Auditory Hallucinations

The origins of auditory hallucinations may be misattributed cognitions such as inner speech, disconnected memories or traumatic flashbacks. It is important to establish what can be done to help people who are distressed.

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ABSTRACT:
There is widespread consensus that auditory hallucinations arise from misattributed cognitions – cognitive events that are not recognised by the individual as being internally-generated, and instead are attributed to external sources. There is less consensus as to the specific nature of these cognitions; with subvocal speech, disconnected memories or traumatic flashbacks, and intentions all cited as candidates. In addition, a wide range of personal, physical, environmental, psychological and situational factors have been found to impact on the central source-monitoring or reality-monitoring processes involved. A theoretical model of auditory hallucinations must therefore allow for individual variation within this general framework. Formulations developed with individuals in therapy, equally, will be highly individual. While some people have few difficulties when they have these experiences, for other people they can be highly distressing. Psychological therapies, based on the analysis outlined here, can be effective for helping people experiencing hallucinations. Such therapies are, however, highly individualised, relying on complex and sophisticated individual case formulations bringing together many of the issues discussed here.

Keywords: psychosis, auditory hallucinations, psychological therapy, cognitive therapy

Introduction

It is usual for people – psychologists as well as others – to comment that auditory hallucinations are "common and distressing psychotic phenomena" (Cspike & Kinderman, 2006, p. 365). And in some senses that is true. Hallucinations are indeed very common experiences in people with mental health problems (Slade & Bentall, 1988; Wing, Cooper, & Sartorius, 1974; World Health Organisation, 1973), and they can be highly distressing for many people (Barrowclough & Tarrier, 1992; McInnis & Marks, 1990). Auditory hallucinations are closely associated with the diagnosis of schizophrenia, with up to 75% of individuals receiving a diagnosis of schizophrenia reporting auditory hallucinations (Nayani & David, 1996; Slade & Bentall, 1988; Wing et al., 1974; World Health Organisation, 1973). Indeed, in the ICD-10 diagnostic system it is

possible to receive a diagnosis of schizophrenia (in certain specific circumstances) with auditory hallucinations as the only observed phenomenon.

But is it also clear that auditory hallucinations are a much more common, and more "normal", phenomenon than this account would suggest. Firstly, people with other conditions or diagnoses not typically associated with psychosis, such as depression or post-traumatic stress disorder, also experience similar phenomena (Bentall, 1990). Hallucinations are common features of bereavement (Rees, 1971), with people frequently hearing or even seeing recently deceased loved ones. Hallucinations are also relatively common following traumatic experiences (Ross, Anderson, & Clark, 1994). Secondly, large numbers of the general population experience such phenomena quite commonly. Estimates for the lifetime incidence of auditory hallucinations in the general population range from a conservative 1 to 2% (Thomas & Leudar, 1996) to 10–15% (Tien, 1991). Barret and Etheridge (1992) found that up to 30–40% of a student population have experienced occasional, brief hallucination like events, such as hearing one's own thoughts. Likewise Posey and Losch (1983) reported that 42% of university students have had mild, pseudo-hallucinations, such as thinking one's name was called out. Many commentators (Strauss, 1969, 1989) therefore conclude that hallucinations exist on continua with other "normal" experiences; experienced by many individuals.

Romme and colleagues (1992) found that 44% of individuals who reported hearing voices were not receiving any psychiatric care. In some cases, although certainly not all, hallucinations can be regarded as neutral, entirely normal parts of human experience or even positive (Romme & Esher, 1993). What seems to characterise the differences between people who experience few problems while hearing voices, and those that end up having difficulties, is that the former group report having control over their voices, and are consequently significantly less distressed (Leuder, Thomas, McNally, & Glinsky, 1997).

There are at least two important, psychological, consequences of these observations. Firstly, we should be cautious about what is inferred from the use of the term "hallucination". Most studies of "hallucinations" refer to studies of highly distressed individuals struggling to cope with hallucinations in the picture of significant and evident psychological disorder. But these experiences clearly commonly occur outside that picture. Essentially the term "hallucinations" has come to mean hallucinations which cause distress. This means, as Bentall (2003) points out, that decisions to intervene to help people experiencing phenomena such as hallucinations should be predicated not on notions of illness, or even in terms of "symptoms", but on the basis of personal distress.

Brain Disease

Clearly, a wide range of injuries, insults to the brain and chemical intoxications can induce hallucinations (Assad & Shapiro, 1986). Indeed, many people in Western Europe apparently enjoy ingesting a range of street drugs, a principal effect of which is often to

induce hallucinations. The power of LSD and other dopaminergic drugs, in particular, to induce hallucinations has been a driver behind the socalled dopamine hypothesis of schizophrenia (see Bentall, 2003).

In fact, however, brain dysfunction as a medical illness appears to be a relatively unimportant causal factor. Not only does the very widespread incidence of hallucinatory or hallucination-like experiences in the normal population indicate that brain illness is not necessary, but medical investigations of hallucinating people indicate that medical causes are very rarely found (Johnstone, MacMillan, & Crow, 1987) and mainly relate to visual hallucinations of a characteristic type (Cornelius et al., 1991). This is not to say that physical or biological agents are not important – a simple consideration of the effects of LSD proves this to be false. But it does mean that brain "disease" is rarely a cause of hallucinations.

Hallucinations are Misattributed Cognitions

The dominant psychological formulations of auditory hallucinations are based on the hypothesis that individuals are mistaking their own internal, private cognitions for external events (Bentall, 1990; Frith, 1992; Hoffman, 1986; Morrison & Haddock, 1997; Morrison, Haddock, & Tarrier, 1995; Rankin & O'Carroll, 1995). More precisely, there is compelling evidence that hallucinations stem from misattributed inner speech. In the development of the modern science of psychology, the role of inner speech has had a chequered history, and it would be unwise to reprise that history here. But it is fair to conclude that inner speech or sub-vocalisation is extremely common, accompanying nearly all mental activities (Cacioppo & Petty, 1981; McGuigan, 1978) involving thought or autobiographical me-mory (Morin & Everett, 1990), and is, as Richard Bentall claims (Bentall, 2003, p. 197), "an important vehicle of self-awareness". People use both inner and overt speech while engaged in activities, although they may not always be aware that they are doing so (Flavell, Green, Flavell, & Grossman, 1997).

For relatively obvious reasons, sub-vocalisations have been studied extensively in the area of hallucinations. All studies point to the conclusion that hallucinations are misattributed sub-vocal speech. As early as 1948, muscular activity of the lips and tongue was discovered to be associated with hallucinations (Gould, 1948; Inouye & Shimizu, 1970). Oddly, a number of researchers have reported that these subvocalisations are associated with audible speech. That is, both Gould (1949) and Green and Preston (1981) were able to detect audible speech sounds (whispers) – that the person was unaware of – during hallucinations. These findings have been paralleled by a series of studies investigating the functional neuroanatomy of hallucinations. Using EEG (Stevens & Livermore, 1982), SPET (McGuire, Shah, & Murray, 1993) and PET (Silbersweig et al., 1995), researchers have found that auditory hallucinations are reliably associated with activity in those areas of the brain (for instance Broca's and Wernicke's areas) associated with language production and comprehension. Taken together, these findings are usually taken (see Bentall, 2003) as clear evidence that hallucinations are misattributed inner speech.

Why?... In What Circumstances?

A simplistic response to this analysis might be to suggest that the origins of auditory hallucinations have been established – hallucinations are misattributed inner speech. But it is important to establish why, in what circumstances, sub-vocalised speech is misinterpreted as external, why this is (or is not) distressing, and what can be done to help people who are distressed. In this issue, as in all instances of mental disorder (Kinderman, 2005), psychological processes are involved in the processes of determining the source of perceptual experiences. In the case of hallucinations there is evidence that people who hear voices have difficulties with "reality discrimination"; the ability correctly to identify events as internal or external (Bentall, 1990).

Researchers have employed many different, closely related, techniques to investigate source or reality monitoring. Perhaps the clearest example would be an approach similar to that used by Keefe and colleagues (2002). In this kind of methodology a participant might be presented with a list of words read out by an experimenter (that is, words clearly external to the participant) to which they may be asked to generate a response – often this is presented as a simple word-association exercise. Clearly, the participant's response is self-generated. At a later time, the participant may then be presented with a mixed list of initial stimulus items (experimenter-generated) and their own responses (participant-generated), and are asked to determine whether these words were, indeed, self-generated or experimenter- generated. Source-monitoring or reality-monitoring is measured, in part, by the proportion of participant-generated items that are incorrectly judged to have been experimenter-generated. The fact that these items are logically related in a word-association exercise means that this discrimination is not as simple as it might appear.

Bentall and Slade (1985) found that hallucinating individuals were more likely to fail in correctly identifying the source of a signal than those not hallucinating. Not surprisingly, the people hearing voices believed that internally generated signals were external more frequently than did people not hearing voices, a finding replicated by Bentall and colleagues (1991). In a similar study, Rankin and O'Carroll (1995) found that non-patient research participants disposed to hallucinations (as measured by the Launay-Slade Hallucination Scale) were more likely to attribute their thoughts to an external source than were research participants without a proneness to hallucinate. Source monitoring or reality discrimination difficulties appear to relate to material other than the specific content of hallucinations (Allen et al., 2004), and often relate to material supplied by researchers, rather than the individuals' own cognitions. In this paradigm, our understanding of hallucinations now relates to the issue of why such source-monitoring or reality discrimination processes could fail.

Cognitive Disruption

Without necessarily accepting the idea of illness or disease, a number of researchers have suggested that hallucinations result from a cognitive deficit – a problem with cognitive processes related to source-monitoring. In this context, researchers have

implicated memory impairments and language planning disruptions (David, 1994; Hoffman, 1986) as well as fundamental problems with "theory-of-mind" (Frith, 1992). These findings are supported by a wide range of psychological and neuropsychological evidence indicating a range of cognitive problems in people experiencing hallucinations (Allen et al., 2004; Brunelin et al., 2006; Johns et al., 2006; Rossell & Boundy, 2005).

It seems likely that such cognitive deficits are indeed associated with hallucinations. It is also relatively easy to understand how such difficulties might contribute to misattribution of cognitions to external sources. At the same time, the distribution of hallucinations in everyday life and in otherwise "normal" members of the community (Barrett & Etheridge, 1992; Posey & Losch, 1983; Tein, 1991), equally suggests that these difficulties do not constitute a "cause" of hallucinations, but rather are part of a complex pattern of vulnerabilities (Zubin, Stuart, & Condray, 1992). This means that a wide range of cognitive abnormalities such as those outlined here could impact on source discrimination processes. More pertinently, it suggests a possible circular relationship. Since hallucinations can be distressing (Barrowclough & Tarrier, 1992; McInnis & Marks, 1990; Nayani & David, 1996), and since stress can impact negatively on a wide range of mental processes (see Bentall, 2003), it is not unreasonable to suppose that people distressed by hallucinations might experience increasing difficulties with reality discrimination. It is hardly surprising that the auditory hallucinations of persons with schizophrenia worsen in a negative mood (Haddock, Bentall, & Slade, 1993).

This discussion serves to illustrate an important psychological point. Biological factors can be expected to have their effects on mental disorder through the disruption of psychological processes (Kinderman, 2005). In the case of hallucinations, it appears that these processes form part of the normal architecture of cognition (Bentall 2003; Morrison et al. 1995). That is, all people can be expected to use source discrimination mechanisms to attribute cognitions and experience appropriately – but not flawlessly. And, for all of us, circumstantial and biological factors that impact on these processes, will, quite naturally, affect source discrimination. It is worth stressing that errors in source monitoring are common and can often be influenced by straightforward factors such as environmental noise, demand characteristics and expectations (Johnson, Hashtroudi, & Lindsay, 1993). But there may also be rather more specific factors in the case of hallucinations that cause distress and lead people to seek help.

Traumatic Events

There are clear relationships between one broad class of circumstantial factor – traumatic experiences – and hallucinations. Firstly, reports of trauma are very common among users of psychiatric services generally, people with psychotic experiences in particular, and specifically people hearing voices. Thus Read, van Os, Morrison, and Ross (2005) found that experiences of warfare, assaults (including sexual assaults) in

adulthood and childhood sexual assaults were very common in all distressed persons, but particularly in people hearing voices.

Read and colleagues (2005) and Morrison and colleagues (2003) discussed a range of possible reasons for this link. Biologically, it is possible that traumatic events in childhood could negatively affect the development of stress regulation mechanisms (Read, Perry, Moskowitz, & Connolly, 2001). This damage, plausibly, could lead to the cognitive disruption mentioned earlier. On more conventional psychological topics, Read and colleagues (2005) discuss how cognitive schemas of worthlessness or threat could be related to the experience of trauma, but also to the occurrence of hallucinations, and also suggest that "some ... hallucinations appear to be nothing more or less than memories of traumatic events identical to the split-off flashbacks usually considered indicative of PTSD rather than schizophrenia" (Read et al., 2005, p. 341). In addition, however, a potent combination of highly intrusive, very distressing thoughts, with clear schematic implications for the individual is "normal" following traumatic events. In addition, many people report dissociative experiences following trauma, and it is easy to see how this may contribute to the likelihood of source misattribution.

Traumatic memories, or intrusive thoughts, following traumatic events may be clear examples of how a particular type of cognitive event could be misinterpreted as coming from an external source. It does not necessarily mean that all hallucinations are indicative of childhood sexual abuse, but it does illustrate some of the elements that contribute to misattribution.

Characteristics of Intrusive Thoughts

Intrusive thoughts can be defined as unwanted, unacceptable or uncontrollable, unrealistic or ego-dystonic thoughts which arise unbidden in the mind (Rachman, 1978). Intrusive thoughts are often accompanied by distress and interrupt ongoing mental activity. Such intrusions are very common (Rachman & de Silva, 1978; Salkovskis & Harrison, 1984).

People experiencing auditory hallucinations have reported high levels of negative intrusive thoughts (Csipke & Kinderman, 2005; Morrison & Baker, 2000). This is entirely consistent with the idea that hallucinations are misattributed sub-vocalisations, because of the close relationship between the two. Anxious states are typically associated with increased ruminations (Riggs & Foa, 1993). In particular, anxiety can be defined as a mood state in which an individual becomes ready or prepared to attempt to cope with upcoming negative events (Brown, O'Leary, & Barlow, 1993). This preparation may be done by mentally rehearsing possible events and actions that may occur in the future. Self-talk is very often used to guide such behaviour and prepare for future action (Flavell et al., 1997).

There are several characteristics of intrusive thoughts that may make source discrimination difficult. Firstly, cognitions that emerge as a result of effortful processes tend to be correctly recognised as self-generated, whereas effort-free cognitions (thoughts that just "pop into your mind") tend to be more likely to be misattributed

(Johnson, Hashtroudi, & Lindsay, 1993). As outlined above, stress impacts negatively on source monitoring, and many negative intrusive thoughts are very distressing. Clearly, anxious ruminations and by definition intrusive thoughts' can be both highly distressing and effort-free. Intriguingly, Morrison and colleagues (2000) proposed that thoughts which are in the second person perspective (i.e., "You are a fool") may sound more like a second party speaking to the voice hearer than thoughts that are in the first person perspective (e.g., "I am a fool"), and hence may be more likely to be misattributed. There is emerging evidence (Csike & Kinderman, 2006) that people experiencing hallucinations do indeed exhibit such self-critical talk.

Interpretative Biases and Metacognitive Beliefs

Certain metacognitive beliefs, beliefs people hold about the acceptability of certain thoughts and thought processes, may also be associated with hallucinations (Morrison, Haddock, & Tarrier, 1995). Firstly, some metacognitive beliefs may contribute to the distress experienced with intrusive thoughts. Thus beliefs about the importance of being in control of one's thoughts and being responsible for one's thoughts may lead to distress if one then has unwanted thoughts. Lobban, Haddock, Kinderman and Wells, 2002) found that these beliefs were common in people prone to hallucinations, whereas Morrison, Wells and Nothard (2002) found that people prone to hallucinations were more self-conscious about their thoughts, believed thoughts should be controllable, and believed that certain types of thoughts are dangerous. Rachman (1997) pointed out that a sense of mental pollution, or cognitive dissonance, occurs when individuals involuntarily think repugnant thoughts – unacceptable violent, sexual or blasphemous thoughts.

Treatment

Psychological and psychosocial treatments for psychotic phenomena are now clearly rooted in evidence and have considerable organisational support. Common features of such therapies include a "normalizing" approach – placing the individual's difficulties in the context of normal psychological processes (Pfammatter, Junghan & Brenner, 2006). Typically, psychological approaches are based on assessments that examine specific characteristics of individual phenomena (eg, frequency, intensity, duration etc), and use a formulation rather than diagnosis/treat approach (Morrison, 2004). Meta-analyses suggest that psychological approaches to therapy for psychotic problems are significantly effective (Gould et al., 2001; Pfammatter, Junghan, & Brenner, 2006; Pilling et al., 2002a, 2002b; Tarrier & Wykes, 2004). In both the USA and the UK influential commentators (Kendall et al., 2003; Lehman et al., 2004) and advisory bodies (National Institute for Clinical Excellence, 2002) have therefore strongly supported their adoption. These therapies are effective in both individual and group applications (Wykes et al., 2005).

Psychological approaches to hallucinations have more specifically been shown to be effective (Haddock et al., 1998). Haddock and colleagues (1998) suggest a number of different elements or techniques that have been developed specifically for

hallucinations. Distraction techniques have been employed, with mixed results. Margo, Hemsley and Slade (1981) reported on a range of different environmental manipulations on the severity of auditory hallucinations. Essentially, it appears that the effectiveness of different interventions in impacting upon (although not necessarily treating) hallucinations appears to depend on the degree to which the interventions involve verbalisation. When people experiencing hallucinations are asked to engage in an activity (for instance reading meaningful material out loud), a positive impact is seen on hallucinations (Galhager, Dinan, & Baker, 1994). This of course is consistent with, and support for, the misattributed inner speech model of hallucinations.

Haddock and colleagues (1998) report most positive effects for therapeutic approaches that attempt to address some of the underlying psychological issues. This is likely to be because such approaches address some of the issues, outlined above, that contribute to distressing misattribution of intrusive thoughts or sub-vocalisations to external sources. In particular, Haddock and colleagues commented on the positive effects of interventions that included the modification of beliefs surrounding hallucinations. In these approaches (see Bentall, Haddock, & Slade, 1994; Chadwick & Lowe, 1994; Haddock, Bentall, & Slade, 1993; Haddock et al., 1996; Morrison, 2004), therapists use the conventional techniques of cognitive behavioural therapy to elicit individuals' key beliefs concerning the hallucinations themselves, the meaning of the hallucinations to the individual, the content of the hallucinations, metacognitive beliefs etc. These are then modified, again using very conventional cognitive behavioural approaches, in order to address the distress caused by the voices as experiences, and to address the distress induced by their content. The therapist is likely to explore an individual's beliefs about mental disorder generally, mental illness more specifically, and indeed the experience of hallucinations themselves.

People's beliefs concerning such matters vary widely from person to person (Colombo, Bendelow, Fulford, & Williams, 2003; Kinderman, Setzu, Lobban, & Salmon, 2006) and can be important. These beliefs may, if appropriate, be addressed in therapy to lead to a more normalised attitude to the problems. Similarly, metacognitive beliefs (as discussed above) may be elicited and, as before, modified. The rationale here is that such beliefs (whether about mental disorder, the hallucinations, or thoughts in general) may contribute to both distress and misattribution. If one believes that such events are both impossible and highly negatively significant (i.e. "This can only mean I'm mad"), both misattributions and distress are likely. Clearly such approach should be combined with a psychoeducational approach, explaining the evidence for, and significance of, a psychological account of hallucinations. In addition, therapists are likely to address more personal significance of the hallucinations. Thus, therapists are likely to explore the nature of any relationship between the individual and the voices (or more properly, perhaps, the entities believed to be responsible for the voices). Thus issues of power relationships and the benevolence or malevolence of the voices may be explored (Chadwick & Birchwood, 1994). These schemata may well be of considerable significance, in that there appears to be a significant relationship between issues of

social status, dominance and subjugation and the experience of malevolent hallucinations (Chadwick & Birchwood, 1994).

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