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Auditory Hallucinations

Have you ever heard a voice calling you from the other room when you know you're home alone? Good news, you aren't being haunted, you're just hallucinating! Don't worry, it sounds worse than it is. These experiences are known as Auditory Hallucinations, and in this paper I will explain some of the complexities of auditory hallucinations and hopefully teach you something interesting. First, let's begin with what auditory hallucinations are.

Auditory hallucinations are, in scientific terms, "the sensory perceptions of hearing noises without an external stimulus," as according to the National Institute of Health (NIH). When the auditory hallucinations are voices or the sound of people talking, then they are categorized more specifically as Auditory Verbal Hallucinations. This type of auditory hallucination is probably most widely known to be a symptom of Schizophrenia. "This specific subset of paracusias is particularly associated with schizophrenia but is not specific to it." (Thakur, et al. 2023)

Auditory hallucinations appear in a large range of different disorders, and it is thought to have a diverse set of causes. They do, however, occur most often in individuals with psychosis, which is a collection of symptoms that affect your mind and creates loss of touch with reality. Some symptoms of psychosis include paranoid ideas, trouble thinking clearly and logically, and having strong beliefs that are not shared by people within your community; like the idea the Minnesota Vikings will be able to make it to the Superbowl. Delusions of grandeur in sports aside, let's

return to the delusions of the mind. Auditory hallucinations are the most common type of hallucination, with researchers estimating between 5-28% of people in the United States experiencing them. One specific type of auditory hallucination is the phenomenon of having auditory hallucinations when you are falling asleep or when you are waking up, which are known as Hypnogogic hallucinations and Hypnopompic hallucinations respectively. These hallucinations are considered to be normal and in most cases aren't a cause for concern as around 70% of people have had one of these hallucinations at least once. With how many forms of auditory hallucinations there are and how surprisingly common they appear to be, surely we would have an understanding of what causes them, right? Actually, we don't know. While we don't understand the exact trigger in the brain that causes auditory hallucinations, there are a few theories that try to explain why this may occur. One theory is that it is caused by an imbalance of serotonin and dopamine, with another ruling it as spontaneous activation of the auditory network in your brain. However, what if I told you that you weren't actually hearing anything? No, I'm not messing with you, auditory hallucinations don't actually use your ears to make you hear things.

In an article published in 2021, titled, "Auditory hallucinations activate language and verbal short-term memory, but not auditory, brain regions," a study was conducted to measure what parts of the brain were being activated during the event of an auditory verbal hallucination. The results of this study found that auditory verbal hallucinations activated regions of the brain unrelated to parts of the brain responsible for hearing. "As a group, the AVH+patients showed no activation in most of the superior temporal cortex when they experienced AVH, including its posterior portion which contains the primary auditory cortex (Heschl's gyrus)."

(Fuentes-Claramonte, et al) In a rather ironic turn of events, auditory hallucinations, or at the

very least auditory verbal hallucinations, are not actually auditory. This not only proves the theory of spontaneous activation of the auditory networks of the brain wrong, but also raises more questions about how auditory hallucinations occur, considering that no one is actually “hearing” anything. This issue is only made more difficult to solve due to the wide range of mental disorders that experience auditory hallucinations as a symptom, such as schizophrenia, bipolar disorder, post-traumatic stress disorder (PTSD), anxiety disorder, and major depression. Even having a hearing impairment can cause auditory hallucinations, such as tinnitus, which becomes more likely the more severe the hearing impairment is. This may be the reason that I hear my mom yell at me to get up in the morning, despite living in my own house. Another possible cause of auditory hallucinations is trauma, which is a common factor of many of the other mental disorders that can cause auditory hallucinations. However, this should not be interpreted to mean that trauma is the only cause or has to be a factor in order for auditory hallucinations to occur.

While the observation that trauma can have a significant role to play in the onset as well as the continuation of voice hearing is one of the most striking and important developments in the recent study of psychosis, it is a different matter altogether to claim that it is necessary for it to occur. This is made even clearer when the causes of trauma can be events that can themselves cause auditory hallucinations. “Yet many traumatic experiences also commonly co-occur with other events that may constitute a parallel risk factor for the development of hallucinations after trauma: for example, concussion and brain injury in intimate partner violence,¹⁸ malnutrition and neglect in childhood trauma,¹⁹ and drug-facilitated sexual abuse.²⁰” (Bull, 2019) So, while trauma can be a very large influence on the development of auditory hallucinations, this does not mean it is a deciding factor that must occur in order for auditory hallucinations to develop. To

simplify things, Auditory hallucinations can be caused by a variety of factors. It does not have to include trauma.

To put a nice bow on this topic: Auditory hallucinations are the occurrence of hearing things that are not there, they are very common and have a diverse set of causes, they are not actually “heard,” and trauma is not required for them to be developed. It is a complex and confusing can of worms with no concrete understanding of what actually causes these phenomena. To put it in the simplest of words, we don’t know enough to have a solid idea of what happens. This is definitely a topic that you should keep an eye on, or better yet, keep an ear open for. Future discoveries into this subject will surely be something worth learning.

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