

# A COGNITIVE BEHAVIOURAL FRAMEWORK FOR THE TREATMENT OF DISTRESSING VISUAL HALLUCINATIONS IN OLDER PEOPLE

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**Abstract.** This paper summarizes a recently developed model for understanding the genesis of visual hallucinations, shows how this can be incorporated into a cognitive behavioural framework, and then illustrates possible ways in which this may be used to successfully treat the emotional distress that some older people experience as a consequence of their hallucinations. These ideas have been developed as a model-based clinical response to patients distressed by their hallucinations. The purpose of this paper is to outline this approach in order to stimulate discussion and empirical evaluation.

*Keywords:* Visual hallucinations, Charles Bonnet, cognitive therapy, psychosis.

## Introduction

Some two million adults in the UK have repeated complex visual hallucinations<sup>1</sup> (Collerton, Perry, & McKeith, in press), though most keep their experiences very much to themselves. Between 70–90% of people do not tell of their experiences (e.g. Neshet, Neshet, Epstein, & Assia, 2001), even those with long contact with mental health services (Gauntlett-Gilbert & Kuipers, 2003). For those unfamiliar with these phenomena, good first person accounts of hallucinations are by Trevor-Roper (Crewe, 2002) and Cole (1999).

Many of these hallucinations are normal experiences, often on the borders of sleep. They are usually experienced with a decreasing frequency with age (Asaad & Shapiro, 1986; Brasic, 1998; Ohayon, Priest, Caulet, & Guilleminault, 1996; Ohayon, 2000; Stoerig, 2001). However, there is also a strong association with pathological processes, particularly in older age groups (Chapman, Dickinson, McKeith, & Ballard, 1999; Manford & Andermann, 1998). Four groups

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<sup>1</sup> Complex visual hallucinations are hallucinations of formed objects (faces, people, animals or objects). They are contrasted with simple hallucinations of lines or dots, and panoramic hallucinations of landscapes (Cutting, 1997). They are generally easier to define than investigate, with clinical overlaps with a range of other visual phenomena including illusions, misperceptions, and agnosias.

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of disorders, eye disease, delirium, neurodegenerative disorders, and schizophrenia (including late life paraphrenia) are the commonest pathological associations, with rates varying five fold across these. With the exception of schizophrenia, these are all common disorders of late life. Thus, the greatest number of people with visual hallucinations is over the age of 65 (Paulson, 1997; Ostling & Skoog, 2002). There is marked individual variety in peoples' emotional reactions to these hallucinations, with about half being distressed (e.g. Diederich, Alesch, & Goetz, 2000). Understanding that these experiences are hallucinations, rather than genuine external phenomena, develops in about half of people with hallucinations, often over a period of time. Though the relationship of this understanding to emotional reactions has not been systematically researched, the first person accounts referred to above illustrated the development of a range of emotional reactions as interpretations of hallucinations change.

### Models of visual hallucinations

Table 1 summarizes the phenomenology of complex visual hallucinations. (These have been extensively reviewed by Asaad and Shapiro, 1986; Brasic, 1998; Collerton et al., in press; Kolmel, 1993; Manford & Andermann, 1998; Stoerig, 2001). Though evidence is inconclusive, on balance it suggests that the phenomenology of hallucinations is consistent between disorders (Collerton et al., in press; Lindal, Stefansson, & Stefansson, 1994). A number of biological models of the genesis of visual hallucinations have been developed

**Table 1.** Phenomenology of recurrent complex visual hallucinations  
(Adapted from Collerton et al., in press)

Who hallucinates?	<p>Eye disease: 15–18% of cases            Paraphrenia and schizophrenia: 38–43% of cases            Delirium: 28–38% of cases            Dementing and neurodegenerative illnesses: 20–60% of cases            Well people: 3% of the population on the borderlines of sleep            Rarer associations: alcohol, thalamic stroke, pontine stroke, narcolepsy, sensory deprivation, bereavement</p>
What is hallucinated?	<p>In order of frequency, people or faces (equal numbers of familiar and unfamiliar), animals, and objects. Faces may be characteristically distorted with prominent eyes and mouths            Uncontrollable            Appear life like            Normal or small sized            Usually animated but not moving in space</p>
Where are hallucinations seen?	<p>Usually in a restricted range of locations, commonly in one room of the house.            Superimposed on existing background            Occur in centre of visual field</p>
When are hallucinations seen?	<p>Often at times of low or high arousal, commonly at a consistent time of day.            Rapid onset and end            Lasts for minutes            No apparent trigger</p>

over the last 50 years from the perspectives of specific pathologies (for example, dream intrusion in neurodegenerative disorders, Arnulf et al., 2000; cortical irritation in epilepsy, Levine & Finklestein, 1982; cortical release in blindness, ffytche & Howard, 1999; excess of top down activation in psychosis, Grossberg, 2000; and interactive models, Barnes, Boubert, Harris, Lee, & David, 2003), though most struggle with accounting for the generalities of who hallucinates, what they hallucinate, and when and where they hallucinate. These models have focused on accounting for the regularities in hallucinatory experiences. There is little known about individual variations in these experiences (Taylor, Mancil, & Kramer, 1986), though there is preliminary evidence of predisposing cognitive impairments (Collerton et al., in press; Wesnes et al., 2001), cognitive factors (Morrison, Wells, & Nothard, 2002; Needham & Taylor, 2000), and traumatic experiences (Read, Agar, Argyle, & Aderhold, 2003) in some, but not all, people.

Recent years have witnessed something of a revolution in our understanding of auditory hallucinations, especially in conditions like schizophrenia (Bentall, 1990; Morrison, 1998; Chadwick & Birchwood, 1994; Slade & Bentall, 1988). In contrast, extensions of these to account for visual hallucinations (Slade & Bentall, 1988) are relatively undeveloped and do not take full account of the latter's distinctive phenomenology.

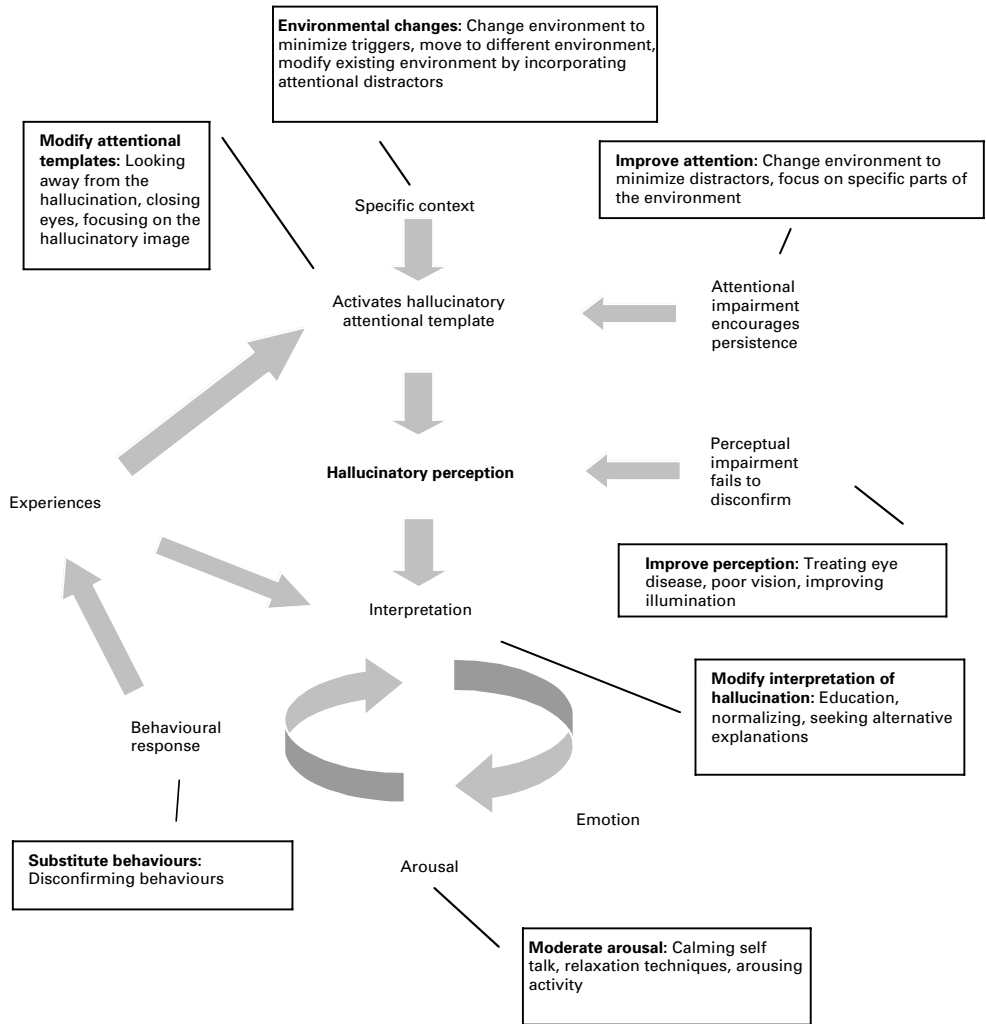
A recently developed model of visual hallucinations accounts for the regularities in hallucinatory experiences by postulating a combination of attentional and perceptual impairments that predict the risk of developing hallucinations, together with the role of attentional factors in influencing the content of hallucinations. These are underpinned by characteristic dysfunctions in specific cortical areas and neurochemical pathways (Collerton et al., in press). Thus, the rates of hallucinations across different disorders varies with the rates of the coexistence of these cognitive impairments, and the content of hallucinations reflects expectancies from the environments in which they are perceived.

#### *Emotional reactions to visual hallucinations*

This model is silent in its predictions as to what an individual's emotional reaction to hallucinations will be. However, incorporating it into a classic cognitive therapy framework allows this feature to be added (Figure 1). The content of hallucinations is generally prosaic with violent or disturbing images relatively rare (Pliskin et al., 1996; Teunisse, Craysberg, Hoefugels, Verboek, & Zitman, 1996; Zarroug, 1975). Thus, the cognitive appraisal of the experience is a key to understanding the emotional reaction.

In common with cognitive behavioural models of distressing auditory hallucinations (Morrison, 1998; Chadwick & Birchwood, 1994), and of obsessional concerns (Salkovskis, 1989), this model places the emotional reaction as an understandable consequence of the cognitive appraisal of unusual experiences, in this case the hallucinated image. It is not the presence of the hallucination per se but the appraisal of it that leads to distress. This appraisal may then form the keystone of a self-reinforcing cycle.

As an aside, it is important to note that visual hallucinations may also be incorporated into existing delusional beliefs or even lead to such beliefs (Maher, 1974, 1992), though there is little evidence that in themselves they necessarily lead to delusional explanations (Holroyd, Curry, & Wooten, 2001). Thus, delusions are more common in people who hallucinate and have a diagnosis of schizophrenia or dementia than with people with eye disease (Teunisse et al., 1996). It may be, however, that this reflects a selection bias; patients with dementia



**Figure 1.** CBT formulation of emotional distress associated with visual hallucinations with potential treatment options

or schizophrenia being more likely to come to clinical attention as a consequence of these delusions.

*Maintenance processes*

In common with existing CBT models of psychosis, once an appraisal has been made, reinforcing loops – behavioural, physiological, attentional, and environmental – may act to maintain and strengthen this cycle. A first, behavioural, loop may operate when the appraisal leads to actions that confirm that appraisal. For example, one patient interpreted

hallucinations of people with clipboards as reflecting covert surveillance by his university tutors. He shouted at these. This then led to attention from other passers-by, and ultimately the police, which he then interpreted as confirming his belief that he was under surveillance. Hence, his behaviour maintains the appraisal of being under surveillance, and via the attentional and arousal processes outlined below possibly increases the chance of future hallucinations.

Conversely, behaviour may serve to prevent disconfirmation of the appraisal via the use of safety behaviours and avoidance (Salkovskis, 1991). People may make active attempts to control the visual experience or to prevent exposure to it. A common means of controlling hallucinations is to look away from the image or to close eyes. This may prevent close enough attention being paid to the hallucination to modify the attribution. Moreover, if as is a common fear, the person is concerned that the experience is a sign of something wrong with them, such as going mad, they may not report their experiences and hence prevent the opportunity to reality test their experiences.

Secondly, the nature of vision is that subjective perception is heavily influenced by attentional expectancies. Current understandings suggest that the subjective experience of a whole visual scene is an illusion resulting from the interaction of an abstract conceptual representation (a scene specific attentional template or perceptual schema) with visual stimuli (Henderson & Hollingworth, 1999). Environmental features and hallucinatory images can be incorporated into templates leading to recurrent, situation-specific hallucinations (Collerton et al., in press). Thus, the more often a hallucination occurs, the more it becomes an expected part of that specific environment, and hence the more frequently it recurs. As a consequence, hallucinations may tend to occur in a specific location at specific times, and have a recurring theme. As an instance, one patient saw the figure of his granddaughter appear from the cereal box each breakfast time. This is strikingly similar to the findings that people with auditory hallucinations are influenced by expectancies (Bentall, 1990). As we illustrate later, it may also be that people make specific changes to the environment that then act as cues for further hallucinations.

A third reinforcing loop may occur in that emotional arousal interacts with attention such that exceptionally high or low levels of arousal impair attention (Fenelon, Mahieux, Huon, & Zeigler, 2000; Lalla & Primeau, 1993). This may interact with circumstances that may lead to low emotional arousal such as social isolation and sensory deprivation (Flynn, 1962; Heron, Doane, & Scott, 1956). Conversely, periods of high arousal are also associated with increased experiences of verbal and visual experiences (Manford & Andermann, 1998) with periods of acute stress and prolonged arousal possibly leading to hallucinations. For instance, when describing his pursuit over several days in the Iraq desert, the SAS soldier, Chris Ryan (1995) reported seeing his daughter walking in the desert in front of him. Hence, it would seem that both low or high arousal might affect the experience of hallucinations. As a clinical example, one patient hallucinated water on the floor of his room from waking till he went for breakfast. This was a time of low activity and arousal; encouraging him to be more active reduced the incidence of hallucinations.

### **Clinical implications**

#### *Targets for therapeutic intervention*

The primary target for psychological treatment in people who have visual hallucinations is not the hallucinations themselves, but the persons's appraisals of these and consequent emotions

and behaviours. This might also theoretically indirectly reduce the incidence of hallucinations by breaking reinforcing loops, although this needs empirical testing. It is worth bearing in mind that the great majority of people successfully keep their hallucinatory experiences to themselves, and of those who do disclose their experiences, only half are distressed. This suggests that, in themselves, hallucinations need not be disabling. Both medication (e.g. Batra, Bartels, & Wormstall, 1997; Bullock & Cameron, 2002) and environmental changes (Diederich, Pieri, & Goetz, 2003) can reduce the frequency of hallucinations. However, in light of the demands of environmental manipulations and the potential of disabling side effects of medication, non-distressing hallucinations are rarely treated (McKeith et al., 2003; Zesiewicz, Barker, Dunne, & Hauser, 2001). Given the limited evidence for the success of these available treatments (Taylor et al., 1986), there is a need for more effective therapies, a need that cognitive-behavioural treatments may contribute to meeting.

### *Assessment and formulation*

A cognitive-behavioural formulation of visual hallucinations informs two areas of clinical practice: assessment and treatment. In assessment, it is important to identify three specific aspects of the experience. As with working with other hallucinatory experiences, assessment should include the phenomenology of the experience, beliefs about the phenomena, and emotional and behavioural responses to these.

In terms of the phenomenology, it is important to elicit the features of the experience such as the frequency, duration, vividness, and clarity, and whether there are specific times or locations associated with visual hallucinations. As described later, this information can be used to apply specific interventions.

Key questions to elicit appraisals include: What are the beliefs about the image? Who is it or what is it meant to be? For what reason does the person perceive it, but others do not? These questions may reveal beliefs about the experience that are relevant to understanding the distress. We have found that people are usually able to explain why they have particular emotions in reaction to their hallucinations. There is often an understandable link to past experiences or cultural attitudes. As an example, a patient hallucinated dogs, a fairly common type of hallucination. As a child he had spent 20 minutes hanging precariously on to a lamppost as a dog jumped up trying, as he thought, to bite him. He had been frightened of dogs ever since, and became extremely distressed whenever he hallucinated one. Symbolic references to early experiences, though seen, are rare (Taylor, Mancil, & Kramer, 1986).

### *Treatment*

This assessment framework also suggests a number of possible avenues for therapeutic interventions analogous to those used to treat distressing auditory hallucinations, together with a systematic approach to therapy (Figure 1). However, the evidence, as yet, as to the effectiveness of this varies from preliminary to absent. Broadly, psychological approaches that focus on education, cognitive reappraisal, and hallucination control would be expected to reduce emotional distress when hallucinations occur. These may be complemented by environmental changes and medication that may reduce the frequency of hallucinations.

### *Hallucination control techniques*

Careful assessment of the experience of the visual experience may reveal consistent triggers such as low levels of lighting, specific times of day, or events that frequently precede and are associated with these experiences. Appropriate environmental interventions, such as improved lighting, may serve to reduce the frequency of such experiences. Patients have often spontaneously discovered means of controlling their hallucinations (Cole, 1999; Diederich, Alesch, & Goetz, 2003). These may be used systematically both to curtail hallucinations as they occur and to test alternative explanations for patients' experiences (see below on reappraisal). These have parallels in the strategies used by people with auditory hallucinations, such as engaging in social conversations, or turning up the radio (Falloon & Talbot, 1981). Tarrier and colleagues (Tarrier, Harwood, Yusopoff, Beckett, & Baker, 1990) have successfully demonstrated how people with voices can be taught to increase the repertoire or efficiency of such strategies to reduce voice hearing. A similar process may be possible with people with visual hallucinations.

### *Content*

Where content is perceived as distressing for people with auditory hallucinations, there is sometimes value in considering the experience as one would a negative automatic thought (Morrison & Renton, 2001). For instance, the person can learn to question the truth of what the voice is saying. Similarly, when people with visual experiences in psychosis report distressing content, attempts can be made to address this by imagery rescripting (Callcott & Turkington, 2002), or exposure to the negative content until habituation occurs.

However, here the difference with visual hallucinations in older adults appears more obvious. Often such approaches do not lend themselves well to working with these presentations. The apparent links between a person's own traumatic experiences and the content of the visual experiences may be less evident, and even where there is such a link, other interventions may work more effectively. Hence, there is typically more emphasis on control and reappraisal strategies.

### *Education*

There is a consensus that education as to the nature and causes of visual hallucinations is generally beneficial, and an essential part of engaging the patient in therapy (Taylor et al., 1986). This may be sufficient in itself. Hugh Trevor-Roper gives a good account of the relief that he felt when his visual hallucinations were labelled as Charles Bonnet syndrome, and many patients share this.

There is information on visual hallucinations in mental illness available from Mind ([www.mind.org.uk](http://www.mind.org.uk)), in eye disease from the Royal National Institute for the Blind ([www.rnib.org.uk](http://www.rnib.org.uk)), and, in dementia, from the Alzheimer's Society ([www.alzheimers.org.uk](http://www.alzheimers.org.uk)).

The provision of information about visual hallucinations should be undertaken in a similar manner to the way it is used with people with auditory hallucinations. Kingdon and Turkington (1994) emphasized the use of information to normalize the experience of auditory hallucinations. Information is provided on the prevalence of voices in non-psychiatric groups and in people in unusual situations, be it sensory deprivation, sleep deprivation or in times of extreme stress. The purpose of this information is to illustrate that it is possible to hear voices and

not be considered to be mad or to have psychosis. This information is often incorporated into a stress vulnerability model to help account for the onset of such experiences (Nuechterlein & Dawson, 1984). This is a way of helping decatastrophize the experience of hearing a voice. It also provides an alternative, and less distressing, explanation of the experience, which is a valuable step prior to the process of cognitive reappraisal. We would encourage the use of similar education with people with visual hallucinations.

### *Cognitive reappraisal*

As with working with voices, beliefs about the experience are important in understanding the emotional reaction to it and subsequent maintenance factors. In essence, to produce change in appraisals, we need to help people arrive at an alternative and less distressing belief about the experience. This can be achieved via education about hallucinations followed by tests of this alternative and the original explanation, using cognitive and behavioural techniques. As an example, patients can test predictions as to the effects of closing their eyes on hallucinations or ghosts, or look at the role of changing levels of lighting on the occurrence of hallucinations. The results of such experiments provide an opportunity to test both the original belief and the alternative normalized explanation.

Provision of less distressing alternative explanations is important in decatastrophizing the appraisals made. However, it is important to generate a meaningful, acceptable, and less distressing explanation for the experience. Clearly, when considering the provision of education about visual hallucinations, we need to be cautious about normalizing these experiences in the context of a diagnosis that may carry equally negative connotations for the person. Letting someone know that they are experiencing hallucinations because they have a dementing illness may be as upsetting as the previous appraisal. This is analogous to the finding that explanations of hearing voices as being due to schizophrenia are often viewed in a negative light and may lead to increased distress (Morrison, 1998).

It is possible that addressing the hallucination experience via the provision of education, increasing control strategies, and addressing arousal and attention process will be sufficient in itself. However, working with delusional interpretations may require the use of techniques derived from work with people with psychosis (Chadwick, Birchwood, & Trower, 1996; Kingdon & Turkington, 1994).

### *Restrictions on clinical use of these techniques*

The illnesses most commonly associated with visual hallucinations in older people, dementia, delirium, and eye disease, may place limitations on the effectiveness or applicability of approaches to the individual who is hallucinating, although they may help carers understand and manage the patient more effectively. The effect of these illnesses is difficult to predict in the individual case, and the only reliable method is trial and error.

### **Clinical example**

Mrs A is an 82-year-old widow who lives alone. She has no previous history of psychological problems, but has been troubled for the last 2 years by nighttime hallucinations of a skeletal



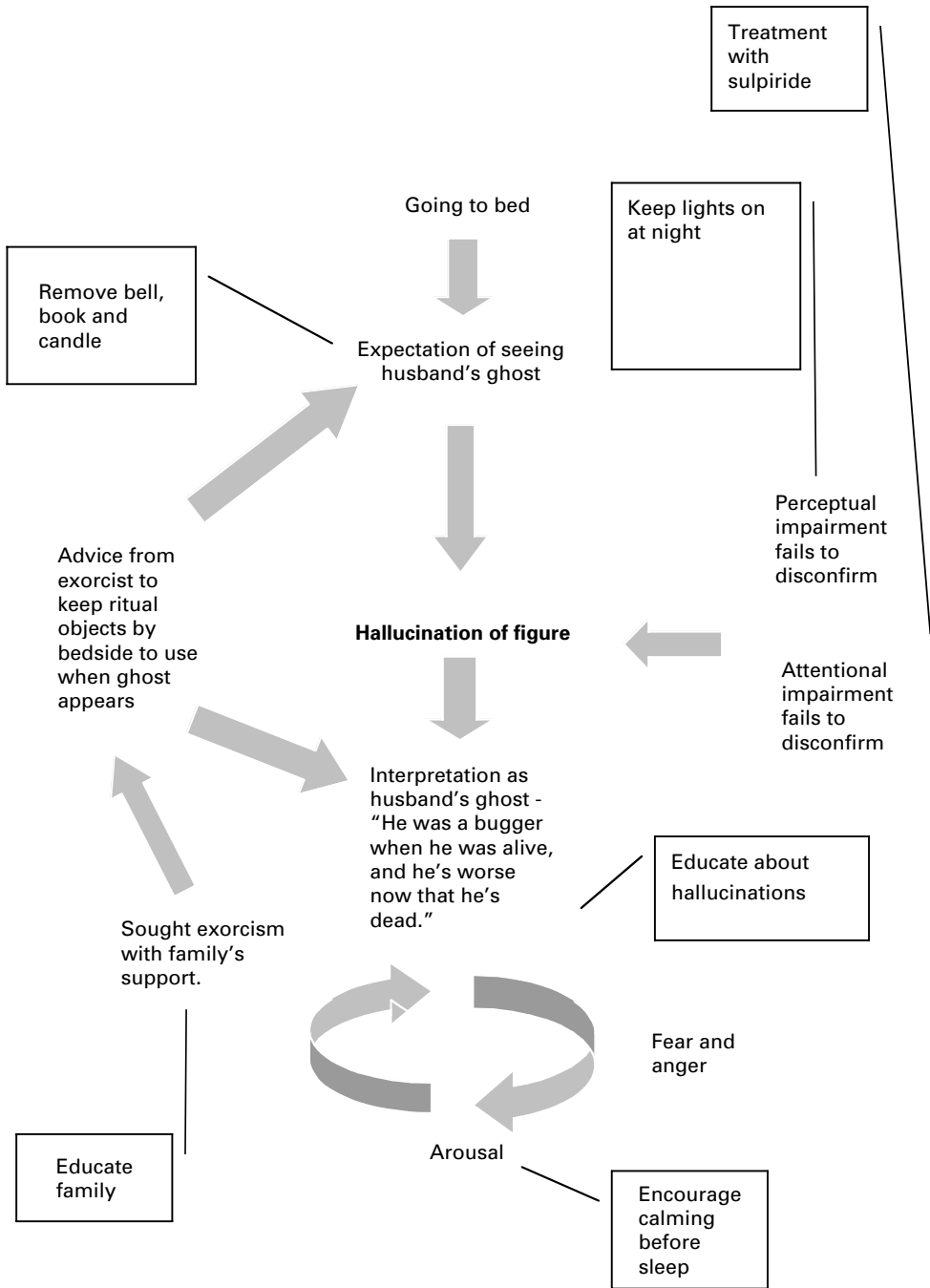


Figure 2. Case example

figure that she interpreted as the ghost of her dead husband. She found these terrifying not only in appearance, but also in intent since he had abused her while alive. Because of this, she sought exorcism for his ghost. With the support of her family, she sought advice from the diocesan exorcist who, not unnaturally, reinforced this interpretation and when she was first referred, she was sleeping with the tools of exorcism, a bell, bible and candle at her bedside although without either the ghost being exorcised or feeling reassured. She had a full medical, psychiatric and psychological assessment, and received a diagnosis of Dementia with Lewy bodies.

This case, though atypical in the content of the hallucination, simultaneously illustrates a number of potential factors. There was no opportunity for reality testing of her hallucinations when they occurred since she lived alone. They occurred at times of low illumination and arousal, and they were associated with psychological trauma. Furthermore, she had acted in accord with her appraisal that it was a ghost and the exorcist reinforced this. The provision of a bell, bible and candle also served as safety behaviours as, to her mind, they prevented the ghost from harming her further. Thus, her continuing safety did not disconfirm her appraisal that she was seeing her husband's malevolent ghost.

These factors were formulated as in Figure 2. From this formulation, a number of interventions were combined. These are noted in the call outs. These interventions included sulphiride (antipsychotic medication to reduce her arousal and possibly directly moderate her hallucinations), education of Mrs A and her family about her diagnosis and hallucinations to allow reappraisal, removal by them of reminders of her husband and the exorcism paraphernalia from the bedroom, and improving lighting in the house. These latter were to modify maintaining loops. This combination reduced and then eliminated her hallucinations over a 2-month period with a consequent reduction in her distress. She was discharged after 6 months.

### Conclusions

This is a challenging and rewarding area to develop further. Our model is at an early stage. It provides an explanatory framework, but needs both its assumptions to be tested and its therapeutic utility assessed. Whilst the literature on psychological models in psychosis in younger people is rich with theoretical and clinical material, it is apparent that these need developing to account for visual experiences, particularly in older adults. However, integrating this literature with the distinctive phenomenology of visual hallucinations and their associated symptoms in older people has the potential to deliver significant clinical benefits.

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