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The Characteristic Features of Auditory Verbal Hallucinations in Clinical and Nonclinical Groups: State-of-the-Art Overview and Future Directions

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Despite a growing interest in auditory verbal hallucinations (AVHs) in different clinical and nonclinical groups, the phenomenological characteristics of such experiences have not yet been reviewed and contrasted, limiting our understanding of these phenomena on multiple empirical, theoretical, and clinical levels. We look at some of the most prominent descriptive features of AVHs in schizophrenia (SZ). These are then examined in clinical conditions including substance abuse, Parkinson's disease, epilepsy, dementia, late-onset SZ, mood disorders, borderline personality disorder, hearing impairment, and dissociative disorders. The phenomenological changes linked to AVHs in prepsychotic stages are also outlined, together with a review of AVHs in healthy persons. A discussion of key issues and future research directions concludes the review.

Key words: hallucinations/hallucinosis/hearing voices/psychosis/transdiagnostic

Introduction

Although there is no clear consensus concerning the definition of hallucinations,[1] from an empiricist-rationalist perspective, a hallucination may be referred to as "a sensory experience, which occurs in the absence of corresponding external stimulation of the relevant sensory organ, has a sufficient sense of reality to resemble a veridical perception, over which the subject does not feel s/he has direct and voluntary control and which occurs in the awake state."[2] Auditory verbal hallucinations (AVHs) are the main focus of this article because this type of hallucination has been the most often examined in the literature. In this article, we review the characteristics of AVHs in clinical and nonclinical groups, using findings derived from empirical studies that have used quantitative measures of hallucination characteristics.

The term "phenomenology" can refer to the detailed description of the clinical and/or descriptive features of signs and symptoms observed in psychopathological conditions or to a method of analysis of the constitution of subjective experience within the philosophical tradition of phenomenology. Given our empirical focus, the former use of the term will primarily be employed in this article, although intermittent reference to philosophical phenomenological approaches is also made (see "The Phenomenology of Prehallucinatory Experiences" and "Limits" sections).

No previous review has examined the phenomenological characteristics of AVHs in schizophrenia (SZ) in detail nor incorporated comparisons with those AVHs reported in other clinical and nonclinical groups. The significance of AVHs lies in the fact that they are prevalent in psychopathological and neurological disorders and in the general population, yet they remain poorly understood and difficult to define. Phenomenological studies promise to advance our understanding of AVHs

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on multiple empirical, theoretical, and clinical levels. For example, increased understanding may lead to more sophisticated categorizations of the phenomenon, which may, in turn, improve the reliability of assessments and provide more focused interventions. Also, phenomenological changes are considered an indication of treatment response, and certain phenomenological features may be used as discriminatory indicators for differential diagnosis.[3] Enhanced specification of phenomenological features may furthermore unveil unique "hallucination signatures" in different disorders and provide tools to differentiate between experiences that call for treatment and those that do not. Finally, a better understanding will illuminate the mechanisms underlying hallucinatory experiences and allow investigations that are tailored to the phenomenological features of AVHs. It has been argued[4] that different (neurological and cognitive) models are needed to explain different phenomenological signatures of AVHs, each entailing differing causal mechanisms. In turn, this has important implications regarding possible intervention strategies.

AVHs in SZ

From a diagnostic viewpoint, AVHs provide considerable weight toward a diagnosis of SZ. The presence of these symptoms during a 1-month period, together with another "characteristic symptom" such as delusions or disorganized speech, points to a diagnosis of SZ according to *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) and DSM-5, if accompanied by social or occupational dysfunction during a 6-month period. Furthermore, if the AVHs during this 1-month period consist of a voice keeping up a running commentary on the person's behavior or thoughts or of 2 or more voices conversing with each other, then (if social or occupational dysfunction is present) no other "characteristic symptoms" are required for a diagnosis of SZ. Given that AVHs are often viewed as a characteristic feature of SZ, it is not surprising that they are highly prevalent in people with the disorder, with estimates ranging between 40% and 80%.[1]

Main Descriptive Features of AVHs in SZ

Acoustic Properties. AHs in SZ are often experienced as voices although they can also take the form of other nonverbal sounds (eg, ringing, whistling, animal sounds). Many such "voices" can be reported by patients as being similar or just like hearing other people speak, while others are unlike real voices. Furthermore, some patients report what Bleuler "soundless voices" in which a message or meaning is communicated to the voice hearer but it is not actually heard.[4] Loudness varies from whispers to shouting. Often, negative derogatory voices are louder than positive voices. Clarity ranges from mumbling to the experience of clear sounds.

Linguistic Properties. AVHs in SZ may vary along various linguistic properties, such as from low linguistic complexity (hearing words) via medium (hearing sentences) to high complexity (hearing conversations).[5] Single words, however, are perhaps more often reported.

Frequency. There is considerable variability in the frequency of AVHs in people with SZ, typically ranging from once or twice weekly to continuous. Some individuals never experience AVHs during their illness, while others will experience them only during an acute episode. Others still have treatment-resistant AVHs, which persist during the chronic phase of the illness.

Control. One of the main characteristic features of AVHs in SZ is that individuals have little control over the onset or offset of the experience. The lack of perceived control may be crucial (in addition to other features, such as content) in the development of distress and in the transition between nonclinical to clinical hallucinations. Intrusive cognitions are also a feature of typical inner experience and thus assessment of controllability of AVHs needs to be considered in relation to other involuntary experiences such as intrusive thoughts and other unbidden inner speech utterances.

Inner-Outer localization. AVHs in SZ may be experienced as coming from inside the head or outside the head (or both), and some individuals may find it difficult to make this distinction.[5,6] Research suggests that the perceived location of AVHs does not have any clear meaningful relationship with demographic, clinical, diagnostic, structural, or other factors.[1]

Content. In terms of pragmatics, voices are often comprised of commands, personal insults, and abuse, although they may also be positive or neutral. Negative voices tend to be male and more dominant with predominantly shaming themes, while positive voices are associated with greater control and positive attribution. Voice hearers report on average 3 different voices. AVHs also differ in their structural qualities. Different types of grammatical speech have been identified, with second (you) or third (s/he) person hallucinations and purely descriptive nonpersonal sentences being the most common. This distinction is important, as, historically, third person hallucinations are thought to be "typical" of SZ and, on their own, are sufficient for a clinical diagnosis of SZ. Similarly, 2 or more voices conversing or arguing about the patient (such as the person hears the voices talking about him or her) are thought to be of diagnostic relevance for SZ. Many also have dialogs with their voices

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in which they respond to the voices, sometimes aloud, but usually in covert speech.

Personification. Voices are often personified by individuals.[6] Voices may be male or female; however, male voices are more common than female voices. In terms of age, voices may be young or old, although younger patients are more likely to hear voices that are also younger. Individuals may report knowing the identity of their voices, and the voices may tell the person his/her name. Hallucinated voices frequently speak with accents different to the region or social class of the patient. The highly personified nature of some voices has been linked to (in some but clearly not all cases) experiences of childhood sexual abuse.[7]

Appraisals. People offer different explanations for their hallucinatory experiences. Attributions may range from attributions to self (I hear my own voice) to attributions that do not identify a specific source, to attributions of AVHs to others (I hear someone else talking to me).[5] Voices tend to be attributed to an external agent, which has an identity and a purpose (often to harm the patient). One study[6] found that 72% of patients gave explanations of their AVHs, categorized into 3 classes: forces of Good or Evil; conspiracy or plot; ghosts, spirits, or aliens. Goodwin et al[8] reported that AVHs were part of a current delusional system in 56% of patients with acute SZ.

Change Over Time. These phenomenological features of AVHs may also fluctuate during the illness, sometimes reflecting important changes in clinical state.[3] This has been termed "dynamic developmental progress" to reflect the change of AVH characteristics over time.[4]

The Phenomenology of Prehallucinatory Experiences

Changes in mental experiences that occur before AVHs develop are useful to understand the developmental trajectory of AVHs. In general, the development of AVHs maps onto recognizable phases of the clinical staging model of psychosis, which identifies 4 stages of increasing psychopathological severity[9]:

1. Asymptomatic premorbid: endophenotypic vulnerability traits, risk factors
2. Early prodromal: anomalous subjective experiences, initial socio-relational difficulties
3. Late prodromal: attenuated or transient psychotic symptoms
4. Full-blown psychotic episode: constellation of symptoms susceptible to psychosis diagnosis

The initial first-person narration reveals precisely "what is it like" to experience a change in the quality of one's own mental life (stage 2) heralding early psychotic phenomena (stage 3). There is a subjectively perceived change in the stream of thoughts.[10,11] Instead of shifting smoothly and effortlessly from one moment to the next, thoughts appear disturbingly changed in the very way they are presented and experienced by the subject. Individuals may report that thoughts feel anonymous or spatialized (located somehow like physical objects); they may acquire a quasi-sensorial concreteness (become sonorized or endowed with a sound/vocal quality) or are experienced as deprived of the tag of "mineness" and familiarity. These alterations may result in a failure to discriminate between one's own and others' voices or may result in an accentuated introspective state of self-monitoring (eg, where the person attempts to figure out the "specific type of sound" of thoughts).

Although these experiences are of obvious relevance for clinical-therapeutic practice and research, far too little research has been devoted to understanding these (and other) phenomenological changes that seem to be essentially related to developing AVHs at a later stage. It is presumed that these changes are not only present in persons who will develop a full-blown psychosis but also in healthy persons who experience AVHs (see "AVHs in Those Who Do Not Seek Help" section)—although these suppositions need to be examined directly in future studies. Another important unexamined question is whether or not these changes are equally present in persons suffering from other clinical conditions, such as those described in "Phenomenological Features of AVHs in Clinical Populations Other Than SZ" section.

AVHs in Those Who do Not Seek Help

AVHs also occur in a significant minority of otherwise healthy individuals. Some 15% of the healthy population at times hear voices.[12] In most such individuals, AVHs occur only rarely and often only under specific conditions (eg, after sleep deprivation, during stress). Furthermore, AVHs may be accompanied by subclinical levels of delusions and formal thought disorder but rarely subclinical levels of negative symptoms.[13] This group is not entirely distinct from the SZ spectrum disorders described in "AVHs in SZ" section but should rather be viewed as lying on a spectrum of severity. Three studies[14–16] have compared AVHs in healthy individuals with patients suffering from psychosis.

The first of these studies[14] found no major differences in the structure and function of the AVHs of these 2 groups. However, it did note that patients with SZ were more likely to identify their voices as being public figures and that their voices were more likely to instigate violence. The voices of the healthy individuals were more likely to evaluate others, to have mundane content, and to be identified as the voices of family members.

Honig et al[15] compared nonclinical participants without a psychiatric history with 2 clinical groups (SZ and

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dissociative disorders [DD]), all of whom were hearing voices. The nonclinical group generally felt in control of the experience, in contrast to the patient groups. All 3 groups reported positive voices, but there were group differences in negative voices (100% in SZ, 93% in dissociative group, and 53% in nonpatients) suggesting that negative voices differentiated the groups. Moreover, the 2 patient groups were afraid of their voices, they significantly disturbed their daily life, and the voices were critical and troublesome. In terms of frequency, the daily and continuous experiences of voices were more frequent in the patient groups than in the nonpatient group. Loci (inside vs outside) were similar in all 3 groups.

Daalman et al[16] compared healthy voice hearing individuals and persons with psychosis. Patients had higher scores for the following AVH-related items of the Psychotic Symptom Rating Scales (PSYRATS): more negative content, higher distress and disruption of daily life, greater frequency, longer duration, and less controllability. Patients more often experienced voices in the third person (50%) compared with healthy individuals (25%). The beliefs that individuals held about the origin of hallucinations also differed slightly. Nonpatients frequently attributed their voices to spiritual sources (spirits of deceased people, guardian angels, entities, angels, and presences), whereas patients often attributed their voices to real people, such as the secret police, telepathic people, drug gangs, or malevolent neighbors. Patients also often attributed their hallucinatory experiences to abnormal brain function (perhaps as a result of psychoeducation). Other phenomenological characteristics, such as perceived location of voices (heard inside or outside the head), loudness, number of voices, and personification (attribution to a real and familiar person), did not differ between the 2 groups.

Phenomenological Features of AVHs in Clinical Populations Other Than SZ

Substance Abuse

Auditory hallucinations can sometimes be triggered by the use of—or withdrawal from—illicit substances such as alcohol, cannabis, amphetamines, cocaine, Lysergic acid diethylamide, and *N*,*N*-dimethyltryptamine. Generally speaking, hallucinogens are more likely to induce visual than auditory misperceptions. If auditory misperceptions occur at all, they tend to do so in the context of compound hallucinations. A notable exception is diisopropyltryptamine (DiPT), a hallucinogenic of the tryptamine family, which primarily affects auditory pitch. Few studies have specifically charted the type and frequency of AVHs in the context of substance abuse. One recent study[17] that included patients with alcoholic hallucinosis reported AHs in 28% of the cases and visual hallucinations in 14% of the cases. AVHs in patients with alcoholic hallucinosis have been reported to be well localized, usually involving only one voice, and where the speaker of the voice is often identified.[18] Another study[8] found that a large majority (85%) of hallucinations (all occurring during alcohol withdrawal) involved voices and that around three-fourth of voices were reported as unpleasant, 43% were part of a current delusional system, and 30% involved 2 or more voices carrying on a conversation. A high level of insight was also observed in that 95% of patients indicated that the hallucinations may be due to their imagination.

Parkinson's Disease

Hallucinations in Parkinson's disease (PD) tend to be visual in nature, less frequently auditory, and even less frequently in any of the other sensory modalities, although multimodal hallucinations have been reported in up to 30% of the cases.[19] Cross-sectional studies indicate that AVHs are present in 10%–20% of the cases,[20] although Mack et al[21] reported the presence of AVHs in no more than 3.6%. Interestingly, Goetz et al[22] found that whereas no AVHs were observed at base line, only at follow-up were AVHs (albeit associated with visual hallucinations) reported. Specifically, up to 20% of patients presented with hallucinations (visual and AVHs) 10 years after base line. In the only study to date to examine AVHs in PD in detail,[20] 37% reported having experienced hallucinations. Of these, 29% had only visual hallucinations, 8% had both visual and AVHs, and none had isolated AVHs. In all cases, the voices were heard externally, spoke in the first or second person—but not arguing—and there was no affective component. Voices were largely nonimperative, nonparanoid, and mood noncongruent and often incomprehensible. There was no relationship between visual hallucinations and AVHs (ie, the visual images never spoke and the voices were never accompanied by an image).

Epilepsy

In contrast to other neurological disorders, hallucinations occurring in the context of epilepsy are frequently in the auditory modality. The reported cross-sectional incidence of hallucinations and other psychotic symptoms in epilepsy is 3.3% and is 14% in temporal lobe epilepsy.[23] Postictal hallucinosis comprises some 25% of the hallucinatory phenomena in epileptic patients. As post- and interictal psychotic episodes resemble those in patients diagnosed with SZ, they are also designated as "SZ-like psychoses of epilepsy" and occasionally may even be mistaken for frank psychosis. Epileptic AHs can present in the form of elementary nonverbal hallucinations but also in the form of AVHs that furthermore may involve several voices and are experienced as unpleasant. However, commands, threats, and voices talking in the third person are fairly rare.

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Dementia

The presence of psychotic symptoms in dementia is significant because it is frequently linked to caregiver distress, to an increase likelihood of institutionalization, and greater cognitive deterioration. A review of studies on Alzheimer's disease estimated the prevalence rates to range from 4% to 76% for all types of hallucinations and from 1% to 29% for AVHs.[24] The latter is particularly frequent in individuals with hearing impairment.

Late-Onset SZ

It has been estimated that about 15%–20% of patients with SZ have onset of symptoms after 40 years of age.[25] Late-onset (onset after 40) SZ and very late-onset (after 60) SZ-like psychosis have similar risk factors and presentations compared with early-onset SZ, including symptomatology, especially positive symptoms. Compared with early-onset SZ, there is a predominance of women, hallucinations are frequently linked to paranoia, there are less severe negative symptoms, less cognitive impairment, and better prognosis. There is also often presence of sensory deficits. Hallucinations in this group are often multimodal (visual, olfactory, and auditory modalities), and this may be a distinguishing feature between early- and late-onset SZ. Late-onset patients are more likely than early-onset patients to report third person hallucinations, running commentary, and accusatory or abusive AVHs.[26] Only one study[27] has reported the phenomenological features of symptoms in late-onset SZ and reported that delusions and hallucinations were the most common symptoms, including third person (in 53% of patients) and running commentary (in 10%) AVHs.

Mood Disorders

Severe depression is sometimes accompanied by AVHs, which are usually transient and limited to single words or short phrases and are generally mood-congruent.[1]

It has been estimated[28] that 15% of patients with bipolar disorder (BD) had experienced hallucinations, with AHs being the most frequent (in 18% of cases). Other studies of BD patients report the prevalence of AHs to be 15%–57%.[29,30] Compared with patients with SZ, patients diagnosed with BD show a lower lifetime prevalence of hallucinations and their hallucinations tend to be less severe.[29] However, when the comparison is limited to those presenting with psychotic features, BD patients were as likely as SZ patients to report hallucinations, principally AHs, and both verbal and nonverbal.[8,31] The frequency of AVHs varies across patients and phase of illness and may be inconsistent from one episode to the other. Duration is often brief and the occurrence is intermittent.[8] In general, the occurrence of AVHs in BD is associated with the presence of delusions and higher levels of anxiety.[29] The content of AVHs is often grandiose and associated to delusional themes. A comparison of AVHs in patients with primary affective disorder (including mania) and SZ found that hallucinatory conversations, running commentaries, and accusatory voices generally occurred as often in both groups and that gender of the voice was not specific to either of the groups.[8] Concerning changes over time, one study[28] reported that AHs are more often reported during mania than depression and usually at the extreme end of severity of both phases. In pediatric samples, command AHs have been reported more often (15.6%) than conversing voices (7.4%), commenting voices (6.6%), and other AVHs (5.4%).[32] Interestingly, the reporting of lifetime AHs and in particular commenting voices (but not of other types of hallucinations) was also statistically associated to a childhood trauma (sexual abuse).[33,34]

Borderline Personality Disorder

There is currently no consensus about the phenomenology and severity of psychotic features associated with borderline personality disorder (BPD). This is reflected in the inconsistent nomenclature that has been proposed to describe psychotic features in BPD,[35] often suggesting that psychotic features in BPD are short lasting, less severe, and qualitatively different from those in psychotic disorders such as SZ. Few studies have explored the prevalence of AVHs in patients with BPD. One study[36] reports a 50% prevalence rate of AVHs in BPD patients. Chopra and Beatson[37] and George and Soloff[38] found a prevalence rate of 21% and 54%, respectively, for AHs in general but did not specify their results for AVHs. Two studies[35,36] have investigated the phenomenological characteristics and ensuing distress of AVHs in a direct manner in BPD.

In Kingdon et al,[36] AVHs in BPD patients were compared with those in SZ patients and patients with BPD and SZ. AVHs were reported in 46% of BPD patients, in 66% of SZ patients, and in 90% of patients with both BPD and SZ. The only differences on the PSYRATS were higher scores for the degree and amount of negative content and amount of distress of AVHs in the BPD group. There were no significant group differences for the other PSYRATS features.

In Slotema et al[35] AVHs (also assessed using the PSYRATS) in 3 groups were compared: BPD patients, patients with SZ/schizoaffective disorder, and individuals without a psychiatric diagnosis. In BPD patients, the mean frequency of AVHs was at least once per day for several minutes or more, and AVHs were experienced inside the head in the majority of patients. The majority believed their voices to originate from an internal cause and thought they had no control over their voices for the majority of the time. Further inspection of the internal cause replies revealed that 29% declared that the voices were like their own thoughts and 33% expressed that they experienced voices due to their (psychiatric) disease.

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The voice was experienced as female in 65% of patients and as male in 76%. In 30% of the patients, the owner of the voice was familiar to the patient. The most prominent voice spoke several phrases in the majority of patients. Distress due to AVHs was high among this group. All items for characteristics of AVHs and ensuing distress did not differ between patients with BPD and SZ/schizoaffective disorder except for the item "disruption of life" (higher in SZ/schizoaffective disorder). Compared with the group without a diagnosis, patients had much higher scores on almost all items, except for the items "location" and "loudness." The results of these studies suggest that AVHs in BPD are frequent and severe and phenomenologically similar to those in SZ.

Hearing Impairment

AVHs may be observed in persons (usually elderly) with hearing impairment. One study[39] found that the prevalence of AHs in a group of elderly subjects (65 y or over) with hearing impairment was 32.8% and that these represented a broad spectrum of phenomenology ranging from simple (eg, humming or buzzing) to complex (eg, music) percepts, including hearing voices in 2.5% of persons.

Dissociative Disorders

Certain authors[40] have argued that AVHs should be considered a dissociative phenomenon (and not a psychotic symptom) especially in cases of early (childhood) trauma. Two studies[15,41] have examined AVHs in patients with DD. The first study[15] (already mentioned above in "AVHs in Those Who Do Not Seek Help" section) compared AVHs in patients with DD with those in patients with SZ and nonclinical participants without a psychiatric history. Loci (inside vs outside) were similar in all 3 groups. All 3 groups reported positive voices, but negative voices were more prevalent in patients with DD and SZ. Moreover, the 2 patient groups were afraid of their voices and reported significant disturbances in their daily life and that the voices were critical and troublesome. In terms of frequency, the daily and continuous experiences of voices were also more frequent in the patient groups than in the nonpatient group. Dorahy et al[41] compared AVHs in 3 groups: patients with DD, patients with SZ with childhood maltreatment, and patients with SZ without childhood maltreatment. Results revealed that nearly all patients with DD reported hearing more than 2 voices, whereas this was reported in far fewer (in a third or less) of both SZ groups. The DD patients overwhelmingly heard both child and adult voices, whereas almost all patients with SZ heard only adult voices. In all 3 groups, voices were largely incongruent with mood. There were also no clear group differences in terms of voice loci (inside vs outside). Finally, the prevalence of command AVHs were found to be more common in the DD group (72%) compared with SZ patients who had not suffered childhood maltreatment (44%) but comparable to SZ patients who had suffered childhood maltreatment (81%).

Summary

Few studies have examined AVHs across the range of clinical disorders and even fewer have provided information concerning phenomenological characteristics as divided in "AVHs in SZ" section for SZ. This situation renders a comparison between clinical disorders difficult. A research priority is clearly for future studies to examine phenomenological aspects to elucidate which clinical disorders present with AVHs, and to provide detailed information concerning their phenomenological features. The evidence provided here suggests that the phenomenological characteristics of AVHs experienced in a wide range of clinical disorders are similar to those experienced by SZ patients. This includes substance abuse, late-onset SZ, BD, BPD, and DD. Indeed, in many of these disorders, individuals may hear unpleasant, third person voices that furthermore are associated with delusions, are highly frequent and uncontrollable, elicit anxiety, and distress and may disrupt individuals' everyday life functioning.

However, it is essential that future research also examines potential differences among these clinical groups. One particular priority is delineating the frequency and nature of first-rank AVHs (a voice keeping up a running commentary on the person's behavior or thoughts or 2 or more voices conversing with each other). In addition to their incidence in SZ, research presented in the present article shows that they may also be experienced by persons with late-onset SZ or BD. More research is needed to examine their incidence in BPD and DD and in nonpatients who experience AVHs. A related issue is the paucity of information relevant to this issue provided by existing AVH measures. The PSYRATS, eg, only assesses whether or not several voices are heard and/or whether voices are in the third person. A future research priority is thus to develop sophisticated assessment instruments and methods (eg, using the philosophical phenomenological method) capable of establishing commonalities and differences among different groups.

Several further issues need to be addressed in future studies: AVHs need to be examined in a direct and detailed manner; researchers need to be aware that AVHs may exclusively present themselves in particular phases of the disorder (eg, later stages in PD, postictal in epilepsy); in heterogeneous clinical populations, researchers will likely need to identify subgroups that present AVHs (viz. the large variation in AVH prevalence rates in dementia); isolated AVHs in some groups are very rare (eg, PD); finally, in some clinical groups, researchers need to provide sophisticated examinations that are capable of disentangling possible AVH-delusion

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overlaps (eg, high level of delusional ideation in BD, SZ, late-onset SZ, BPD).

Key Issues and Future Directions

Phenomenological Assessment of AVHs

While all subjects who experience AVHs necessarily have a common experience—hearing voices—they differ from each other with respect to other phenomenological features.[5,6] AVHs are thus encountered in heterogeneous populations, which include healthy individuals and patients with a variety of neurological and psychopathological disorders, and AVH phenomenology maybe different in these populations (see "Phenomenological Features of AVHs in Clinical Populations Other Than SZ" section). These considerations emphasize the importance of a comprehensive evaluation of the phenomenology of AVHs, not only as a means for adequate communication about AVHs but also in terms of research concerning their mechanisms and treatment.

A few comprehensive instruments for the evaluation of AVH phenomenology exist (for reviews see refs.[1,42]), which all follow a tradition of assessing the same phenomenological features as described in "AVHs in SZ" section. However, a number of additional AVHs characteristics may be integrated in future assessment strategies based on, for instance, important phenomenological aspects of normal inner verbal mentation,[43] underresearched phenomenological facets of AVHs uncovered by research into historical accounts of voice hearing,[44] and other important distinctions that have previously been made.[45] These characteristics could include such features as dialogicality, use of own name, condensation/expansion, density of meaning, presence of other voices, self-awareness, motivational/evaluative qualities, ego-dystonic/ego-syntonic voices, degree of reality, causal attribution of voices, degree of publicness-privateness, and degree of sensation-ideation.

Another way by which phenomenology could provide information about AVH mechanisms is the study of the main factor structure of the dimensionality of AVH phenomenology. One study found 3 independent dimensions reflecting inner-space/outer-space experiences of AVHs, self/other attribution of AVHs, and linguistic complexity of AVH content.[5] It has been suggested[46] that the first 2 dimensions may reflect 2 independent cognitive processes: inner-/outer-space confusion and self/other misattribution. Indeed, 2 studies showed different patterns of deficits in self/other and inner-space/outer-space distinction.[47,48] Furthermore, the space location of the experience of AVHs has been found to be associated with specific neural correlates. One study[49] demonstrated that patients with AVHs that are experienced outside the head relative to patients with AVHs experienced inside the head and to controls have smaller white matter volumes at the right temporoparietal junction. Whether similar validation extends to the large number of phenomenological features is a question for future research. Another important issue to resolve concerns how these neuroimaging findings are to be related to observations that phenomenological characteristics (eg, inner-outer localization of AVHs)[3] may also change over time in patients.

Key Issues That Have Interfered With Progress

With advances in our understanding of cognitive (Waters et al, this theme) and neural (Allen et al, this theme) mechanisms of AVHs, a perplexing fact remains: no single model has so far explained AVH phenomenology in a satisfactory manner.[11] Most would currently agree that AVHs are heterogeneous phenomena[3] and that multiple models are needed to adequately account for AVH phenomenology.[1,4,46] However, research has generally investigated AVHs as a unitary entity. One of the main reasons that has contributed to the disjunction of AVH phenomenology/AVH research is that AVH phenomenology has been, until recently, understudied. Additionally, phenomenological entities of AVHs have been sometimes ill-defined and phenomenological terminology has been used inconsistently. For example, the term "reality of voices" is used sometimes without definition or refers to the similarity of AVHs to real-life speech perception or to whether the patient thinks that there is really someone talking.

Limits

An important issue to take into account concerning the literature presented here relates to the methods used to collect data. In particular, at least 2 possible sources of error may be acknowledged: the reliability of interviews when assessing AVHs, and the difficulty people have in reporting their own mental states (eg, when experiencing AVHs). One way of addressing the first limit is to evaluate with the help of structured interview scales (eg, the PSYRATS), and indeed this was done in a number of the studies cited in the present article. The second source of error may be particularly challenging with paranoid or more chronic patients experiencing AVHs. In some instances, patients may be instructed by their voices not to talk about them to others. One way of addressing this is to assess experiences in patients in the early stages (eg, prodromal, first-episode) of their illness or to include nonhelp seeking persons who experience AVHs (see "AVHs in Those Who Do Not Seek Help" section) since these individuals may be more able to describe their experiences due to, for instance, lack of effects of institutionalization, pharmacological treatment, cognitive deficits, etc.

The phenomenological characteristics of AVHs in SZ were compared with those in other clinical disorders. It should be pointed out that there is much debate concerning the true boundaries of many of these clinical disorders, and indeed, research on AVHs in these disorders

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provides support for contentions that the boundaries are not very distinct. As revealed in "Phenomenological Features of AVHs in Clinical Populations Other Than SZ" section, AVHs experienced in certain clinical disorders (eg, BD) seem to be similar to those experienced by patients with SZ, consistent with either a multidimensional model of psychosis or a general psychosis syndrome view. Similarly, AVHs in individuals with DD are similar to those in SZ, thus questioning a clear divide between psychosis and dissociation.

Cognitive neuroscientific and clinical perspectives (see other articles in this theme) remain valuable to the understanding of AVHs, as are early (Jaspers, Conrad, Schneider, and Ey) and more recent (Sass, Parnas, and Stangellini) contributions from the philosophical phenomenology tradition. Notably, Kurt Schneider's designation of voices commenting on patients as "first-rank symptoms" continues to play an important role in the diagnosis of SZ. More recently, Sass and Parnas[50] have proposed that SZ is a self-disorder, whereby there is a basic disturbance in "ipseity" or in the "experiential sense of being a vital and self-coinciding subject of experience" (p428). According to these authors, AVHs involve a distortion of the normal structure of awareness, whereby a form of exaggerated awareness (hyperreflexivity) emerges resulting in various transformations such as certain thoughts being felt as if endowed with perceptual features or even acoustic qualities (see "The Phenomenology of Prehallucinatory Experiences" section). Clearly, these early and more recent examples represent significant contributions to our understanding of AVHs, although the lack of information regarding these subjective experiences across a range of clinical and nonclinical groups does not allow meaningful comparisons to be made. Thus, for instance, an interesting future avenue could involve analyzing and comparing AVHs in different groups from a philosophical phenomenology tradition. Indeed, Andreasen[51] has underscored the lack of progress in descriptive psychopathological research and the need to integrate such more theoretical approaches with more empirical-oriented (e.g., neurosciences) approaches—without one having a higher stature over the other.

Identification of Research Needing Further Work and Development

As we make the case above, phenomenological research provides the means for delineating important and distinct characteristics of AVHs, and, as such, could enhance the chances of clarification of AVH mechanisms,[52] and could inform experimental design in AVH research[11]. Accordingly, phenomenological research could be an important first step in cognitive neuroscience and treatment research of AVHs. To maximize the potential advantages of a phenomenological understanding of AVHs, future research should address the following issues:

1. Development of agreed-upon definitions of phenomenological entities and agreed-upon taxonomy to describe these entities.
2. Need for a more nuanced understanding of the phenomenology of ordinary inner experience, in particular inner speech, since AVHs are very often defined (implicitly or explicitly) in relation to such typical inner experiences.
3. Provide a better understanding of the dynamic quality of AVHs (eg, which characteristics change, how, and why).
4. Improvement of current measures of AVH phenomenology. For instance, by including relevant characteristics not already included in existing instruments and by rendering them pertinent for a broad spectrum of clinical groups. Furthermore, psychometric properties of these measures should be examined.
5. Need for comprehensive studies of the dimensionality of AVH phenomenology, as this could inform about AVH mechanisms.
6. Need for systematic studies of AVH phenomenology across diagnostic boundaries, in addition to systematic studies of pre-AVH phenomenology and AVHs in nonclinical populations.
7. Examination of how other, broader, factors may play a role in AVHs, such as the person's immediate environment and culture.
8. Validation of phenomenological features at the cognitive, neural circuitry, cellular, and genetic levels.
9. Need for more research examining the first-person experience of AVHs, in particular, as approached by a more philosophical psychopathological tradition.
10. Need for a better understanding of the relation between the phenomenology of AVHs and causally related delusional ideation (both specific phenomenological facets of AVHs seeding the later development of delusional ideation as well as delusional ideation potentially causing the development of AVHs with specific phenomenological properties).

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References

1. Aleman A, Larøi F. *Hallucinations: The Science of Idiosyncratic Perception.* Washington, DC: American Psychological Association; 2008.
2. David AS. The cognitive neuropsychiatry of auditory verbal hallucinations: an overview. *Cognit Neuropsychiatry*. 2004;9:107–123.
3. Larøi F. The phenomenological diversity of hallucinations: some theoretical and clinical implications. *Psychol Belg*. 2006;46:163–183.

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4. Jones SR. Do we need multiple models of auditory verbal hallucinations? Examining the phenomenological fit of cognitive and neurological models. *Schizophr Bull*. 2010;36:566–575.
5. Stephane M, Thuras P, Nassrallah H, Georgopoulos AP. The internal structure of the phenomenology of auditory verbal hallucinations. *Schizophr Res*. 2003;61:185–193.
6. Nayani TH, David AS. The auditory hallucination: a phenomenological survey. *Psychol Med*. 1996;26:189.
7. Fowler D, Freeman D, Steel C, et al. The catastrophic interaction hypothesis: how do stress, trauma, emotion and information processing abnormalities lead to psychosis? In: Larkin W, Morrison AP, eds. *Trauma and Psychosis.* Hove, England: Routledge; 2006.
8. Goodwin DW, Alderson P, Rosenthal R. Clinical significance of hallucinations in psychiatric patients: a study of 116 hallucinatory patients. *Arch Gen Psychiatry*. 1971;24:76–80.
9. Raballo A, Larøi F. Clinical staging: a new scenario for the treatment of psychosis. *Lancet*. 2009;374:365–367.
10. Raballo A, Larøi F. Murmurs of thought: phenomenology of hallucinatory consciousness in impending psychosis. *Psychosis*. 2011;3:163–166.
11. Larøi F, de Haan S, Jones S, Raballo A. Auditory verbal hallucinations: dialoguing between the cognitive sciences and phenomenology. *Phenomenol Cogn Sci*. 2010;9:225–240.
12. Beavan V, Read J, Cartwright C. The prevalence of voice-hearers in the general population: a literature review. *J Ment Health*. 2011;20:281–292.
13. Sommer IE, Daalman K, Rietkerk T, Diederen KMJ, Bakker S, Wijkstra J, Boks MPM. Healthy individuals with auditory verbal hallucinations; who are they? Psychiatric assessments of a selected sample of 103 subjects. *Schizophr Bull*. 2010;36:633–641.
14. Leudar I, Thomas P, McNally D, Glinski A. What voices can do with words: pragmatics of verbal hallucinations. *Psychol Med*. 1997;27:885–898.
15. Honig A, Romme M, Ensink BJ, Escher A, Pennings M, Devries M. Auditory hallucinations: a comparison between patients and nonpatients. *J Nerv Ment Dis*. 1999;186:646–651.
16. Daalman K, Boks MPM, Diederen KMJ, et al. The same or different? Auditory verbal hallucinations in healthy and psychotic individuals. *J Clin Psychiatry*. 2011;72:320–325.
17. Perälä J, Kuoppasalmi K, Pirkola S, et al. Alcohol-induced psychotic disorder and delirium in the general population. *Br J Psychiatry*. 2010;197:200–206.
18. Alpert M, Silvers KN. Perceptual characteristics distinguishing auditory hallucinations in schizophrenia and acute alcoholic psychoses. *Am J Psychiatry*. 1970;127:298–302.
19. Katzen H, Myerson C, Papapetropoulos S, Nahab F, Gallo B, Levin B. Multi-modal hallucinations and cognitive function in Parkinson's disease. *Dement Geriatr Cogn Disord*. 2010;30:51–56.
20. Inzelberg R, Kipervasser S, Korczyn AD. Auditory hallucinations in Parkinson's disease. *J Neurol Neurosurg Psychiatry*. 1998;64:533–535.
21. Mack J, Rabins P, Anderson K, et al. Prevalence of psychotic symptoms in a community-based Parkinson disease sample. *Am J Geriatr Psychiatr*. 2012;20:123–132.
22. Goetz CG, Stebbins GT, Ouyang B. Visual plus nonvisual hallucinations in Parkinson's disease: development and evolution over 10 years. *Mov Disord*. 2011;26:196–200.
23. Torta R, Keller R. Behavioral, psychotic, and anxiety disorders in epilepsy: etiology, clinical features, and therapeutic implications. *Epilepsia*. 1999;40(suppl 10):2–20.
24. Bassiony MM, Lyketsos CG. Delusions and hallucinations in Alzheimer's disease: review of the brain decade. *Psychosomatics*. 2003;44:388–401.
25. Folsom DP, Lebowitz BD, Lindamer LA, Palmer BW, Patterson TL, Jeste DV. Schizophrenia in late life: emerging issues. *Dialogues Clin Neurosci*. 2006;8:45–52.
26. Howard R, Rabins PV, Seeman MV, Jeste DV. the International Late Onset Schizophrenia Group.Late-onset schizophrenia and very-late-onsetschizophrenia-like psychosis: an international consensus. *Am J Psychiatry*. 2000;157: 172–178.
27. Harish MG, Suresh KP, Rajan I, Reddy YC, Khanna S. Phenomenological study of late-onset schizophrenia. *Indian J Psychiatry*. 1996;38:231–235.
28. Goodwin FK, Jamison KR. *Manic-Depressive Illness.* New York, NY: Oxford University Press; 2007.
29. Baethge C, Baldessarini RJ, Freudenthal K, Streeruwitz A, Bauer M, Bschor T. Hallucinations in bipolar disorder: characteristics and comparison to unipolar depression and schizophrenia. *Bipolar Disord*. 2005;7:136–145.
30. Bräunig P, Sarkar R, Effenberger S, Schoofs N, Krüger S. Gender differences in psychotic bipolar mania. *Gend Med*. 2009;6:356–361.
31. Pini S, de Queiroz V, Dell'Osso L, et al. Cross-sectional similarities and differences between schizophrenia, schizoaffective disorder and mania or mixed mania with mood-incongruent psychotic features. *Eur Psychiatry*. 2004;19:8–14.
32. Tillman R, Geller B, Klages T, Corrigan M, Bolhofner K, Zimerman B. Psychotic phenomena in 257 young children and adolescents with bipolar I disorder: delusions and hallucinations (benign and pathological). *Bipolar Disord*. 2008;10:45–55.
33. Hammersley P, Dias A, Todd G, Bowen-Jones K, Reilly B, Bentall RP. Childhood trauma and hallucinations in bipolar affective disorder: preliminary investigation. *Br J Psychiatry*. 2003;182:543–547.
34. Shevlin M, Dorahy MJ, Adamson G. Childhood traumas and hallucinations: an analysis of the national comorbidity survey. *J Psychiatr Res*. 2007;41:222–228.
35. Slotema CW, Daalman K, Blom JD, Diederen KM, Hoek HW, Sommer IE. Auditory verbal hallucinations in patients with borderline personality disorder are similar to those in schizophrenia. *Psychol Med*. 2012;16:1–6.
36. Kingdon DG, Ashcroft K, Bhandari B, et al. Schizophrenia and borderline personality disorder: similarities and differences in the experience of auditory hallucinations, paranoia, and childhood trauma. *J Nerv Ment Dis*. 2010;198:399–403.
37. Chopra HD, Beatson JA. Psychotic symptoms in borderline personality disorder. *Am J Psychiatry*. 1986;143:1605–1607.
38. George A, Soloff PH. Schizotypal symptoms in patients with borderline personality disorders. *Am J Psychiatry*. 1986;143:212–215.
39. Cole MG, Dowson L, Dendukuri N, Belzile E. The prevalence and phenomenology of auditory hallucinations among elderly subjects attending an audiology clinic. *Int J Geriatr Psychiatry*. 2002;17:444–452.
40. Moskowitz A, Corstens D. Auditory hallucinations: psychotic symptom or dissociative experience? *J Psychol Trauma*. 2007;3:35–63.
41. Dorahy MJ, Shannon C, Seagar L, et al. Auditory hallucinations in dissociative identify disorder and schizophrenia with and without childhood trauma history: similarities and differences. *J Nerv Ment Dis*. 2009;197:892–898.

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42. Bell V, Raballo A, Larøi F. Assessment of hallucinations. In: Larøi F, Aleman A, eds. *Hallucinations: A Guide to Treatment and Management.* Oxford, UK: Oxford University Press; 2010.
43. Fernyhough C. Alien voices and inner dialogue: towards a developmental account of auditory verbal hallucinations. *New Ideas Psychol*. 2004;22:49–68.
44. Jones SR. Re-expanding the phenomenology of hallucinations: lessons from sixteenth century Spain. *Mental Health Religion Culture*. 2010;13:187–208.
45. Aggernæs A. The experienced reality of hallucinations and other psychological phenomena. An empirical analysis. *Acta Psychiatr Scand*. 1972;48:220–238.
46. Larøi F, Woodward TS. Hallucinations from a cognitive perspective. *Harv Rev Psychiatry*. 2007;15:109–117.
47. Stephane M, Kuskowski M, McClannahan K, Surerus C, Nelson K. Evaluation of inner-outer space distinction and verbal hallucinations in schizophrenia. *Cognit Neuropsychiatry*. 2010;15:441–450.
48. Stephane M, Kuskowski M, McClannahan K, Surerus C, Nelson K. Evaluation of speech misattribution bias in schizophrenia. *Psychol Med*. 2010;40:741–748.
49. Plaze M, Paillère-Martinot ML, Penttilä J, et al. Where do auditory hallucinations come from? A brain morphometry study of schizophrenia patients with inner or outer space hallucinations. *Schizophr Bull*. 2011;37:212–221.
50. Sass LA, Parnas J. Schizophrenia, consciousness, and the self. *Schizophr Bull*. 2003;29:427–444.
51. Andreasen NJ. Understanding schizophrenia: a silent spring? *Am J Psychiatry*. 1998;155:1657–1659.
52. Stephane M, Pellizzer G, Roberts S, McClannahan K. Computerized binary scale of auditory speech hallucinations (cbSASH). *Schizophr Res*. 2006;88:73–81.

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