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Cognitive-Behavioral Therapy

van der Gaag, M.

published in

Hallucinations: Research and Practice
2012

DOI (link to publisher)

[10.1007/978-1-4614-0959-5_26](https://doi.org/10.1007/978-1-4614-0959-5_26)

[Link to publication in VU Research Portal](#)

citation for published version (APA)

van der Gaag, M. (2012). Cognitive-Behavioral Therapy. In J. D. Blom, & I. E. C. Sommer (Eds.), *Hallucinations: Research and Practice* (pp. 361-374). Springer Science+Business Media, LLC. https://doi.org/10.1007/978-1-4614-0959-5_26

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Chapter 26

Cognitive-Behavioral Therapy

Mark van der Gaag

26.1 Appraisal Is the Foundation of the Cognitive Model of Hallucinations

Medication is the treatment of choice for many types of hallucination, but a lack of results – due to noncompliance and the persistence of residual symptoms, for example – has led researchers to develop various ancillary treatment forms (Pantelis and Barnes 1996). Two decades ago, psychological research focused primarily on coping strategies. But although many patients do apply self-developed coping strategies, they tend to lose confidence in their efficacy over time, while patients with a long history of voice hearing do not always appear to select the most effective coping strategies (Carter et al. 1996; Farhall et al. 2007).

Cognitive-behavioral therapy (CBT) advocates a wholly different approach. In the context of the traditional medical model, which also infused the coping model, the primary variable to be treated is the symptom of disease (e.g., “hallucination”) rather than the patient’s depression, anxiety, or dysfunctional behavior, which are all considered *secondary* to the hallucinations at hand and only amenable to treatment when the hallucinations themselves are being treated. The cognitive model differs from more conservative variants of the medical model in that its primary goal is not the eradication of the primary symptoms per se but the reduction of distress and dysfunctional behavior. After all, symptoms only become “real” symptoms (as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and other psychiatric classifications) when they cause distress and/or dysfunctional behavior. However, within the context of the cognitive model, it is not so much the symptom itself that is held responsible for causing any distress or dysfunctional behavior but the patient’s appraisal of that symptom (Birchwood and Trower 2006b).

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Auditory hallucinations, for example, do not always occur in the context of disease (see Chap. 28). Actually, most people who hear voices lead perfectly normal lives and do not tend to seek any kind of treatment for them. Only when voices are appraised in a catastrophical way they are bound to cause depression, anxiety, social isolation, and so on (Honig et al. 1998; Lawrence et al. 2010). Those who are indifferent to their hallucinations, and live their lives the way they did before, will seldom become psychiatric patients. Those who do become patients are those who appraise their voices in a malevolent way and endow the latter with so much power that they develop a passive and submissive attitude (Mawson et al. 2010). For that reason, CBT for auditory hallucinations focuses on the ways in which voices are being appraised, and aims at a reduction of distress and dysfunctional behavior, even if the hallucinations themselves continue to be experienced.

26.2 Psychological Models for Hallucinosi

In recent years, various psychological models for hallucinations have been developed. Some of the earlier models were based on evidence – obtained from a number of highly intriguing studies – that the mediation of verbal auditory hallucinations may depend on subvocal speech. That finding set the stage for the subsequent neuroimaging of speech-related versus hallucination-related activity in the brain, the investigation of psychological processes underlying speech and hallucinations, and the investigation of the content, appraisal, and metacognitive aspects of auditory hallucinations. All those research avenues yielded valuable new data, but an integration into a unitary model has not yet been achieved, and to date many of the phenomena under study have remained unexplained. All in all, the psychological model of hallucinosis is still tentative and “under construction.” And yet it boasts sufficient clinically relevant data to justify the application of cognitive-behavioral interventions, the efficacy and effectiveness of which are small to medium-sized, but stable (NICE 2009).

26.2.1 The Origin of Verbal Auditory Hallucinations

26.2.1.1 Inner Speech and Self-Monitoring Failure

A study of “tension in the throat” showed that automatic speech (or “inner speech”) may well underlie the mediation of verbal auditory hallucinations (Gould 1948). Gould used an electromyograph with leads on the lower lip and chin to examine 100 patients diagnosed with schizophrenia. In that study, a hallucinating subgroup of 48 patients showed an increased tension in the muscles of the lip and chin in 83% of

the cases, whereas the nonhallucinating group showed such tension in only 10% of the cases. The author therefore concluded that verbal auditory hallucinations are associated with an involuntary intensification of the psychomotor mechanisms of speech. Another study found similar changes in activity in the tongue and the chin, as well as changes in the patients' breathing amplitude, but no changes in the tension of their arm musculature (McGuigan 1966).

In the years following this pioneering work, many small intervention studies were carried out. Most of them were multiple-baseline studies comparing multiple-treatment conditions with multiple returns to baseline within series of hallucinating patients (Corrigan and Storzbach 1993). Those studies yielded some evidence for the effectiveness of systematic desensitization, operant conditioning (using reward and punishment), the voluntary use of the vocal cords (through humming and gargling), social conversation (which appeared to be incompatible with ongoing hallucinatory experiences), and the manipulation of auditory input by means of earplugs or loud music (see also Chaps. 11 and 28). Favorable short-term effects were recorded for all those interventions, but randomized controlled trials (RCTs) of sufficient power were never performed.

The concept of inner speech continues to play an important role in the cognitive-behavioral model of hallucinations, even though it fails to explain the occurrence of voices in the second or third person or the simultaneous occurrence of multiple voices. To account for the latter phenomena, the model now proposes that hallucinations may arise when the self-monitoring of inner speech is failing. The hearing of external voices and the awareness of one's own verbal thoughts both depend on activity in Wernicke's speech perception area. Wernicke's area "knows" the difference between the two because a corollary discharge feed-forward mechanism "tells" it that thoughts are on their way (Ford and Mathalon 2005). When Broca's speech production area "translates" a thought into a train of words and then sends them off to Wernicke's area, a collateral message is sent to that monitor to allow for its identification as "inner speech." When that monitor fails to inform Wernicke's area, the latter will "conclude" that the words must have an external origin (see also Chap. 21).

26.2.1.2 Intrusions from Traumatic Memories

And yet not all types of auditory hallucination appear to be associated with inner speech. Some individuals experience voices that are clearly related to earlier traumatic experiences. Such voices tend to constitute reexperienced verbal messages, conveyed priorly by people involved in the traumatic situation (Jones 2010). They can perhaps be conceptualized best as intrusions of traumatic memories (or "reperceptive hallucinations"). In contrast, voices attributed to inner speech tend to be involved with the planning and execution of one's present actions. They usually tell the percipients what to do next or threaten him with aversive consequences when he refuses to obey (Jones 2010).

26.2.2 *Psychological Processes*

26.2.2.1 Source Monitoring

Heilbrun found that 12 psychiatric patients with a history of hallucinations turned out to be insufficiently capable of identifying the words, meaning, and grammatical style of their own spoken sentences following a 1-week lapse of time, as compared to eight nonhallucinating psychiatric patients. Incidentally, the two groups did not differ with regard to their ability to remember verbal material, the stability of their opinions, or the level of their communication skills (Heilbrun 1980). A meta-analysis of 23 studies carried out over the past 30 years confirmed that individuals diagnosed with schizophrenia who are prone to hallucinations tend to attribute self-generated thoughts and utterances to other people (Waters and Badcock 2010). That cognitive bias tends to increase when their attention is directed to the self, and/or when strong emotions are aroused. It has been suggested that this source-monitoring bias may also be a source of verbal auditory hallucinations. However, a drawback of this model is that it does not explain why voices are actually *heard*. It would seem to explain experiences of thought insertion or “indirect Gedankenlautwerden” rather than the occurrence of hallucinations. The bias itself appears to be endophenotypic, as it has also been found during prodromal states and episodes of remission, as well as in siblings of patients diagnosed with schizophrenia (Brunelin et al. 2007).

26.2.2.2 Appraisal

Because verbal auditory hallucinations may differ from the percipient’s “inner voice” and the utterances often convey specific themes that are coherent over time (Nayani and David 1996), voice hearers easily appraise them as coming from a different person or agent. When the voices are also appraised as omnipotent or omniscient and the percipient becomes convinced that they have malevolent intentions, anxiety is bound to set in. Once anxious, voice hearers often start to deal with the voices by making promises to them and by obeying their orders and commands (Birchwood and Chadwick 1997). The association between such appraisals and the severity of verbal auditory hallucinations has been repeatedly confirmed (Mawson et al. 2010). And yet changing those appraisals does not always lead to a reduction of the severity of the hallucinations at hand. In order to attain that goal, interpersonal aspects and self-esteem need to be addressed as well (Mawson et al. 2010).

26.2.2.3 Interpersonal Aspects

The relational aspects of hallucinations were noticed many years ago. In hospitalized patients, for example, who may experience extreme hallucinations, therapists found it hard to relate to the patient at all (Erickson and Gustafson 1968). The average

therapist is available for no more than an hour per week, whereas in such cases, the voices may be present 24×7. Many patients do not feel free to discuss their voices because they appear to be listening – and speaking – all the time. That relational inequality was examined for the first time by Gilbert and Birchwood (2001), who demonstrated that the presence of powerful voices tends to correlate positively with subordinate behavior (including flight-or-fight reactions) and depression. They also found that the concomitant tendency to consider oneself as low-ranking in a hierarchy does not only characterize the relationship with the voices, but all of the patients' social relationships (Birchwood et al. 2000; Gilbert et al. 2001). Moreover, their research showed that this perceived low-ranking position is not due to depression, distress, or the power with which the voices are endowed. Nor do the voices themselves lead to depression, or the appraisal of power to the occurrence of voices. Instead, the authors found that the distorted perception of one's own social rank and power leads up to the appraisal that the voices are powerful, and also to distress and depression (Birchwood et al. 2004).

Self-criticizing thoughts occurring in the context of depression appear to have a role similar to that of voices in psychosis: they serve to punish the patient. In either case, the patients' own attempts to stop them tend to be futile. Gilbert (2009) developed a therapy based on the two-chair technique borrowed from Gestalt therapy, and combined it with evolutionary thoughts on the “soothing system” of social mammals. In young mammals, the “threat system” needs to be inactivated by a caring parent to allow for a normal development. Only when sufficiently caressed and comforted will the young mammal feel capable of exploring the world. By repeatedly experiencing safety and soothing, that feeling can be internalized, and the adult thus treated is able to sooth himself to overcome any inappropriate anxieties and feelings of threat. In patients who experience hallucinations, the threat system tends to be permanently active due to the presence of threatening voices. Gilbert's method consists of introducing the patient to thinking about what a caring and soothing voice might say. Thus, the patient may gradually learn to rely on the trustworthy, soothing “voices” and to escape the terror caused by the threatening ones (Gilbert 2009).

Two other interpersonal aspects are shame and stigmatization. Shame for being psychotic, and attempts to hide from others that one may in fact be different (or that one is using medication, etc.) tend to lead to a heightened self-awareness and social phobia anticipating the possible rejection by others (Birchwood et al. 2007).

26.2.2.4 Self-esteem and Depression

Low self-esteem plays a pivotal role in the continuation of hallucinatory experiences. Patients with low self-esteem also tend to be more severely depressed and to experience verbal auditory hallucinations with a higher degree of severity and associated distress (Smith et al. 2006). Beliefs about the omnipotence and malevolent intentions of voices, as well as low self-esteem, contribute independently to feelings of depression in patients experiencing persistent verbal auditory hallucinations (Fannon et al. 2009). Fannon et al. also conclude that low self-esteem is crucial to

Fig. 26.1 The psychological model of verbal auditory hallucinations

our understanding of any affective disturbances that may occur in voice hearers and that therapeutic interventions therefore need to address the way the voices *and* the self are being appraised.

26.2.3 Conclusions Based on the Psychological Model

Although the psychological model of auditory hallucinations (see Fig. 26.1) is far from complete and leaves many aspects of their mediation unexplained, it has certainly aided to increase our insights into these phenomena. First of all, we have learned that the propensity to hear voices is distributed continuously in the general population (Van Os et al. 2010). Secondly, we now have two basic explanatory models at our disposal (the inner speech model and the self-monitoring model), whereas a third model (i.e., the reperception model) suits those cases where intrusive traumatic memories are reexperienced in the form of hallucinations. In the third place, we now know that hallucinations tend to lead to distress when they are being appraised as powerful, as having an external source, and as having malevolent intentions, whereas low self-esteem contributes independently to the severity of verbal auditory hallucinations and of depression. In the fourth place, we now know that anxiety tends to lead to submissiveness to the voices, as well as to a tendency to obey and appease them, while depression often entails feelings of defeat and surrender. Fifth, we have learned that feelings of shame and stigmatization may entail severe

anxiety, a social phobia-like self-awareness, and attempts to avoid exposure to other people and their judgments. Sixth and finally, we have learned that those behavioral responses tend to lead to a consolidation of the appraisals and to the inability to experience any emotionally corrective experiences.

26.3 Cognitive-Behavioral Therapy

CBT targets the ways in which events are being appraised. It puts the appraisals in perspective through a collaborative approach in which other possible explanations for the events in question are considered together with the patient and in which any concomitant feelings and behavioral reactions are extrapolated when they are considered valid. To find out which type of appraisal may suit an event best, the patient is challenged to carry out behavioral experiments and to experience the adequacy or inadequacy of different approaches. The cognitive aspect of CBT involves the guided discovery of alternative explanations and alternative reactions. The behavioral part involves the testing of alternative ways to deal with particular situations and attempts to change one's feelings about them. The discovery that catastrophes fail to occur, e.g., that resisting the voices' commands does not lead to any kind of punishment, is a powerful way to diminish distress.

26.3.1 Education and Normalization

In addition, CBT for hallucinations has various normalizing and educational aspects. Many patients already feel better when they hear that each and every year, about 2% of the population start to experience hallucinations, and that at any given moment some 4% of the population are experiencing them (Van Os et al. 2010). It is also highly educational to tell patients that most of those people are not bothered very much by their voices, that they continue to live the way they did before, and that people with severely threatening voices can learn to ignore them and to continue with the things that make their lives worth living and meaningful.

When patients express the wish to learn something about their voices and the way they are mediated, it may be helpful to tell them about the sensitization of the dopamine system which gives rise to intrusions and hallucinations, but also makes them jump to conclusions, and renders them overly confident about those conclusions. One may also consider explaining that voices have a certain tendency to make people anxious or angry, i.e., that they "thrive" or "feed" on anxious and angry feelings. Patients may well have noticed that strong emotions make the voices louder and more persistent. Therefore, they tend to acknowledge that it is good advice to try to stay calm whatever the circumstances and to imagine that a "game" is being played where the one who shows any strong emotions will lose.

26.3.2 *Challenging the Way Voices Are Appraised*

Appraisals that tend to aggravate the severity of hallucinatory experiences are those that exaggerate their power, characterize them as omnipotent and omniscient, place their source in the external world, endow them with malevolent intentions, and make believe that they can actually do harm.

26.3.2.1 Power

Threatening voices and command hallucinations can pose a danger to the patient and his environment. Many patients are bent on resisting any dangerous and aggressive commands they may hear and on trying to appease their voices without letting themselves be lured into dangerous or aggressive behavior. But not all patients are able to resist their voices. The risk that they will comply with command hallucinations can be reduced by changing the patients' beliefs about the voices' power (Birchwood and Trower 2006a; Trower et al. 2004). Trower and colleagues tested the effectiveness of cognitive therapy in command hallucinations by randomizing 38 patients who had recently complied with their voices' commands and had suffered the consequences. The control condition was treatment-as-usual, and the patients were followed up after 6 and 12 months. In the cognitive therapy group, the authors found large and significant reductions in compliant behavior, with an effect size of 1.1. Improvements were also recorded in the patient group (but not in the control group) as regards the power attributed to the voices, the perceived need to comply, and the levels of concomitant distress and depression. No changes in the frequency, loudness, and content of the voices were recorded. The differences were still significant after 12 months of follow-up.

Beliefs about omniscience and omnipotence can be challenged with the aid of behavioral experiments. "Are those omniscient voices able to predict the headlines of tomorrow's newspaper?" "Do they possess knowledge that you do not already possess yourself?" "Is it possible to verify their knowledge?" Answers to questions such as these can be very revealing. The same method is applicable to beliefs about the voices' alleged omnipotence. Sometimes a shortcut can be taken by telling the patient that you yourself, as a therapist, have dealt with dozens of threatening voices, and that they are all mouth but no trousers. An alternative, and perhaps more elegant, way is to encourage the patient to look for examples of what happened when he refused to do what the voices commanded him to. He may then become aware that he has in fact experienced many occasions in which his refusal to obey failed to have any consequences.

Another elegant way is to draw the voices. Being unable to act, they do not have any arms or legs. Being only capable of seeing what the patient sees, they probably have no eyes of their own. Being reluctant to listen to the patient's pleas, they may well have no ears either. One ends up with the cartoon of a smiley, having nothing but a mouth that is solely capable of repeating the same old stuff over and over again.

26.3.2.2 External Hallucinations Versus Intrusions

A problem with external voices is that they do not consist of any actual sounds. If so, anyone would be able to hear them, which is obviously not the case. When the patient believes that he has a natural radio receiver inside his head – which is of course highly improbable – then one might suggest that it should be possible to disrupt the radio waves received by his brain. A cap made of aluminum foil (also known as a cage of Faraday) is sometimes used by physicists to create an anechoic space. Such a device prevents electrical fields to enter from the outside and vice versa, thus reducing the power of high-frequency radiation with 120 dB. Elaborating on that line of thought, myriad behavioral experiments can be thought of to test the patient's hypotheses and to challenge his beliefs about the alleged radio receiver.

26.3.2.3 Identity, Goals, and Meaning

Voices are there for a reason. What do they want to accomplish? Do they want to punish the patient? And if so, why? To destroy the patient? And do they have any reason to want this?

26.3.3 Challenging the Content of Voices

Voices can say many different things. Some of them constantly humiliate the patient by telling him that he is a loser, that nobody cares for him, that he is incompetent, or that he would be better off dead. Is all that true? Did the patient never gain anything? Has there never been anyone who cared for him? By exploring the voices' contents, many of the classical CBT questions can be put forth: Is it true what the voices say? And if it is true, is that something to worry about? And if it is something to worry about, is there a way to cope with it and preserve one's quality of life?

26.3.4 Changing the Patient's Attitude Toward His Voices and His Safety Behaviors

When it is possible to raise some doubt, it is time to encourage various behavioral changes. The patient might consider to limit the time spent with his voices, to pick up the routines of daily life, and to regain important social roles that lend meaning and fulfillment to his life. Also, safety behaviors must be broken down in order to accomplish the experience that any anticipated disastrous consequences fail to happen.

26.3.5 The Effects of CBT for Hallucinations

The effect sizes of CBT for voices are varying. The first report of CBT in psychosis was published some 60 years ago (Beck 1952). Structural research into the efficacy of CBT for this condition started about two decades ago in the UK, and in 2003, the results of meta-analyses entailed a recommendation for CBT in the psychosis guidelines of the National Institute of Clinical Excellence and in those of many other countries. In meta-analyses of trials with general CBT for psychotic symptoms in general, the effect sizes vary from small to medium-sized (NICE 2009), whereas trials with CBT for command hallucinations and other specific targets tend to show larger effect sizes (Trower et al. 2004). As the number of RCTs in those meta-analyses is large and the findings are robust, CBT for hallucinations is now accepted as an evidence-based treatment for hallucinations as well as for psychosis in general.

26.4 New Developments

CBT has always focused on the contents of thoughts and on thinking styles. Recently, the focus has shifted to issues such as interpersonal relations, loss and trauma, self-esteem, acceptance, metacognitive processes, and cognitive biases. There is a growing trend to work with schemas, emotion regulation, interpersonal relationships, and a more accepting relationship with one's thoughts and one's self.

26.4.1 Competitive Memory Training

Competitive memory training (COMET) is based on the notion that a therapy is successful when it succeeds to change the hierarchy of relevant neural networks and the order in which they are activated (Brewin 2006). In depression, it is quite easy to activate depressing thoughts and memories (i.e., mood-induced memories), to ruminate on them, and to induce feelings of defeat and entrapment. A successful treatment reinforces the neural networks that are incompatible with so-called negative networks. When instead “positive” networks are activated over and over again, they may well move up in the hierarchy of networks and come to surpass the negative ones. COMET teaches to reexperience personal memories that are incompatible with the dominant voices' messages. For instance, when the voices go on about a person's alleged incompetence, then the advice is to reexperience a memory of earlier competent behavior (e.g., scoring a winning goal) and to practice reexperiencing that memory five times a day. During the second stage of treatment, the positive and negative networks are activated in tandem. While reenjoying the winning goal, the patient is requested to “turn off” the audience's imagined cheering and to imagine the voices telling him again that he is a loser while he continues to enjoy the feelings of joy and pride associated with the winning goal. Most patients are able to accomplish

that within a single session, and many of them report to then be able to tolerate the voices without being overcome by depressive feelings. During the third stage of treatment, patients are taught to distance themselves from the voices by “zooming out” – by turning the voices’ volume down or by “watching” them from the last row in a theater with an attitude and posture that expresses boredom. COMET is a transdiagnostic technique that has proved to be effective for such varying conditions as eating disorders, panic disorder, and personality disorders. Applied to hallucinations, COMET primarily reduces depression. That effect is accomplished by the reduction of power attribution, the improvement of self-esteem, the acceptance of the voices, as well as a less submissive attitude (Van der Gaag et al. 2010).

26.4.2 Metacognitive Training

Metacognitive training (MCT) is based on scientific evidence regarding cognitive biases in psychosis and designed to teach patients to be aware of those biases and to prudently work around them (Moritz and Woodward 2007). The biases involved are working toward conclusions, attribution biases, problems with theory of mind, and biases against disconfirmatory evidence. The training consists of two blocks of eight sessions each, in which different issues are addressed in parallel. A small – and unfortunately underpowered – study found small to medium-sized effect sizes that were statistically nonsignificant but favored MCT above staying on a waiting list (Aghotor et al. 2010).

26.4.3 Mindfulness Training

Detached mindfulness has multiple components, requiring the activation of metacognitive knowledge, metacognitive monitoring and control, the suspension of conceptual processing, attentional flexibility, and a decentered relationship with one’s own thoughts (Wells 2005). Those cognitive skills can be of aid to put hallucinations in perspective. The field is only just developing, and there are a small number of case studies as well as a single – underpowered – controlled feasibility study that found nonsignificant changes favoring the mindfulness condition over staying on a waiting list (Chadwick et al. 2009).

26.4.4 Compassionate Mind Training

Compassionate mind training (CMT) targets shame and self-criticism, as well as the ensuing submissiveness and negative affect. With the aid of the two-chair technique, a criticizing voice (or “inner bully”) is interviewed, and the criticisms are compared

with the patient's personal needs and distresses. The patient is then encouraged to reply to himself with warmth and compassion rather than with criticism. Case series reports are promising (Mayhew and Gilbert 2008), and an RCT is underway.

26.5 Concluding Remarks

Cognitive-behavioral therapy has a well-established track record that proves its efficacy, effectiveness, and cost-effectiveness for verbal auditory hallucinations. The effect sizes are small to medium-sized and in need of further improvement. The work that is currently going on is aimed at the further development of the cognitive model of hallucinations, which will hopefully allow for more targeted interventions to be developed and tested. Recently, a number of techniques have been developed that do not primarily focus on the content of thoughts and thinking styles but rather on emotional processing and the acceptance of persistent symptoms by finding a decentered perspective that gives room for recommitting to valuable personal goals and social roles in the community.

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