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**Auditory hallucinations: A review of the ERC "VOICE" project**

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#### Abstract

In this invited review I provide a selective overview of recent research on brain mechanisms and cognitive processes involved in auditory hallucinations. The review is focused on research carried out in the "VOICE" ERC Advanced Grant Project, funded by the European Research Council, but I will also review and discuss the literature in general. Auditory hallucinations are suggested to be perceptual phenomena, with a neuronal origin in the speech perception areas in the temporal lobe. The phenomenology of auditory hallucinations is conceptualized along three domains, or dimensions; a perceptual dimension, experienced as someone speaking to the patient; a cognitive dimension, experienced as an inability to inhibit, or ignore the voices, and an emotional dimension, experienced as the "voices" having primarily a negative, or sinister, emotional tone. I will review cognitive, imaging, and neurochemistry data related to the three dimensions. The reviewed data are summarized in a model that sees auditory hallucinations as initiated from temporal lobe neuronal hyper-activation that draws attentional focus inward, and which is not inhibited due to frontal lobe hypo-activation. It is further suggested that this is maintained through abnormal glutamate and possibly GABA transmitter mediation.

1

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