

Hearing Voices in the Normal Population

Lalana Dissanaikae, Mark Agius

SEPT: South Essex Partnership University NHS Foundation Trust.

Abstract

In this paper we discuss the phenomenon of the presence of auditory hallucinations in otherwise asymptomatic patients. We discuss the significance of these patients, both as persons who do not suffer from disease, and as an at risk group for patients who later may develop psychosis. The genetic implications of this phenomenon, and the implications for the aetiology, nosology and treatment of psychosis are considered.

Keywords: auditory hallucinations, delusions, psychosis, schizophrenia

The symptom of hearing voices when there is no sensory stimulus has generally in medicine been associated with serious mental illness. Usually, depending on the other symptoms which have been recognised, auditory hallucinations are taken to suggest the possibility of psychotic illness including schizophrenia, severe depression with psychotic symptoms, bipolar affective disorder as well as drug-induced states and personality disorders.

However, history records that many able, mentally stable, significant persons have reported hearing voices. Famous persons who have heard voices include Socrates, Descartes, Caesar and Joan of Arc. Also Greek oracles, and chief priests and sadhu in Egyptian and Indian history have had similar experiences, with or without the help of psycho-stimulant substances. It is clear that these different persons and cultures would have had different explanatory models for their experiences, and this would also pertain to patients with different cultures today. Not all noises heard by normal persons are psychogenic in origin. Schiller openly admitted that he repeatedly heard note 'a' in his ears. Beethoven wrote his last symphony when he became deaf and suffered from tinnitus.

Voice Hearing in the normal population became a matter for research after Romme and Esher, during a television program in the Netherlands, invited persons who heard voices to phone in. It became apparent that there were many persons who heard voices in the community who had never been to the doctor because of this phenomenon. As a result, a 'Voice Hearers network' was set up.

It also became clear that persons who chose to seek help for their voices by consulting doctors were a self-selected group from among voice hearers, namely those persons who for some reason were distressed by the voices. Many people did not inform doctors because the voices were positive for the patients, or kept them company. Research provides clear evidence that a significant percentage of normal population have had this experience. Various papers give a range of frequency from 1-2 % to 15-18 % of 'non-clinical' populations as hearing voices (1-16).

Some experience of hearing voices in a normal population can be explained by certain factors, but not all. 'Exploring heard syndrome and musical hallucinations' are identified to be common. Also, organic states, or chemical imbalances (delirium), as well as sensory deprivation, and extreme tiredness are known to cause non-mentally-ill people to hear voices. People are known to hear voices without stimuli in the stages soon as they are falling asleep or waking, the normal phenomena of hypnogogic and hypnopompic hallucinations (9). Individuals using psycho-stimulants may hear voices but usually only for the period during which they are intoxicated. Drugs such as LSD are known to produce this, and can also cause visual hallucinations. However, the implication of the fact that many people who hear voices do not report this fact is that the prevalence of 'psychotic symptoms' such as auditory hallucinations in the community is much larger than is expected from the 'one person in a hundred' prevalence of schizophrenia.

The mechanism of hearing voices in the normal population has not been widely explored. There are different theories to explain auditory hallucinations in pathological backgrounds. There is an organic,

chemical basis which is supported by imaging studies using functional magnetic resonance imaging (fMRI). This shows defects in certain cerebral areas such as the speech area in left temporal lobe. The neuro-developmental theories in developing schizophrenia come into this explanation as well (17,18).

The internalization process of the inner voice is a process of creating an inner voice in childhood, which develops in stages throughout the process of maturing. This is consistent with the finding that the voices are more common in adolescence and early adulthood in the normal (non-clinical) population (19).

Psychologists explain 'over-sensitivity' to stimulus, influencing 'inner anxiety' in situations when normal people hear voices. This may also occur in situations such as anxiety disorders. The exact cause of voices remains unknown and more research is needed to explain the phenomena in the normal population in the absence of psychological pathology.

There are many studies on the prevalence of hearing voices in normal adolescent populations. Wigman (19) showed that the frequency could 'differ greatly' and commented that only some cases represented a continuum with the symptoms leading to adulthood illness.

Escher (16) has shown that anxiety and stressful life events are associations of future formation of delusions. The psychotic features they explored were responsive to the triggering event. Delusion formation in children hearing voices may be responsive to triggering events and facilitated by feelings of anxiety and/or depression (16).

De Loore et al. (1) noted that it was not the presence of hallucinations but the persistence and the level of hallucinations that was associated with clinical complications. Their paper mentions that the associated persistence and the risk of development of secondary delusions were 'far from negligible'.

Delusion formation in voice hearers is associated with baseline voice appraisals and attributions including the tone of the voice, the perceived location of the voice, and whether the voice resembled that of a parent. It was also related to baseline anxiety and depression, disorganization and the number of reported recent stressful life events at baseline. In older children, how voices influenced emotions and behaviour was strongly associated with delusion formation. Delusion formation in children hearing voices can respond to triggering events and can be facilitated by feelings of anxiety or depression (20).

Further research carried out in a normal adult population, has shown that the prevalence is greater than previously considered (21). Sommer (8) has shown that 10-15% of healthy individuals of the general population hear voices. There were associations with childhood trauma and family history of Axis 1 mental health diagnosis. Other studies show a different prevalence, (1-2%). Also, the prevalence varies according to the country as shown by Ohayon (15) in a study which involved Italy, UK and Scandinavia. In the same study 27% heard voices during daytime.

Morgan (7) has shown that there is an ethnic variation in hearing voices; this study revealed that voices are common in the black Caribbean population compared with the white British. In another study (13), 4% of the white population heard voices. Hearing voices was 2.5 times commoner in Caribbeans and 50% less common in Asians. Out of the strong sample only 25% who heard voices met criteria for psychosis.

It is interesting to observe the associations between non-clinical and pathological aspects of hallucinations. In a study which explored 'psychotic symptoms' as a continuum with normal pathology it was mentioned that delusions and hallucinations are more common than we think (19). Krabbendam (22) describes the continuum between patients with pathological and non-pathological auditory hallucinations (6,11,14,15). This continuum is particularly prominent in adolescent studies (19,5). While adolescents who hear voices may be 'normal' and not suffering from pathology, they might constitute a high risk group for developing psychotic illness. However, there are reports that only 1/3 of population who hear voices become psychiatric patients.

There appears to be a transition from non-pathological to pathological auditory hallucinations over time (22), and it appears that affective symptoms seem to appear to accompany the transition phase (23,24). Given that patients only present to the doctor when their voices become a problem, it can be expected that a key issue when voices become pathological is that they become distressing (21). Those persons who react to the voices with a delusional interpretation, negative emotional states or a depressive coping style are at increased risk of developing clinical psychosis (22). Experiencing the voices as being intrusive or omnipotent may be what causes voice-hearers to seek help (16). Furthermore, delusional thinking may be present in some voice hearers, and predictors of delusion formation, may be "suspiciousness," "unusual thought content" and "grandiosity" (16).

It is not only auditory hallucinations which occur as a 'non-pathological' dimension in the general population but, in a similar way, dimensions of depression and mania may be similarly found in the general population (25).

When considering the differences in voice hearing among different ethnic groups, it has been argued that black African ethnicity, concentrated adult disadvantage, and separation from parents had a significant effect. It has been suggested that the higher prevalence of psychotic-like experiences in black Caribbean, but not black African subjects could be explained by high levels of social disadvantage over the course of their lives (7).

When considering voice hearing, it is worth noting that living in a city and genetic vulnerability are both aetiological factors in schizophrenia, and can be considered to be linked. Hence persons who describe voice hearing may be experiencing a gene- environment interaction between these two aetiological factors (11).

The fact that population-based studies show that the prevalence of psychotic symptoms is far greater than had been previously considered might, from an evolutionary perspective, explain the persistence of psychosis in the population. In other words, it could be explained by the presence of 'psychosis genes' which do not fully express themselves, thus providing a non-clinical psychosis phenotype, but at the same time ensuring the perpetuation of the genes related to psychosis within the population, where they will express themselves given appropriate conditions in appropriate patients (26). Hence there appears to be a continuum of psychosis symptoms in the general population (27). However, the hearing voices movement reports that going to a psychiatrist with voices exposes patients to an 80% chance of being diagnosed with schizophrenia. This may be because of the self-selecting nature of the patients who choose to present themselves to the medical profession. However, it may be of interest to primary care doctors that there are likely to be a number of people who experience voice hearing in any general practice, who may be unknown to their medical advisors.

When should the general practitioner become concerned about someone who hears voices? If the voices cause distress or are associated with deterioration and/or if the other symptoms discussed in the paper on prodrome are present, then the patient should be referred for specialist assessment. If the voices are an incidental finding, occur in isolation, and are not associated with any loss of function or distress then monitoring the situation may be all that is required. However, the general practitioner should always seek specialist psychiatric advice if in doubt, so as to avoid unnecessary delay in the diagnosis and treatment of those patients who will develop a serious psychosis.

GP comment

What have I learned from this paper?

1. The proportion of people in the normal population who hear voices is much higher than most people realise.
2. Not all of those who hear voices will progress to develop psychosis. If the voices are associated with any deterioration in function or if they are accompanied by the symptoms described in the paper on prodrome then prompt assessment by specialist psychiatrist should be arranged.

Dr Rihan Bashir, GP, MRCGP DFFP DCH DRCOG LFFHom PGCert
Ivel Medical Centre, Biggleswade, UK.

References

1. De Loore E, Gunther N, Drukker M, Feron F, Sabbe B, Deboutte D, van Os J, Myin-Germeys I. Persistence and outcome of auditory hallucinations in adolescence: A longitudinal general population study of 1800 individuals. *Schizophr Res*. 2011 Apr;127(1-3):252-6
2. Lawrence C, Jones J, Cooper M. Hearing voices in a non-psychiatric population. *Behav Cogn Psychother*. 2010 May;38(3):363-73.
3. Polanczyk G, Moffitt TE, Arseneault L, Cannon M, Ambler A, Keefe RS, Houts R, Odgers CL, Caspi A. Etiological and clinical features of childhood psychotic symptoms: results from a birth cohort. *Arch Gen Psychiatry*. 2010 Apr;67(4):328-38.
4. Cangas AJ, Langer AI, Moriana JA. Hallucinations and related perceptual disturbance in a non-clinical Spanish population. *Int J Soc Psychiatry*. 2011 Mar;57(2):120-31
5. Kelleher I, Harley M, Murtagh A, Cannon M. Are screening instruments valid for psychotic-like experiences? A validation study of screening questions for psychotic-like experiences using in-depth clinical interview. *Schizophr Bull*. 2011 Mar;37(2):362-9
6. Stip E, Letourneau G. Psychotic symptoms as a continuum between normality and pathology. *Can J Psychiatry*. 2009 Mar;54(3):140-51
7. Morgan C, Fisher H, Hutchinson G, Kirkbride J, Craig TK, Morgan K, Dazzan P, Boydell J, Doody GA, Jones PB, Murray RM, Leff J, Fearon P. Ethnicity, social disadvantage and psychotic-like experiences in a healthy population based sample. *Acta Psychiatr Scand*. 2009 Mar;119(3):226-35.
8. Sommer IE, Daalman K, Rietkerk T, Diederik KM, Bakker S, Wijkstra J, Boks MP. Healthy individuals with auditory verbal hallucinations; who are they? Psychiatric assessments of a selected sample of 103 subjects. *Schizophr Bull*. 2010 May;36(3):633-41.
9. Choong C, Hunter MD, Woodruff PW. Auditory hallucinations in those populations that do not suffer from schizophrenia. *Curr Psychiatry Rep*. 2007 Jun; 9(3):206-12.
10. Johns LC. Hallucinations in the general population. *Curr Psychiatry Rep*. 2005 Jun;7(3):162-7.
11. van Os J. Is there a continuum of psychotic experiences in the general population? *Epidemiol Psychiatr Soc*. 2003 Oct-Dec;12(4):242-52.
12. van Os J, Hanssen M, Bak M, Bijl RV, Vollebergh W. Do urbanicity and familial liability coparticipate in causing psychosis? *Am J Psychiatry*. 2003 Mar;160(3):477-82
13. Johns LC, Nazroo JY, Bebbington P, Kuipers E. Occurrence of hallucinatory experiences in a community sample and ethnic variations. *Br J Psychiatry*. 2002 Feb;180:174-8.

14. Johns LC, van Os J. The continuity of psychotic experiences in the general population. *Clin Psychol Rev.* 2001 Nov;21(8):1125-41.
15. Ohayon MM. Prevalence of hallucinations and their pathological associations in the general population. *Psychiatry Res.* 2000 Dec 27;97(2-3):153-64
16. Escher S, Romme M, Buiks A, Delespaul P, van Os J. Formation of delusional ideation in adolescents hearing voices: a prospective study. *Am J Med Genet.* 2002 Dec 8;114(8):913-20.
17. Asai T, Sugimori E, Tanno Y A psychometric approach to the relationship between hand-foot preference and auditory hallucinations in the general population: Atypical cerebral lateralization may cause an abnormal sense of agency. *Psychiatry Res.* 2011 Mar 23. [Epub ahead of print]
18. Hugdahl K. "Hearing voices": auditory hallucinations as failure of top-down control of bottom-up perceptual processes. *Scand J Psychol.* 2009 Dec;50(6):553-60.
19. Wigman JT, Vollebergh WA, Raaijmakers QA, Iedema J, van Dorsselaer S, Ormel J, Verhulst FC, van Os J. The Structure of The Extended Psychosis Phenotype in Early Adolescence--A Cross-sample Replication. *Schizophr Bull.* 2009 Dec 31.
20. Escher S, Romme M, Buiks A, Delespaul P, Van Os J. Independent course of childhood auditory hallucinations: a sequential 3-year follow-up study. *Br J Psychiatry Suppl.* 2002 Sep;43:s10-8.
21. Beavan V, Read J. Hearing voices and listening to what they say: the importance of voice content in understanding and working with distressing voices. *J Nerv Ment Dis.* 2010 Mar;198(3):201-5.
22. Krabbendam L, Myin-Germeys I, Hanssen M, de Graaf R, Vollebergh W, Bak M, van Os J. Development of depressed mood predicts onset of psychotic disorder in individuals who report hallucinatory experiences. *Br J Clin Psychol.* 2005 Mar;44(Pt 1):113-25.
23. Krabbendam L, Myin-Germeys I, Bak M, van Os J. Explaining transitions over the hypothesized psychosis continuum. *Aust N Z J Psychiatry.* 2005 Mar;39(3):180-6.
24. Krabbendam L, van Os J. Affective processes in the onset and persistence of psychosis. *Eur Arch Psychiatry Clin Neurosci.* 2005 Jun;255(3):185-9
25. Krabbendam L, Myin-Germeys I, De Graaf R, Vollebergh W, Nolen WA, Iedema J, Van Os J. Dimensions of depression, mania and psychosis in the general population. *Psychol Med.* 2004 Oct;34(7):1177-86
26. Ian K, Jenner JA, Cannon M. Psychotic symptoms in the general population - an evolutionary perspective. *Br J Psychiatry.* 2010 Sep;197(3):167-9.
27. van Os J, Hanssen M, Bijl RV, Ravelli A. Strauss (1969) revisited: a psychosis continuum in the general population? *Schizophr Res.* 2000 Sep 29;45(1-2):11-20