

# A comprehensive study on the cognitive mechanisms and neural substrates of hallucination proneness

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Propositions accompanying the PhD thesis

**A comprehensive study  
on the cognitive mechanisms and neural substrates  
of hallucination proneness**

By

Joseph Francois Johnson

- I. Responsivity of the posterior temporal cortex to environmental voice sounds increases with one's level of hallucination proneness.
- II. Connectivity of the cerebellar pathway relaying prediction errors to the motor cortex is altered with increasing hallucination proneness.
- III. Brain activity is suppressed in the anterior temporal voice identity region when eliciting the sound of one's own voice via button-press.
- IV. Abnormal salience processing may be the thread that ties together different accounts for the emergence of false perceptions such as hallucinations.
- V. Sufficient paralinguistic information to recognize one's own voice identity is contained in a single vowel sound, both behaviourally and in terms of brain responses.
- VI. Delineating false perception spectra of risk and frequency from those of severity and phenomenology may improve our understanding of the psychosis continuum.
- VII. Detection of cerebellar responses to transient changes in sensory feedback is challenging to probe using fMRI, and may require sustained manipulation to elicit an observable change in activation.
- VIII. Destigmatizing brain function and structure associated with false perceptions may promote help-seeking behaviour for those with persistent disruptive hallucinations possibly at risk for impairment.