referenced to the patient, e.g. accusing the patient, blaming them, advising them or commenting on them. Hallucinatory content does not commonly involve the voices talking about their own independent 'lives' (Larkin, 1979). This is understandable assuming that hallucinations are actually misperceived cognitions (Bentall, 1990), hence likely to be about oneself, rather than a fantasised other. Consequently, although most participants believed their voices were separate entities, they may have had difficulties understanding them in terms unrelated to themselves.

There were also difficulties with further items on this plane. The Wall-off, Protest and Sulk clusters contained further items that failed to fit with the predicted order. These clusters did show some degree of internal consistency, but this was to a lesser extent than found on the other planes. These clusters, and the Separate cluster are adjacent to each other, comprising an entire half of the Voice Reacts plane. This suggests that this plane as a whole may not be as applicable to voices.

As with the Separate segment, this may be related to participants not having accessible concepts of their voices' independent 'lives'. For example, the items which did not fit with the predicted order included 'Sulk, act put upon' ('The voice caves in to me and does things my way, but sulks and fumes about it'), 'Uncomprehendingly agree' ('Full of doubts and tension, the voice sort of goes along with my views anyway'), and 'Sacrifice greatly' ('The voice bitterly, hatefully and

resentfully chooses to let my needs count more than its own'). To be able to rate these items, patients would have to have a concept of what needs and desires their voices have, independent of themselves; this is unlikely to be apparent from voice content.

The problems found in rating voices on this plane suggest that it is not readily applicable to voices. Consequently, the relationship between the patient and their voice is better considered primarily in terms of the parallel Voice Acts and Person Reacts planes. Whilst this may appear one-sided, it is characteristic of relationships in which one person is in a more dominant and active position, and the other is in a more passive and reactive position: hence the focus of interactions in their relationship is usually on the person in the more passive position. Prototypically, this is embodied in the parent-child relationship: the child being in a more passive position, and being the focus of the majority of interactions. Indeed, the SASB was originally developed and applied to describe parent-child relationships, with the parents' interpersonal behaviour towards the child represented on the active plane, and the child's interpersonal responses on the reactive plane (Benjamin, 1974). Consequently, voice-patient relationships may be considered better as akin to parent-child relationships, than relationships on more equal terms.

Validity of the interpersonal model across participants

Examining within-subjects inter-item correlations provided some index of how universally the interpersonal approach could be applied across participants. It was predicted that because of the circumplex structure of the SASB, an individual participant's ratings would show high positive correlations between adjacent items, reducing to negative correlations with opposite items. In other words, the person's

ratings on a given plane would produce an identifiable profile with high ratings around a particular point reducing monotonically to low ratings at the opposite point. This is a relatively strict test of how well the interpersonal approach applies to a given person, because when people rate complex and conflicted relationships, such a clear profile would not be produced. Such complex relationships are often found in patient samples, and would actually be expected from certain types of personality pathology (Benjamin, 1994, 1996a). Nonetheless, approximately three-quarters of participants showed an identifiable circumplex profile on the Voice Acts plane, and over half showed such a profile on both this plane and the Person Reacts plane. This indicates that at least the majority of participants could conceptualise their voices in meaningful interpersonal terms. Furthermore, when correcting for multiple tests, nearly all participants showed an identifiable circumplex profile on at least one of the four planes, suggesting that there was an interpersonal aspect of hallucinatory experience for nearly all individuals.

It should, however, be noted that participants who were severely thought disordered could not be included in the sample, due to difficulties completing the assessments. It remains possible that patients' experience of hallucinations becomes less meaningful interpersonally if their thinking is sufficiently disorganised. Similarly, the majority of participants expressed beliefs that their voices emanated from an external source, rather than having insight into them being internally generated. It is also possible that more insightful participants would see their hallucinations in interpersonal terms less readily.

Conclusions about the validity of an interpersonal conceptualisation of voices

There appeared to be clear support for the proposition that patients can consider their voices in meaningful interpersonal terms, with ratings of the relationship being made without difficulty by subjects, and showing predicted patterns of inter-correlation. It did appear that relationships with voices were not completely comparable to normal interpersonal relationships, in that the responses of voices to the individual did not appear to cover the full range of interpersonal behaviours possible in real-life relationships. However, the full range of interpersonal behaviours could be applied which corresponded to a prototypical parent-child relationship, in which interactions are usually initiated by the voice, and concern the individual experiencing them rather than the voice itself. The possibility that complex conflictual relationships may exist with voices precluded a definitive test of the degree to which voices were experienced interpersonally by all subjects. Nonetheless, there was evidence that at least the majority of participants could conceptualise their voices in terms of a coherent relationship with the focus upon themselves, and nearly all could see their voices in meaningful interpersonal terms in some sense. The validity of considering voices in interpersonal terms was further supported by the confirmation of additional hypotheses, proposed in exploring how this understanding would relate to other aspects of hallucinatory experience, discussed below.

Explorations of interpersonal relationships with voices

As it appeared that the interpersonal relationships described with voices were, in the main, qualitatively similar to normal interpersonal relationships, it was possible to examine quantifiable aspects of the relationships. The first noteworthy finding was that there was great variation in the degree of affiliation versus hostility in the

relationships described with voices, demonstrated by scores on the Affiliation dimension on all SASB planes. Indeed, there appeared to be an even distribution of scores throughout the dimension, with affiliative and hostile ratings being equally common within the sample. As well as demonstrating that there are wide individual differences in the way voices were perceived, this shows some difference from everyday interpersonal relationships, in which affiliative relationships tend to be the norm, and hostile relationships are less common (Benjamin, 1986, 1994; Gurtman, 2001).

The degree of variation on the Autonomy dimension appeared to be less than that found on the Affiliation dimension for all planes. What was particularly noteworthy was the correlation found between voice affiliation-hostility and voice autonomy-control. The Affiliation and Autonomy dimensions are independent when people make ratings of normal interpersonal relationships (Pincus, Newes, Dickinson & Ruiz, 1998), and were not significantly correlated on any of the other planes. It did not appear that the observed association was artefact of there being any unreliable areas around this plane, as the internal consistency of item clusters was comparable to that found in normal relationships. Hence it appears that people tend to experience voices as either hostile and controlling to some extent, or friendly and giving autonomy to some extent.

This is curious, as Chadwick *et al.* (1996) have proposed that their dimensions of voice malevolence-benevolence and power are indeed orthogonal. The measures adopted here are assessing slightly different concepts to those proposed by Chadwick and Birchwood (1994). There did appear to be a close correspondence between the SASB Affiliation dimension and BAVQ classifications of voices as malevolent or benevolent – which clearly makes sense as voices believed to have a kind intent are

likely to be perceived as affiliative, and voices believed to have a malevolent intent are likely to be perceived as hostile. However, the concepts of voice power and control are somewhat different conceptually. Chadwick and Birchwood's construct of voice power relates to the degree to which voices are attributed to have extraordinary abilities, and hence the ability to influence the individual, potentially against their will (Chadwick & Birchwood, 1994). The SASB construct of control represents the degree to which voices are perceived as trying to exert power over the individual. Hence, the two concepts relate to potential control and attempted control. It is possible that a voice could be perceived as being very powerful yet not be experienced as exerting control over the individual, e.g. a patient might hear a voice which is affirming and encouraging (low control) and is believed to be God (high power). Unfortunately, the BAVQ item for voice power did not appear to be sufficiently valid to examine the association between the two constructs in more detail. However, Birchwood *et al.* (2000) have recently developed a more robust measure of voice power, which shows meaningful correlations with other measures yet is independent of malevolence-benevolence. As the voice control dimension used in the current study appears to behave differently, this does suggest it is measuring a construct distinct from voice power.

It seemed that, in part, ratings of voice control were influenced by the frequency of hallucination. This association makes sense because experiencing a voice continually talking to you would be inconsistent with perceiving it as allowing you freedom. However, it seems likely that perceptions of voices as controlling may also relate to aspects of voice content. In particular, command hallucinations may be experienced as controlling. As command hallucinations frequently involve

commands to harm oneself or others, this may explain the association between perceptions of voice control and hostility.

Complementarity

To examine a potential application of the interpersonal approach, the complementarity principle was examined. Conceptualising the relationship in terms of the Voice Acts and Person Reacts planes, participants' perceptions of their voices in interpersonal terms were predictive of how they responded to them. This suggests that reciprocal relationships exist between patients and their voices, lending further support to the validity of conceptualising hallucinatory experience interpersonally.

Using the comparison between vector angles, the rate at which complementary responses were elicited did not appear to be significantly lower than that reported by Gurtman (2001) in ratings of child-mother relationships, although the precise degree of complementarity appeared to be slightly lower. Separate examination of the two primary dimensions suggested that this is due to there being a very strong association between voice hostility/friendliness and hostility/friendliness from the participants – the predominant way in which voices differed between participants – but that voice control was not predictive of patient submission. The association between voice and patient affiliation-hostility mirrors the findings of Chadwick and Birchwood (1995; Birchwood and Chadwick, 1997) that benevolent voices tend to elicit engagement – akin to Reactive-love, Trust and Disclose – whereas malevolent voices tend to elicit resistance – akin to Protest and Wall-off.

The failure of voice control to predict submission suggests that submission does not arise simply from perceiving voices as controlling, and other appraisals about voices may be important. It is possible that appraisals of voice power, in the sense

described by Chadwick and Birchwood (1994), are the important mediating factor in determining submission. This may be because controlling voices tended to be perceived as hostile as well, resulting in the person being unwilling to submit to them – submission might only occur when also viewing voices as powerful. Again, this could not be examined in the current study, but may be amenable to further study using the measure developed by Birchwood *et al.* (2000).

The interpersonal experience of voices and distress

The results clearly showed an association between perceiving voices as hostile and finding them distressing. This confirms Chadwick and Birchwood's findings that voices seen as malevolent were experienced as more distressing (Birchwood & Chadwick, 1997).

However, what this study hoped to add to the existing findings of Chadwick and Birchwood, was an examination of whether perceived voice control also correlated with distress. Chadwick and Birchwood (1994) proposed that perceiving oneself as being in a relationship in which one is subject to control would add to the distress experienced as a result of hallucinations. This was examined from the point of view of both overall distress, i.e. anxiety, depression and anger combined, and depression in particular. It did appear that when voices were perceived as controlling, they were experienced as more distressing. However, this was in the context of controlling voices tending to be more hostile as well, and perceptions of voice control did not appear to have an effect on distress above that accounted for by voice hostility. This suggests that in perceptions of voices' interpersonal behaviour, the degree of hostility is the main determinant of emotional distress in response to voices.

Whilst distress as a whole was proposed by Chadwick and Birchwood (1994) as being associated with voice control, the strongest theoretical basis for the relationship between emotion and perceptions of control is in relation to depression (Gilbert, 1992). However, examining a specific effect of voice control on depression was more complicated. Depression as an emotional response to voices tended to be associated with other negative emotional responses, suggesting that depression tends to occur in the context of an overall negative affective experience, which primarily results from perceiving voices as hostile. Nonetheless it was possible to examine whether there was a specific effect on depression in this context by obtaining a measure of the degree of variance within ratings of depression which did not covary with the other two POMS scales. This measure represented an index of the degree to which the *tone* of emotional response was depressive, as opposed to the intensity of depression experienced. It was found that whilst this measure correlated with submission to voices, as expected, it did not show the predicted correlation with voice control.

This occurred within the context of submission to voices not being reliably predicted by a perception of voices as controlling. If it is presumed that submission to voices arises from other appraisals about voices (e.g. power), then it is possible that these appraisals contribute to both depressive emotional responses and submission. However, the failure to find an association between voice control and depression may also be related to variation within the sample being dominated by the degree of perceived hostility versus affiliation of voices. As distress in general and voice control both covaried with this dimension, there will have been little power to detect an independent effect on depression once correcting for overall distress.

Calgary Depression Scale scores, on the other hand, did show the predicted association with voice control. Importantly, depression on this measure did not show

a statistically significant correlation with voice hostility, indicating that there was an independent association between voice control and depressive symptoms. This also suggests that the observed association is unlikely to be an artefact of depressed participants simply rating their voices in more negative terms, as there would be more reason to expect this to be reflected in ratings of voices as hostile. Identifying the direction of causality is more difficult with this measure though. The presence of depressive symptoms may be attributable to a number of factors, of which the experience of controlling voices is but one. It would seem at least as likely that it is depression, or a third variable associated with depression, that results in the perception of voices as more controlling. This explanation seems more plausible, considering that symptoms of depression did not correlate with submission to voices. If the experience of voices as controlling was causal in the observed association, an accompanying association with submission would be expected both theoretically (Gilbert, 1992), and from the observed association of submission with depression as an immediate emotional response. Hence it seems more plausible to conclude that when a patient is depressed, they experience their voices as controlling, rather than the other way around.

Implications for an interpersonal understanding of voices

Interpersonal perceptions of voices

When asked to rate interpersonal aspects of their hallucinatory experience, participants were able to do so relatively easily, and gave ratings of voices which were organised in a meaningful manner. This suggests, at the very least, that participants were able to understand their voices in interpersonal terms when confronted with a task to do so. However, the consistency and ease with which this

was done suggests that participants already had an interpersonal understanding of their voices. Structurally, this understanding could be conceptualised as an object representation, or 'person schema' (Horowitz, 1991; Benjamin & Freidrich, 1991), for their voice. Furthermore, the confirmation of hypotheses about how interpersonal ratings of voices would relate to the person's behavioural and emotional responses to them, suggests that such person schemas are important in organising the day to day experience of hallucination.

The clearest finding from the study was that in ratings of voices, the Affiliation dimension was predictive of both the degree of distress experienced as a result of hallucination, and participants' responses to their voices. Linking the SASB model to attachment theory, Benjamin (1993) has proposed that the Affiliation dimension corresponds to the quality of attachment within a relationship. Secure attachments are represented by high ratings in the Love, Protect/Trust and Affirm/Disclose segments, producing a positive Affiliation score, and insecure attachments are represented by high ratings in the Attack/Protest, Blame/Sulk and Ignore/Wall-off segments, producing a negative Affiliation score. In support of this, Pincus *et al.* (1999) found that the Affiliation scores in SASB ratings of early relationships with parents corresponded to measures of child-parent attachment and adult attachment style. Hence, the individual differences noted in the interpersonal experience of hallucination could also be conceptualised in terms of the type of attachment that is embodied in the interpersonal voice schema.

The relevance to attachment of the main dimension on which person schemas for voices differed raises the possibility that these schemas may mirror significant relationships in the person's life. It is possible that participants have developed an interpersonal understanding of their hallucinatory experience influenced by internal

representations of significant relationships in their lives. In other words, a person schema derived from experience in previous significant relationships has been mapped onto the hallucinatory experience. Hence, the wide individual differences in interpersonal schemas for voices may reflect differences in the past relationships participants have experienced. If this were the case, distress arising from hallucination may be a result of voices being interpreted in terms of past hostile relationships or insecure attachments.

However, it is likely that a major influence on how person schemas are developed for voices is the content of what voices say, in which there is also substantial individual variation (Lowe, 1973). For example, derogatory voice content is likely to lead to the formation of a hostile person schema for the voice. Hallucinations are widely thought to arise from a misperception of cognitions (be they otherwise conscious or unconscious) as true external stimuli (Bentall, 1990). Hence the content of voices would be expected to reflect the content of the person's cognitions. When the content of voices is derogatory, accusatory or blaming, this would be thought of as reflecting negative self-referent cognitions. Within a cognitive therapy framework, such cognitions would commonly be thought of as a product of dysfunctional self-schemas. Such dysfunctional schemas are usually thought to have a basis in the early experience of the individual – in particular, in early relationships with significant others (Beck *et al.*, 1979; Young, 1990).

In the language of interpersonal theory, self-referent cognitions can be conceptualised as an interpersonal action towards oneself. Benjamin (1974) developed a third plane in her SASB model to represent how the person acts towards him or herself. Hence, a person may Emancipate, Affirm, Love, Protect, Control, Blame, Attack or Ignore themselves, just as they can do to others, and can have done

to them. Negative cognitions about oneself could be thought of as self-blaming or attacking.

The individual differences which occur on this 'Self Acts to Self' plane are formally understood through the process of introjection (Sullivan, 1953) – the person learns how to treat themselves from the way they have been treated by significant others. Structurally, this can be represented by the individual's early learning leading to the formation of internal representations of one's experience in relationships with significant others; these then become incorporated as aspects of an organising self-system (Sullivan, 1953; cf. Klein, 1975; Kohut, 1971). Studies comparing ratings on the introject plane of the SASB with ratings of early childhood relationships with parents have found evidence that individual differences in the way one relates to oneself are associated with corresponding individual differences in schemas for early significant relationships (Benjamin, 1994; Armerlius & Granberg, 2000).

The hypothesised process of introjection raises the possibility that the interpersonal meaning patients appeared able to attach to their hallucinatory experience may reflect something more fundamental than a secondary appraisal of that experience. It is possible that in individuals predisposed to hallucination, the content of voices corresponds to internal representations of real life relationships. In other words, the cognitions that are misperceived as voices arise from schematic representations of past relationships. Hence, distressing voices, rated as hostile on the SASB, and likely to have derogatory content, may be the embodiment of person schemas characterised by insecure attachments. Neutral or comforting voices, rated as affiliative on the SASB, and likely to have neutral or positive content, may be the embodiment of person schemas characterised by secure attachments.

These proposed ideas are amenable to further study using the SASB model. Because research has found that ratings of the 'Self Acts to Self' introject correspond to early child-parent relationships, it seems that there is a good chance of voice schemas also reflecting child-parent relationships. This could be tested by asking participants to complete SASB ratings for their voices and for early relationships. It would also be possible to determine if internal representations of early relationships relate to voice content. In addition to the self-report relationship measure used in the current study, Benjamin (1984) has developed a coding system for dyadic interactions, which can be reliably applied to transcripts of verbal interactions. This system could be used to code patients' reports of hallucinatory content, allowing comparison with patients' perceptions of their voices and early relationships.

Perceptions of voice control

Whilst the affiliation-hostility dimension appeared to be useful in conceptualising individual differences in the experience of hallucination, the usefulness of the dimension of voice control was less clear. The failure to reproduce findings expected on the basis of Chadwick and Birchwood's model may be due to voice control, in terms of the SASB, assessing a different construct to voice power as conceptualised by the cognitive therapy model. Further examination of the relationship between perceptions of interpersonal control, voice power and distress is required to clarify this.

A significant finding, however, was that the level of depressive symptomatology patients experienced appeared to predict perceptions of voices as controlling. This might be accounted for in a similar way as has been described above in relation to the affiliation dimension. Either a controlling 'person schema' is applied to understand

hallucinatory experience when patients are depressed, or internal representations of controlling relationships actually become manifest in voice content. Benjamin (1986) has found that depressed patients rate being subjected to high degrees of control in their childhood relationships with their parents. This also applied in patients with a depressive schizoaffective disorder. This suggests that patients prone to depression hold internal representations of controlling interpersonal relationships. This would be consistent with schizophrenic patients with depressive symptoms, and patients with schizoaffective disorder, holding a controlling person schema organising their experience of voices. Again this could be explicitly tested using the SASB model. Correspondence with voice content could also be examined to clarify the determinants of this construct of voice control.

Conceptualising responses to hallucination

As with the ratings of voices, patients were easily able to give ratings of their own interpersonal behaviour in relation to their voices, and these appeared to conform to a similar structure as ratings of interpersonal behaviour in more everyday relationships. It was noted in the introduction that previous studies on patients' behavioural responses to hallucinations tended not to do so within the context of an organising conceptual framework. In contrast, the SASB allowed responses to voices to be meaningfully conceptualised in terms of a wider model of interpersonal behaviour. In particular, the predictive principle of complementarity could be used to account for the association between perceptions of voices and participants' responses to that experience. This places the proposal of Chadwick and Birchwood (1995) that malevolent (hostile) voices tend to elicit resistance, whereas benevolent (affiliative) voices tend to elicit engagement, within a clear theoretical framework. It also offers

possibilities for the assessment of patient submission, which may be a concomitant of depressive responses to voices.

There may also be possibilities for the use of the Person Acts plane of the SASB in understanding patients' responses to their voices. As discussed above, the parallel Voice Reacts plane appeared to have limited utility in conceptualising voices, which is probably related to the hallucinatory basis of the content of interactions. However, the Person Acts plane maintained its reliability when applied to voices. Hence the primary aspect of the voice-patient relationship could be conceptualised in terms of the voice initiating the interactions (Voice Acts, Person Reacts), but as a secondary aspect of the relationship, the person may also initiate interactions with the voice (Person Acts), even though voices may not respond with the full repertoire of interpersonal behaviour (Voice Reacts). Together, the Person Acts and Person Reacts planes could be used to conceptualise patients' efforts to cope with hallucination. Research on this, too, has tended to lack an organising conceptual framework, which the SASB may provide. It was hoped that the present study would be able to evaluate the effectiveness of different coping responses to hallucination on adjustment by examining correlations with resultant distress. However, as the variance within the measures of distress appeared so heavily associated with voice hostility, there would have been little chance of detecting an association with these measures. However, using a different measure of adjustment, e.g. perceived coping or reduction in distress, these associations could be examined.

Limitations

Use of the circumplex to evaluate the validity of the interpersonal approach

The study determined the validity of the interpersonal approach to voices by examining whether predictions deriving from the circumplex structure of the SASB were maintained. To do this, the magnitude and direction of inter-item correlations in ratings of voices were compared with an order predicted by the circumplex. This is not a complete test of circumplicity, as a true test would also examine whether items (or clusters of items) were equally spaced around the plane of the circumplex (Pincus, Gurtman & Ruiz, 1998). More stringent tests of circumplicity have been proposed than were applied here, and have the advantages of producing a small number of coefficients summarising the degree of circumplicity exhibited (e.g. Paddock & Nowicki, 1986; Pincus, Gurtman & Ruiz, 1998). In the present study, conclusions about circumplicity were made by the relatively less elegant method of calculating multiple between-subjects or within-subjects coefficients, as has been done in earlier work developing circumplex models (Benjamin, 1974; Lorr & McNair, 1965). It was decided not to use a more stringent test, because when such tests of circumplicity have been applied to the SASB, an equal spacing of items has tended not to arise, particularly in patient samples (Lorr & Strack, 1999; Pincus, Gurtman & Ruiz, 1998), suggesting that the circumplex basis of the SASB is not robust. This is likely to be because the SASB was explicitly developed to place the findings of earlier circumplex models within a clinically applicable conceptual framework which related to other psychological theories such as Sullivan's interpersonal theory (Sullivan, 1953) and object relations (see Benjamin, 1996b). This occurred at the expense of statistical rigour. Hence, whilst this does not invalidate the SASB as a model, it limits the

degree to which circumplicity can be used as an index of whether relationships with voices are representative of normal interpersonal relationships.

In contrast, models based on the Interpersonal Circle show a more robust circumplex structure (Pincus, Gurtman & Ruiz, 1998), and, as such, would have provided a more stable framework in which to examine the structure of relationships with voices. On the other hand, the use of the Interpersonal Circle has the disadvantage that associated measurement instruments are focused on assessing differences in interpersonal style as an aspect of personality (e.g. Alden, Wiggins & Pincus, 1990; LaForge & Suczek, 1955; Wiggins, Trapnell & Phillips, 1988), rather than on the description of specific relationships. Hence other methodological problems would have arisen from the use of the Interpersonal Circle.

SASB scoring

A further complication of having used the SASB in the study is that it can be measured and scored in a variety of different ways. Ratings were scored in terms of the primary dimensions of Affiliation and Autonomy. This method of scoring is recommended by Pincus, Newes, Dickinson and Ruiz (1998) because it produces the most normal distribution of scores, provides continuous rather than categorical measurement, and links most clearly with the theoretical dimensions used in constructing the SASB. These dimensions also showed the most direct correspondence with the dimensions of power and malevolence which have been proposed as important in the experience of voices by Chadwick and Birchwood (1994), and are comparable with the dimensions proposed in other interpersonal models (e.g. Freedman *et al.*, 1951; Schaffer, 1959). However, results are not directly comparable with much of the other research conducted with the SASB, which has

used a range of different indices including cluster scores, and correlations with mathematically derived cluster profiles (see Benjamin, 1984; Pincus, Newes, Dickinson & Ruiz, 1998). Typically, dimension scores have not been reported in most research on relationships with the SASB. Furthermore, the alternate short-form of the Intrex has often been used in preference to the long-form; the long-form was selected for the present study in order to examine inter-item correlations more fully. This meant that the findings of the study could not be referenced to normative data as thoroughly as would have been desirable.

These difficulties may have been overcome by also asking participants to make ratings of other significant relationships, to provide comparison data. In this way, the distributions of scores, as well as patterns of inter-item correlation, could be compared with analogous data for the same participants. This was decided against in designing the study, due to it doubling the number of items in the already lengthy SASB measure, and it was feared that participants would be unable to complete the measures. However, whilst there were difficulties in recruiting participants, and engaging participants who were thought disordered or distractible, only a small number of interviews were abandoned due to fatigue. It might be possible to shorten the length of the SASB questionnaire for voices by concentrating on the Voice Acts and Person Reacts planes. In addition, the short form version of the Intrex – which includes a single item, rather than a cluster of four or five items, for each segment – could be used, given that this study has provided some examination of the more complete 36 item structure. Hence it may be possible to examine this in future, along with other hypotheses about the correspondence between voice schemas and internal representations of significant others.

Separating behaviour from affect in interpersonal ratings

A further difficulty arising from the use of the SASB, in contrast to some other models of interpersonal behaviour, is that the dimension of affiliation-hostility is inherently affectively loaded – hostility being associated with anger and anxiety, and affiliation with positive affect (Birtchnell, 1993). This can be seen reflected in the content of several of the questionnaire items. This precluded differentiating the behavioural components of interpersonal responses to voices from the emotional components, to allow a full analysis of the link between patients' behaviour and affect in relation to voices. The observed association between depressive responses and submission did not appear to be confounded with item content in the same way as anger and anxiety did with hostility. However, the affectively loaded nature of interpersonal ratings on the Person Reacts plane urges caution in the interpretation of this association. The affectively loaded dimension of affiliation-hostility is also used in the Interpersonal Circle. However, Birtchnell (1993) has proposed an interpersonal model which attempts to describe interpersonal behaviour in terms independent of affect, using a horizontal dimension of closeness versus distance in place of affiliation versus hostility. This offers an alternative means of examining the association between patient behaviour and affect in relation to voices.

Measurement of voice power

It was disappointing that the study did not include a reliable measure of voice power, which may have been a mediating factor in predicting patient submission and distress. The association between voice control, voice power and distress requires clarification

Recruitment of participants

There was a low level of recruitment from the initial pool of potential participants. Although few systematic differences were observed between participants who were recruited and those who were not, this suggests some caution is required in interpreting the generalisability of results. The difficulties in recruiting participants seem to reflect general problems in engaging a characteristically disturbed, suspicious and poorly motivated client group. It was noted that patients were more likely to participate if they were directly approached whilst they were in-patients, than if they were advised of the study by their key-workers whilst they were living in the community. This may be due to a number of reasons, but it could reasonably be hypothesised that some of the difficulties in recruiting participants were related to patients not knowing the investigator. Research which has been conducted alongside clinical intervention work – suggesting a rapport already exists with potential participants – has tended to be more successful in terms of recruitment (e.g. Birchwood & Chadwick, 1997; Chadwick & Birchwood, 1995; Falloon & Talbot, 1981).

Conclusion

This thesis examined the validity of a novel interpersonal conceptualisation of the experience of auditory hallucinations, and examined whether it could be used to account for some of the individual differences in hallucinatory experience. It indicated that this model could be used to conceptualise voices meaningfully, showing that experiences of hallucination are likely to have significant interpersonal meaning to the individual, being far from empty speech acts. It also showed that not only were there vast individual differences in the interpersonal experience of voices, but these

could be used to derive predictions about the impact of voices on emotion and behaviour. Findings showed a convergence with the cognitive therapy model of voices (Chadwick & Birchwood, 1994), although potential differences may occur in the conceptualisation of voice power/control. However, what this model may contribute most significantly is an overall conceptual framework with which to understand the varied individual differences in the experience of voices. In particular, this framework has a potential for linking the patients' experience of auditory hallucinations with their relationships with significant others, and possibly providing an understanding of the origins of voice content.

References

- Addington, D., Addington, J. & Tyndale, E. M. (1993). Assessing depression in schizophrenia: The Calgary Depression Scale. *British Journal of Psychiatry*, **163** (suppl. 22), 39-44.
- Alden, L. E., Wiggins, J. S. & Pincus, A. L. (1990). Construction of circumplex scales for the Inventory of Interpersonal Problems. *Journal of Personality Assessment*, **55**, 521-536.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders*, fourth edition. Washington: American Psychiatric Association.
- Armerlius, K. & Granberg, A. (2000). Self-image and perception of mother and father in psychotic and borderline patients. *Psychotherapy Research*, **10**, 147-158.
- Beck, A. T., Rush, A. J., Shaw, B. F. & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Beck-Sandler, A., Birchwood, M. & Chadwick, P. (1997). Acting on command hallucinations: A cognitive approach. *British Journal of Clinical Psychology*, **36**, 139-148.
- Benjamin, L. S. (1974). Structural Analysis of Social Behaviour. *Psychological Review*, **81**, 392-425.

- Benjamin, L. S. (1984). Principles of prediction using Structural Analysis of Social Behavior. In R. A. Zucker, J. Aronoff & J. Rabin (Eds) *Personality and the prediction of behavior*. New York: Academic Press.
- Benjamin, L. S. (1986). Adding social and intrapsychic descriptors to Axis I of DSM-III. In T. Millon & G. L. Klerman (Eds) *Contemporary directions in psychopathology: Towards the DSM-IV*. New York: Guilford Press.
- Benjamin, L. S. (1989). Is chronicity a function of the relationship between the person and the auditory hallucination? *Schizophrenia Bulletin*, **15**, 291-310.
- Benjamin, L. S. (1993). Every psychopathology is a gift of love. *Psychotherapy Research*, **3**, 1-24.
- Benjamin, L. S. (1994). SASB: A bridge between personality theory and clinical psychology. *Psychological Inquiry*, **5**, 273-316.
- Benjamin, L. S. (1996a). *Interpersonal Diagnosis and Treatment of Personality Disorders*, second edition. New York: Guilford.
- Benjamin, L. S. (1996b). A clinician-friendly version of the Interpersonal Circumplex: Structural Analysis of Social Behaviour (SASB). *Journal of Personality Assessment*, **66**, 248-266.
- Benjamin, L. S. & Friedrich, F. J. (1991). Contributions of Structural Analysis of Social Behavior (SASB) to the bridge between cognitive science and a science of object relations. In M. J. Horowitz (Ed) *Person schemas and maladaptive interpersonal patterns*. Chicago: University of Chicago Press.
- Bentall, R. P. (1990). The illusion of reality: A review and integration of psychological research on hallucinations. *Psychological Bulletin*, **107**, 82-95.
- Bentall, R. P., Jackson, H. F. & Pilgrim, D. (1988). Abandoning the concept of 'schizophrenia': Some implications of validity arguments for psychological

- research into psychotic phenomena. *British Journal of Clinical Psychology*, **27**, 303-324.
- Berrios, G. (1991). Delusions as wrong beliefs: A conceptual history. *British Journal of Psychiatry*, **159**, 6-13.
- Birchwood, M. & Chadwick, P. (1997). The omnipotence of voices: Testing the validity of a cognitive model. *British Journal of Clinical Psychology*, **27**, 1345-1353.
- Birchwood, M., Meaden, A., Trower, P., Gilbert, P & Plaistow, J. (2000). The power and omnipotence of voices: Subordination and entrapment by voices and significant others. *Psychological Medicine*, **30**, 337-344.
- Birtchnell, J. (1993). *How humans relate*. Hove: Psychology Press.
- Breir, J. & Strauss, J. S. (1983). Self-control in psychotic disorders. *Archives of General Psychiatry*, **40**, 1141-1145.
- Carr, V. (1988). Patients' techniques for coping with schizophrenia: An exploratory study. *British Journal of Medical Psychology*, **61**, 339-352.
- Carson, R. C. (1969). *Interaction concepts of personality*. Chicago: Aldine.
- Chadwick, P. & Birchwood, M. (1994). The omnipotence of voices: A cognitive approach to auditory hallucinations. *British Journal of Psychiatry*, **164**, 190-201.
- Chadwick, P. & Birchwood, M. (1995). The omnipotence of voices II: The Beliefs About Voices Questionnaire (BAVQ). *British Journal of Psychiatry*, **166**, 773-776.
- Chadwick, P., Birchwood, M. & Trower, P. (1996). *Cognitive therapy for delusions, voices and paranoia*. Chichester: Wiley.
- Claridge, G. (1997). *Schizotypy: Implications for illness and health*. Oxford: Blackwell.

- Close, H. & Garety, P. (1998). Cognitive assessment of voices: Further developments in understanding the emotional impact of voices. *British Journal of Clinical Psychology*, **37**, 173-188.
- Cohen, C. I. and Berk, L. A. (1985). Personal coping styles of schizophrenic outpatients. *Hospital and Community Psychiatry*, **36**, 407-410.
- Corin, E. E. (1990). Facts and meaning in psychiatry: An anthropological approach to the lifeworld of schizophrenics. *Culture, Medicine and Psychiatry*, **14**, 153-188.
- Corin, E. E. & Lauzon, G. (1992). Positive withdrawal and the quest for meaning: The reconstruction of experience among schizophrenics. *Psychiatry*, **55**, 266-278.
- Critchley, E. M., Denmark, J. C., Warren, F., Wilson, K. A. (1981). Hallucinatory experiences of prelingually profoundly deaf schizophrenics. *British Journal of Psychiatry*, **138**, 30-32.
- Cutting, J. & Dunne, F. (1989). Subjective experience of schizophrenia. *Schizophrenia Bulletin*, **15**, 217-231.
- Falloon, I. R. H. and Talbot, R. E. (1981). Persistent auditory hallucinations: Coping mechanisms and implications for management. *Psychological Medicine*, **11**, 329-339
- Farhall, J. & Gehrke, M. (1997). Coping with hallucinations: Exploring stress and coping framework. *British Journal of Clinical Psychology*, **36**, 259-261.
- Freedman, M. B., Leary, T. F., Ossorio, A. G. & Coffey, H. S. (1951). The interpersonal dimension of personality. *Journal of Personality*, **20**, 143-161.
- Frith, C. D. (1987). The positive and negative symptoms of schizophrenia reflect impairments in the perception and initiation of action. *Psychological Medicine*, **17**, 631-648.

- Gilbert, P. (1992). *Depression: The evolution of powerlessness*. Hove: Lawrence Erlbaum Associates.
- Gurtman, M. B. (2001). Interpersonal complementarity: Integrating interpersonal measurement with interpersonal models. *Journal of Counseling Psychology*, **48**, 97-110.
- Guttman, L. A. (1954). A new approach to factor analysis: The radex. In Lazarsfeld, P. R. (Ed) *Mathematical thinking in the social sciences*. Gencoe, Illinois: Free Press.
- Hamilton, M. (1985). *Fish's schizophrenia*. Bristol: Wright.
- Hoffman, R. E. (1986). Verbal hallucinations and language production processes in schizophrenia. *The Behavioural and Brain Sciences*, **9**, 503-548.
- Hooks, P. C. & Levin, J. S. (1986). The social identity of the chronic schizophrenic. *International Journal of Social Psychiatry*, **32**, 48-57.
- Horowitz, M. J. (1991). Person schemas. In M. J. Horowitz (Ed) *Person schemas and maladaptive interpersonal patterns*. Chicago: University of Chicago Press.
- Johnson, F. (1978). *The anatomy of hallucinations*. Chicago: Nelson Hall.
- Junginger, J. (1990). Predicting compliance with command hallucinations. *American Journal of Psychiatry*, **147**, 245-247.
- Kelly, G. A. (1955). *A theory of personality: The psychology of personal constructs*. New York: Norton.
- Kiesler, D. J. (1983). The 1982 Interpersonal Circle: A taxonomy for complementarity in human transactions. *Psychological Review*, **90**, 185-214.
- Klein, M. (1975). *Envy and gratitude and other works*. London: Hogarth.

- Kohut, H. (1971). *The Analysis of the Self*. New York: International Universities Press.
- LaForge, R. & Suczek, R. F. (1955). The interpersonal dimensions of personality: III. An interpersonal check list. *Journal of Personality*, **24**, 94-112.
- Lally, S. J. (1989). 'Does being in here mean there is something wrong with me?'. *Schizophrenia Bulletin*, **15**, 253-265.
- Larkin, A. R. (1979). The form and content of schizophrenic hallucinations. *American Journal of Psychiatry*, **136**, 940-943.
- Lazarus, R. A. & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Leary, T. (1957). *The interpersonal diagnosis of personality*. New York: Ronald Press.
- Lewinsohn, P. M. & Rosenbaum, M. (1987). Recall of parental behavior by acute depressives, remitted depressives, and non-depressives. *Journal of Personality and Social Psychology*, **52**, 611-619.
- Lorr, M. (1997). The circumplex model applied to interpersonal behaviour, affect and psychotic syndromes. In R. Plutchik, H. R. Conte, *et al.* (Eds) *Circumplex models of personality and emotions*. Washington: American Psychological Association.
- Lorr, M. & McNair, D. M. (1963). An interpersonal behaviour circle. *Journal of Abnormal and Social Psychology*, **67**, 68-75.
- Lorr, M. & McNair, D. M. (1965). Expansion of the interpersonal behavior circle. *Journal of Personality and Social Psychology*, **2**, 823-830.
- Lorr, M. & Strack, S. (1999). A study of Benjamin's eight-facet Structural Analysis of Social Behavior (SASB) model. *Journal of Clinical Psychology*, **55**, 207-215.

- Lowe, G. R. (1973). The phenomenology of hallucination as an aid to differential diagnosis. *British Journal of Psychiatry*, **123**, 621-633.
- McNair, D. M., Lorr, M. & Droppleman, L. F. (1992) *EdITS Manual for the Profile of Mood States*, 1992 revision. San Diego, California: Educational and Industrial Testing Service.
- Maher, B. (1974). Delusional thinking and perceptual disorder. *Journal of Individual Psychology*, **30**, 98-113.
- Miller, L. J., O'Connor, E. & DiPasquale, T. (1993). *American Journal of Psychiatry*, **150**, 584-588.
- Mintz, S. & Alpert, M. (1972). Imagery vividness, reality testing and schizophrenic hallucinations. *Journal of Abnormal Psychology*, **19**, 310-316.
- Myllyniemi, R. (1997). The interpersonal circle and the emotional undercurrents of human sociability. In R. Plutchik, H. R. Conte, *et al.* (Eds) *Circumplex models of personality and emotions*. Washington: American Psychological Association.
- Nelson, H. E. (1997). *Cognitive behavioural therapy with schizophrenia: A practice manual*. Cheltenham: Stanley Thornes.
- Paddock, J. R. & Nowicki, S. (1986). The circumplexity of Leary's Interpersonal Circle: A multidimensional scaling perspective. *Journal of Personality Assessment*, **50**, 279-289.
- Pincus, A. L., Dickinson, K. A., Schut, A. J., Castonguay, L. G. & Bedics, J. (1999) Integrating interpersonal assessment and adult attachment using SASB. *European Journal of Psychological Assessment*, **15**, 206-220.
- Pincus, A. L., Gurtman, M. B. & Ruiz, M. A. (1998). Structural Analysis of Social Behavior (SASB): Circumplex analyses and structural relations with the

- Interpersonal Circle and the Five-Factor Model of personality. *Journal of Personality and Social Psychology*, **74**, 1629-1645.
- Pincus, A. L., Newes, S. L., Dickinson, K. A. & Ruiz, M. A. (1998). A comparison of three indexes to assess the dimensions of Structural Analysis of Social Behavior. *Journal of Personality Assessment*, **70**, 145-170.
- Plutchik, R. (1997). The circumplex as a general model of the structure of emotions and personality. In R. Plutchik, H. R. Conte, *et al.* (Eds) *Circumplex models of personality and emotions*. Washington: American Psychological Association.
- Rogers, R., Gillis, J. R., Turner, R. E. & Frise-Smith, T. (1990). The clinical presentation of command hallucinations in a forensic population. *American Journal of Psychiatry*, **147**, 1304-1307.
- Romme, M. & Escher, A. D. M. A. C. (1989). Hearing voices. *Schizophrenia Bulletin*, **15**, 209-216.
- Romme, M. & Escher, A. D. A. M. C. (1993). *Accepting Voices*. London: Mind.
- Romme, M., Honig, A., Noorthoom, E. O. & Escher, A. D. M. A. C. (1992). Coping with hearing voices: An emancipatory approach. *British Journal of Psychiatry*, **161**, 99-103.
- Schneider, K. (1959). *Clinical Psychopathology*. New York: Grune & Stratton.
- Shaeffer, E. S. (1959). A circumplex model for maternal behaviour. *Journal of Abnormal and Social Psychology*, **59**, 226-235.
- Sims, A. (1995). *Symptoms in the mind*, second edition. London: Saunders.
- Slade, P. & Bentall, R. P. (1988). *Sensory deception: A scientific analysis of hallucination*. London: Croom Helm.
- Strong, S. R. & Hills, H. I. (1986). *Interpersonal Communication Rating Scale*. Richmond, Virginia: Virginia Commonwealth University.

- Strong, S. R., Hills, H. I., Kilmartin, C. T., DeVries, H., Lanier, K., Nelson, B. N., Strickland, D. & Meyer, C. W. (1988). The dynamic relations among interpersonal behaviours: A test of complementarity and anticomplementarity. *Journal of Personality and Social Psychology*, **54**, 798-810.
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. London: Tavistock.
- Talbot, J. A., Hales, P. E. & Yudofsky, S. C. (1988). *American Psychiatric Press textbook of psychiatry*. Washington: American Psychiatric Press.
- Tarrier, N. (1987). An investigation of residual psychotic symptoms in discharged schizophrenic patients. *British Journal of Clinical Psychology*, **26**, 141-143.
- Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. *Journal of Personality and Social Psychology*, **37**, 395-412.
- Wiggins, J. S., Trapnell, P. & Phillips, N. (1988). Psychometric and geometric characteristics of the revised Interpersonal Adjective Scales (IAS-R). *Multivariate Behavioral Research*, **23**, 517-530.
- Williams, C. C. & Collins, A. A. (1999). Defining new frameworks for psychosocial intervention. *Psychiatry*, **62**, 61-78.
- World Health Organisation (1975). *Schizophrenia: A multinational study*. Geneva: World Health Organisation.
- World Health Organisation (1992). *International Statistical Classification of Diseases and Related Health Problems (ICD-10)*. Geneva: World Health Organisation.
- Young, J. E. (1990). *Cognitive therapy for personality disorder: A schema-focused approach*. Sarasota, Florida: Professional Resources Exchange.

Appendix 1:

**Confirmation of ethical approval
and participant consent form**

Mr Neil Thomas,
C/o Hamish McLeod,
Academic Centre,
Ealing, Hammersmith & Fulham Mental Health Trust

Our Ref: SB/00/30

20th November 2000

Dear Mr Thomas,

Re: Protocol: Auditory hallucinations and distress: An interpersonal analysis.

Hamish McLeod, on your behalf, attended the Ethics Committee meeting on Friday, 14th July 2000 to present the above protocol. The Committee considered the submission in full and had no ethical concerns with the study.

I am therefore happy to confirm the Committee's approval for the study to proceed. The following personnel represented the Committee:

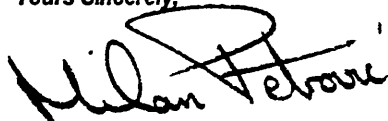
Dr I Treasaden	-	Consultant Forensic Psychiatrist (chair)
Ms T Hilton	-	Principal Pharmacist
Mr M Gillyon	-	Lay Member
Mrs N Law	-	Lay Member
Dr M Leung	-	Clinical Psychologist
Mr P Sheldrake	-	Lay Member
Mr M Petrovic	-	Senior Administrator

If the Committee can assist in any further way, please do not hesitate to let me know. May I take this opportunity to wish you well in your study and to offer my sincere apologies for our oversight in responding to you. In line with this Committee's Standard Operating Procedures, the following are requested:

- The need to comply, throughout the conduct of the study, with good clinical research practice standards;
- To enable the Committee to receive feedback of research approved, you are requested to provide six-monthly reviews. Where this is not provided, the Committee reserve the right to suspend approval of the protocol;
- The results of the research should be sent to the Chairman of the Committee, if necessary in draft form, pending a copy of the completed final report/publication, which will be made available in the Medical Library;
- Further research projects submitted to the Ethical Committee by researchers who fail to comply with these conditions will not be approved;
- If there are any further changes to the Protocol, these must be notified to the Committee for approval.

With kind regards,

Yours Sincerely,



Dr Ian Treasaden,
Ethics Committee Chairman

VOICES STUDY INFORMATION SHEET

In our work, we often come across people who hear voices. We are interested in finding out more about what it is like to hear voices.

Our research study aims to find out more about why some people find the voices they hear upsetting, whilst others like or do not mind their voices. What we find out will help us to develop ways of helping people cope with hearing voices when they find them distressing.

Participating in this research will involve you meeting with an investigator for approximately 60 minutes (probably less) to answer some questions about your experience of hearing voices.

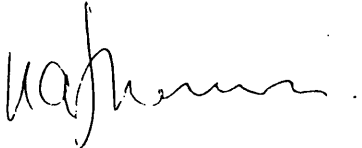
Participation is entirely voluntary and your normal clinical care will not be affected, whether or not you choose to be involved.

If you do choose to participate, you will be paid £5 at the end of the assessment to compensate you for the time you have given to the investigation.

Please feel free to ask any questions.

If you are willing to participate, please sign below, to show you have given your agreement.

Many thanks.



Neil Thomas
Sub-Dept of Clinical Psychology
University College London
Gower Street
London WC1E 6BT

Hamish McLeod
Department of Psychology
St Bernard's Hospital
Uxbridge Road
Southall UB1 3EU

I confirm that the investigator has explained to me fully the nature and purpose of the study and I understand that it is for research purposes.

I have given my agreement to participate in this study.

Name: Signature:

Date:

Appendix 2:
Copies of measures used

BAVQ

We are interested in finding out about people's experiences of hearing voices. Below is a list of statements. For each statement, please say whether it applies to you by circling "TRUE" or "FALSE".

Everybody is different: there are no 'right' or 'wrong' answers.

If you hear more than one voice, please answer for the voice which you hear most often.

1. My voice is punishing me for something I have done	YES	NO
2. My voice wants to help me	YES	NO
3. My voice is persecuting me for no good reason	YES	NO
4. My voice wants to protect me	YES	NO
5. My voice is evil	YES	NO
6. My voice is helping to keep me sane	YES	NO
7. My voice wants to harm me	YES	NO
8. My voice is helping me to develop my special powers or abilities	YES	NO
9. My voice wants me to do bad things	YES	NO
10. My voice is helping me to achieve my goal in life	YES	NO
11. My voice is trying to corrupt or destroy me	YES	NO
12. I am grateful for my voice	YES	NO
13. My voice is very powerful	YES	NO

I find the voice:	Very distressing	Fairly distressing	Neutral	Fairly comforting	Very comforting
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INTREX-V

Below is a list of statements describing the relationship people could have with the voice they hear.

Please say **HOW MUCH EACH STATEMENT APPLIES, AS IF THE VOICE WERE ANOTHER PERSON.**

In the space on the right please rate how much the statements apply with a number from 0 to 100, e.g.:

0	10	20	30	40	50	60	70	80	90	100
Does not apply at all										Applies always, perfectly

-
- | | |
|--|-------|
| 1 The voice butts in and takes over, blocks and restricts me. | _____ |
| 2 The voice gently, lovingly, strokes and soothes me without asking for anything in return | _____ |
| 3 The voice likes me and thinks I am fine just as I am | _____ |
| 4 The voice rips me off, tears, steals and grabs all it can from me | _____ |
| 5 The voice lovingly looks after my interests and takes steps to protect me. It actively backs me up. | _____ |
| 6 The voice learns from me: it comfortably takes advice and guidance from me | _____ |
| 7 The voice clearly understands me and likes me even when we disagree | _____ |
| 8 The voice controls me in a matter-of-fact way. It has the habit of taking charge of everything | _____ |
| 9 The voice ignores the facts and offers me unbelievable nonsense and craziness | _____ |
| 10 The voice is straightforward, truthful and clear with me about its own position | _____ |
| 11 The voice reacts to what I say in strange, unconnected, unrelated ways | _____ |
| 12 The voice leaves me free to do and be whatever I think is best | _____ |
| 13 The voice trustingly depends on me to meet every need | _____ |
| 14 Boiling over with rage and/or fear, the voice tries to escape, flee or hide from me | _____ |
| 15 Believing it is really for my own good, the voice checks often on me, and reminds me of what should be done | _____ |
| 16 The voice misleads me, disguises things, and tries to throw me off track | _____ |
| 17 To do its own thing, the voice does the opposite of what I want | _____ |
| 18 The voice murders, kills, destroys and leaves me as a useless heap | _____ |
| 19 The voice makes me follow its rules and ideas of what is right and proper | _____ |
| 20 Seeming very mean, the voice follows me and tries to hurt me | _____ |
| 21 The voice accuses and blames me. It tries to get me to believe and say I am wrong | _____ |
| 22 The voice is trusting with me. It comfortably counts on me to come through when needed | _____ |
| 23 The voice speaks up, and clearly states its own position | _____ |
| 24 Without concern, the voice lets me do and be anything at all | _____ |
| 25 The voice forgets all about me, our agreements, our plans | _____ |
| 26 The voice expresses itself clearly in a warm and friendly way | _____ |
| 27 The voice warmly and happily stays around and keeps in touch with me | _____ |
| 28 The voice is joyful, happy and very open with me | _____ |
| 29 The voice gives in to me, yields and submits to me | _____ |

- 30 The voice lets me speak freely and hears me even when we disagree _____
- 31 Believing I do things well, the voice leaves me to do things my own way _____
- 32 Believing it really knows what is best for me, the voice tells me exactly what to do, be and think _____
- 33 The voice really hears me, and acknowledges my views even when we disagree _____
- 34 Full of doubts and tension, the voice sort of goes along with my views anyway _____
- 35 The voice gives up, and helplessly does things my way without feelings or views of its own _____
- 36 The voice relaxes, lets go and feels wonderful about being with me _____
- 37 The voice is too busy and alone with its own thing to be with me _____
- 38 The voice angrily leaves me to go without what I need very much, even when it could easily give it to me _____
- 39 The voice harshly punishes and tortures me, takes revenge _____
- 40 The voice freely and openly talks with me about its innermost self _____
- 41 Just when I need it most, the voice abandons me, and leaves me alone with trouble _____
- 42 The voice puts me down, tells me my ways are wrong and its ways are better _____
- 43 The voice has a clear sense of who it is separately from me _____
- 44 The voice caves in to me and does things my way, but sulks and fumes about it _____
- 45 The voice warmly and cheerfully invites me to be in touch with it as often as I want _____
- 46 The voice gets me interested and teaches me how to understand and do things _____
- 47 With gentle loving tenderness, the voice connects sexually if I seem to want it _____
- 48 The voice just doesn't notice or pay attention to me at all _____
- 49 The voice neglects me, my interests and my needs _____
- 50 The voice bitterly, hatefully, resentfully chooses to let my needs count more than its own _____
- 51 The voice checks with me about every little thing because it cares so much about what I think _____
- 52 The voice feels, thinks, does and becomes what it thinks I want _____
- 53 The voice is very tense, shaky, wary, fearful with me _____
- 54 To avoid my disapproval, the voice bottles up its rage and resentment and does what I want _____
- 55 In great pain and rage, the voice screams and shouts that I am destroying it _____
- 56 The voice mindlessly obeys my rules, standards and ideas about how things should be done _____
- 57 The voice bitterly, angrily detaches from me and doesn't ask for anything. It weeps alone about me _____
- 58 The voice freely comes and goes: does its own thing separately from me _____
- 59 The voice joyfully, lovingly, very happily responds to me sexually _____
- 60 The voice warmly and comfortably accepts my help and caregiving _____
- 61 The voice walls itself off from me; it doesn't hear, it doesn't react _____
- 62 The voice furiously, angrily and hatefully refuses to accept my offers to help out _____
- 63 The voice goes its own separate way apart from me _____
- 64 The voice whines, unhappily protests and tries to defend itself from me _____
- 65 The voice pays close attention to me so it can figure out all of my needs and take care of everything _____
- 66 The voice is very happy, playful, joyful and delighted to be with me _____
- 67 The voice angrily leaves me out. It completely refuses to have anything to do with me _____

- 68 Full of happy smiles, the voice lovingly greets me just as I am _____
- 69 The voice peacefully leaves me completely on my own _____
- 70 The voice provides for, nurtures and takes care of me _____
- 71 With much kindness and good sense, the voice figures out and explains things to me. _____
- 72 The voice willingly accepts and goes along with my reasonable suggestions and ideas _____

The following statements are about how you react to the voice. As before, rate how much each statement applies, as if the voice were another person.

- 73 I learn from the voice: I comfortably take advice and guidance from it _____
- 74 I give up, and helplessly do things the voice's way without feelings or views of my own _____
- 75 I gently, lovingly, stroke and soothe the voice without asking for anything in return _____
- 76 Believing it is really for its own good, I check often on the voice, and remind it of what should be done _____
- 77 With much kindness and good sense, I figure out and explain things to the voice _____
- 78 With gentle loving tenderness, I connect sexually if the voice seems to want it _____
- 79 I control the voice in a matter-of-fact way. I have the habit of taking charge of everything _____
- 80 I let the voice speak freely and hear it even when we disagree _____
- 81 I harshly punish and torture the voice, take revenge _____
- 82 I am very tense, shaky, wary, fearful with the voice _____
- 83 Believing it does things well, I leave the voice to do things its own way _____
- 84 I provide for, nurture and take care of the voice _____
- 85 I get the voice interested and teach it how to understand and do things _____
- 86 I make the voice follow my rules and ideas of what is right and proper _____
- 87 I accuse and blame the voice. I try to get it to believe and say it is wrong _____
- 88 I mislead the voice, disguise things, and try to throw it off track _____
- 89 I go my own separate way apart from the voice _____
- 90 I freely and openly talk with the voice about my innermost self _____
- 91 I warmly and happily stay around and keep in touch with the voice _____
- 92 I give in to the voice, yield and submit to it _____
- 93 I lovingly look after the voice's interests and take steps to protect it. I actively back the voice up _____
- 94 I bitterly, hatefully, resentfully choose to let the voice's needs count more than my own _____
- 95 I have a clear sense of who I am separately from the voice _____
- 96 I am trusting with the voice. I comfortably count on the voice to come through when needed _____
- 97 I trustingly depend on the voice to meet every need _____
- 98 I check with the voice about every little thing because I care so much about what it thinks _____
- 99 I bitterly, angrily detach from the voice and don't ask for anything. I weep alone about it _____
- 100 I ignore the facts and offer the voice unbelievable nonsense and craziness _____
- 101 I neglect the voice, its interests and its needs _____
- 102 I whine, unhappily protest and try to defend myself from the voice _____
- 103 I warmly and cheerfully invite the voice to be in touch with me as often as it wants _____

- 104 Seeming very mean, I follow the voice and try to hurt it _____
- 105 I just don't notice or pay attention to the voice at all _____
- 106 Believing I really know what is best for the voice, I tell the it exactly what to do, be and think _____
- 107 I feel, think, do and become what I think the voice wants _____
- 108 I express myself clearly in a warm and friendly way _____
- 109 I clearly understand the voice and like it even when we disagree _____
- 110 Full of happy smiles, I lovingly greet the voice just as it is _____
- 111 I am straightforward, truthful and clear with the voice about my own position _____
- 112 I am joyful, happy and very open with the voice _____
- 113 I react to what the voice says in strange, unconnected, unrelated ways _____
- 114 I am very happy, playful, joyful and delighted to be with the voice _____
- 115 I relax, let go and feel wonderful about being with the voice _____
- 116 I freely come and go: do my own thing separately from the voice _____
- 117 I angrily leave the voice out. I completely refuse to have anything to do with it _____
- 118 I warmly and comfortably accept the voice's help and caregiving _____
- 119 I really hear the voice, and acknowledge its views even when we disagree _____
- 120 I put the voice down, tell it its ways are wrong and my ways are better _____
- 121 I rip the voice off, tear, steal and grab all I can from it _____
- 122 I butt in and take over, block and restrict the voice _____
- 123 I peacefully leave the voice completely on its own _____
- 124 I joyfully, lovingly, very happily respond to the voice sexually _____
- 125 I mindlessly obey the voice's rules, standards and ideas about how things should be done _____
- 126 I murder, kill, destroy and leave the voice as a useless heap _____
- 127 I like the voice and think it is fine just as it is _____
- 128 I furiously, angrily and hatefully refuse to accept the voice's offers to help out _____
- 129 Without concern, I let the voice do and be anything at all _____
- 130 To avoid the voice's disapproval, I bottle up my rage and resentment and do what it wants _____
- 131 I willingly accept and go along with the voice's reasonable suggestions and ideas _____
- 132 In great pain and rage, I scream and shout that the voice is destroying me _____
- 133 I speak up, and clearly state my own position _____
- 134 I forget all about the voice, our agreements, our plans _____
- 135 I pay close attention to the voice so I can figure out all of its needs and take care of everything _____
- 136 I am too busy and alone with my own thing to be with the voice _____
- 137 I cave in to the voice and do things its way, but I sulk and fume about it _____
- 138 I angrily leave the voice to go without what it needs very much, even when I could easily give it to it _____
- 139 To do my own thing, I do the opposite of what the voice wants _____
- 140 Just when the voice needs me most, I abandon it, and leave it alone with trouble _____
- 141 I wall myself off from the voice; I don't hear, I don't react _____
- 142 Boiling over with rage and/or fear, I try to escape, flee or hide from the voice _____
- 143 I leave the voice free to do and be whatever it thinks is best _____
- 144 Full of doubts and tension, I sort of go along with the voice's views anyway _____

POMS-V

Below is a list of words that describe different feelings. Please read each one carefully and say **HOW YOU USUALLY FEEL WHEN YOU HEAR THE VOICE**, by circling one of the five answers to the right.

1	Tense	Not at all	A little	Moderately	Quite a bit	Extremely
2	Angry	Not at all	A little	Moderately	Quite a bit	Extremely
3	Unhappy	Not at all	A little	Moderately	Quite a bit	Extremely
4	Sorry for things done	Not at all	A little	Moderately	Quite a bit	Extremely
5	Shaky	Not at all	A little	Moderately	Quite a bit	Extremely
6	Peeved	Not at all	A little	Moderately	Quite a bit	Extremely
7	Sad	Not at all	A little	Moderately	Quite a bit	Extremely
8	On edge	Not at all	A little	Moderately	Quite a bit	Extremely
9	Blue	Not at all	A little	Moderately	Quite a bit	Extremely
10	Panicky	Not at all	A little	Moderately	Quite a bit	Extremely
11	Hopeless	Not at all	A little	Moderately	Quite a bit	Extremely
12	Relaxed	Not at all	A little	Moderately	Quite a bit	Extremely
13	Unworthy	Not at all	A little	Moderately	Quite a bit	Extremely
14	Spiteful	Not at all	A little	Moderately	Quite a bit	Extremely
15	Restless	Not at all	A little	Moderately	Quite a bit	Extremely
16	Annoyed	Not at all	A little	Moderately	Quite a bit	Extremely
17	Discouraged	Not at all	A little	Moderately	Quite a bit	Extremely
18	Resentful	Not at all	A little	Moderately	Quite a bit	Extremely
19	Nervous	Not at all	A little	Moderately	Quite a bit	Extremely
20	Lonely	Not at all	A little	Moderately	Quite a bit	Extremely
21	Miserable	Not at all	A little	Moderately	Quite a bit	Extremely
22	Bitter	Not at all	A little	Moderately	Quite a bit	Extremely
23	Anxious	Not at all	A little	Moderately	Quite a bit	Extremely
24	Ready to fight	Not at all	A little	Moderately	Quite a bit	Extremely
25	Gloomy	Not at all	A little	Moderately	Quite a bit	Extremely
26	Desperate	Not at all	A little	Moderately	Quite a bit	Extremely
27	Rebellious	Not at all	A little	Moderately	Quite a bit	Extremely
28	Helpless	Not at all	A little	Moderately	Quite a bit	Extremely
29	Deceived	Not at all	A little	Moderately	Quite a bit	Extremely
30	Furious	Not at all	A little	Moderately	Quite a bit	Extremely
31	Bad-tempered	Not at all	A little	Moderately	Quite a bit	Extremely
32	Worthless	Not at all	A little	Moderately	Quite a bit	Extremely
33	Terrified	Not at all	A little	Moderately	Quite a bit	Extremely
34	Guilty	Not at all	A little	Moderately	Quite a bit	Extremely
35	Uneasy	Not at all	A little	Moderately	Quite a bit	Extremely
36	Grouchy	Not at all	A little	Moderately	Quite a bit	Extremely

CALGARY DEPRESSION SCALE

1. Depression

How would you describe your mood over the last two weeks?

Do you keep reasonably cheerful or have you been very depressed or low spirited recently?

In the last two weeks how often have you felt . . . ? Every day? All day?

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

2. Hopelessness

How do you see the future for yourself?

Can you see any future, or has life seemed quite hopeless?

Have you given up or does there still seem some reason for trying?

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

3. Self-deprecation

What is your opinion of yourself compared with other people?

Do you feel better or not as good or about the same as most?

Do you feel inferior, or even worthless?

- 0 Absent
- 1 Mild Some inferiority, not amounting to feeling of worthlessness
- 2 Moderate Subject feels worthless, but less than 50% of the time
- 3 Severe Subject feels worthless more than 50% of the time. May be challenged to acknowledge otherwise.

4. Guilty ideas of reference

Do you have the feeling that you are being blamed for something or even wrongly accused? What about?

(Do not include justifiable blame or accusation; exclude delusions of guilt)

- 0 Absent
- 1 Mild Subject feels blames but not accused less than 50% of the time
- 2 Moderate Persisting sense of being blamed, and/or occasional sense of being accused
- 3 Severe Persistent sense of being accused. When challenged, acknowledges that it is not so.

5. Pathological guilt

Do you tend to blame yourself for little things you may have done in the past?

Do you think you deserve to be so concerned about this?

- 0 Absent
- 1 Mild Subject sometimes feels overly guilty about some minor peccadillo, but less than 50% of the time
- 2 Moderate Subject usually (over 50% of time) feels guilty about past actions, the significance of which he/she exaggerates.
- 3 Severe Subject usually feels he/she is to blame for everything that has gone wrong, even when not his/her fault.

6. Morning depression

When you have felt depressed over the last two weeks, have you noticed the depression being worse at any particular time of day?

- 0 Absent No depression
- 1 Mild Depression present but no diurnal variation
- 2 Moderate Depression spontaneously mentioned to be worse in morning
- 3 Severe Depression markedly worse in morning, with impaired functioning which improves in the afternoon

7. Early wakening

*Do you wake earlier in the morning than is normal for you?
How many times a week does this happen?*

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

8. Suicide

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

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

9. Observed depression

Based on interviewer's observations during the entire interview
The question "*Do you feel like crying?*", asked at appropriate points in the interview, may elicit information useful to this observation.

- 0 Absent
- 1 Mild Subject appears sad and mournful even during parts of the interview involving affectively neutral discussion
- 2 Moderate Subject appears sad and mournful throughout the interview, with gloomy and monotonous voice and is tearful or close to tears at times
- 3 Severe Subject chokes on distressing topics, frequently sighs deeply and cries openly, or is persistently in a state of frozen misery