

Scientists have proposed many different causes and explanations for voice-hearing. These explanations aren't in any particular order, they don't exclude each other, and they all have pros and cons.

1 Voices are linked to 'inner speech'

Most of us talk to ourselves in our heads. For example, you might say to yourself 'Remember to buy milk' while heading out in the morning. This is called inner speech and some scientists think it is linked to voice-hearing. The theory says that a person hears a voice when they have actually talked to themselves in inner speech, but for some reason don't recognize these thoughts as their own. The result is that a bit of inner speech that was actually produced by you becomes attributed to another person or voice.

Support for the inner speech theory:

- Brain scanning studies have shown that voice-hearing, including talking to ourselves in our heads, activates the same part of the brain we use for speaking.
- Muscles around the mouth have been found to move when a person is hearing voices. This also happens when a person is doing inner speech.

If voices are inner speech, why do people not recognise them as their own?

- **Sometimes a person's inner speech doesn't sound like them.** When this occurs, it is easier to understand how it could be experienced as coming from somewhere else.
- **Stress or strain.** Sleep deprivation, drugs or alcohol, or major life stresses can make it easier to make thinking errors.
- **Inner speech can be intrusive.** When thoughts just 'pop into our heads', they are more likely to be attributed to someone else.
- **Unacceptable ideas.** Sometimes people find the content of their thoughts so unacceptable that they are sure that they are 'not me'.

2 Voices are responses to trauma

'The evidence of a link between childhood misfortune and future psychotic disorder is about as strong statistically as the link between smoking and lung cancer.'

Richard Bentall, Professor of Clinical Psychology at the University of Sheffield

Some types of voices are best understood as having their roots in **memories of traumatic life experiences**, particularly those that occur in childhood.

Some people report voices and other unusual experiences that are like 'flash backs' or memories that directly replay or echo the traumatic event. For others, the link is more complicated. For example, a survivor of childhood abuse struggling with shame and other negative feelings might hear the voice of their abuser telling them they are worthless or commanding them to do dangerous or unacceptable things.

"I thought I was bad because the voices called me all sorts of names. Later I realized that the voices were related to the physical abuse because they have the characteristics of those that abused me".

Individuals with a history of childhood trauma, including neglect, bullying, physical, sexual and emotional abuse, are approximately



more likely to develop psychosis.

3 Social and environmental factors play a role

Voices-hearing is also linked to lots of everyday stresses and strains. These include money worries, access to school and work, and community problems.

Recent research in London found that **poverty and deprivation** can increase a person's risk of developing psychosis, as can **living in a city as opposed to a rural area**. Inequality is also a contributing factor.

People from minority ethnic groups living in the UK are much more likely than white British people to be diagnosed with psychosis or schizophrenia.

Social exclusion, discrimination, everyday and institutional racism all contribute to the problem.

4.6

times
MORE likely

Black
Caribbean

4.1

times
MORE likely

Black
African

2.3

times
MORE likely

Pakistani

4 What's happening in the brain is relevant too

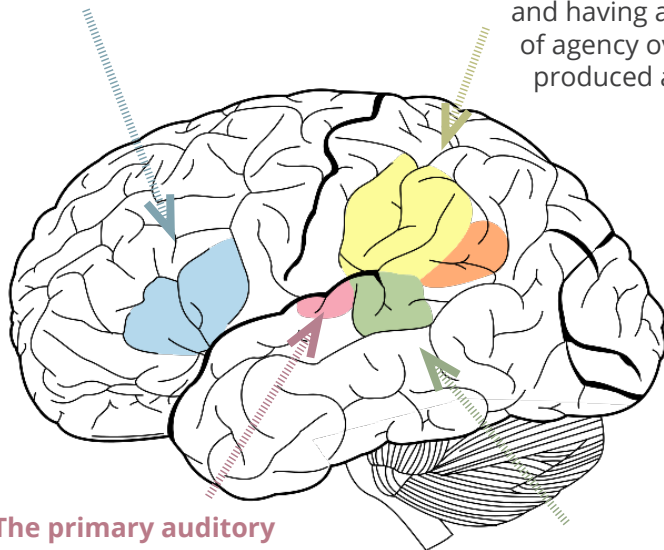
Brain scanning studies (using a technique called functional magnetic resonance imaging, or fMRI) reveal that a few specific areas of the brain seem to be more active than others when someone is hearing a voice. These include:

Broca's area

Involved in speech production and talking to yourself in your head (i.e. inner speech)

The temporoparietal junction (TPJ)

Used for integrating the senses and body signals and having a feeling of agency over self-produced actions



The primary auditory cortex

Sometimes but not always activated when people hear voices

Wernicke's area

Important in understanding speech

Did you know?

Some scientists now think of the brain as a **'prediction machine'** whose main job is not to process information coming from outside, but instead to predict what is happening in the world and adjust those predictions on the basis of new information.

The theory holds that usually there is often too much information for the brain to take in, so we take a shortcuts or 'fill in the gaps'. How we fill in the gaps might be based on past experiences and what we have learned to expect about the world.

This means that if you get used to there being particular threats around you – e.g. snide comments, whispers, or outright abuse – your brains might start **'filling in the gaps' with those expectations**. In some cases, this might lead to hearing unpleasant voices; in others, it could result in seeing a dark shadow, or feeling like someone is touching or pushing you.

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Alderson-Day et al (2016). **The brain's conversation with itself: Neural substrates of dialogic inner speech**. *Social Cognitive & Affective Neuroscience*, Vol. 11, Issue 1. doi: 10.1093/scan/nsv094.

Varese et al (2012). **Childhood adversities increase the risk of psychosis: a meta-analysis of patient-control, prospective- and cross-sectional cohort studies**. *Schizophrenia bulletin*, Vol. 38, Issue 4, 661-71. doi: 10.1093/schbul/sbs050.

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