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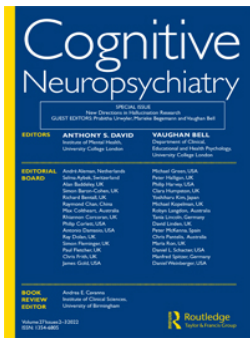
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Editorial: new directions in hallucination research

Prabitha Urwyler, Marieke Begemann & Vaughan Bell

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Editorial: new directions in hallucination research

Hallucinations are deeply intriguing phenomena but conducting research on them can be challenging. Ineffable experiences can test the limits of traditional research methods and can rely on individuals sharing deeply personal and sometimes deeply distressing experiences. In addition, research is now moving beyond the established psychiatric paradigm of “voices and visions as symptoms” to examine how alterations to experience across the range of human experience can inform models of perception, meaning and memory.

This special issue of *Cognitive Neuropsychiatry* is focused on new directions in hallucination research – and who better to expand the horizons of hallucinations research than early career researchers with the vision and foresight to tackle this area anew.

The articles in this special issue comprise nine papers from the early career network of the International Consortium on Hallucination Research. Each of these papers has been led by a working group of early career researchers – often attracting more established and senior researchers as the work gathered momentum. The papers are an exciting collection of new visions for hallucinations research.

The special issue begins with research on groups who have intense hallucinatory experiences but have rarely been the focus of systematic research. Palmer-Cooper and colleagues (Palmer-Cooper et al., 2021) examine the role of metacognition in two groups of people. Firstly, in people with ASMR (Autonomous Sensory Meridian Response) – a perceptual condition in which low-level audio-visual stimuli triggers intense somatic sensations in the head and neck regions that can spread throughout the body; and second in Tulpamancers – individuals who, through self-training, develop the experience of seemingly autonomous identities existing in their consciousness. The study found a complex relationship between these experiences and measures of meta-cognition that did not simply mirror what is typically found in studies on patients with psychosis, suggesting that these experiences are unlikely to be simply “mild” experiences on the clinical spectrum.

The paper by Montagnese and colleagues (Montagnese et al., 2021) examines types of hallucinations that are well-known clinically but are drastically under-researched – namely, hallucinations associated with neurodegenerative disorders and eye disease. One long-standing puzzle has been why hallucinations in these conditions relate so variably to insight, with some hallucinations associated with eye disease being visually spectacular but often clearly recognised as hallucinations. Montagnese and colleagues examined correlates of insight and found that it was predicted by better cognition and lower levels of distress, potentially suggesting a commonality with hallucinations in other domains, although the exact relationships varied across clinical conditions.

Four studies focused on hallucinated voices, although took markedly different approaches. Using a simulation study, Bortolon and colleagues (Bortolon et al., 2021) found that both neutral and negative simulated voices triggered similar levels of subjective shame in volunteers, suggesting that the emotional impact of voices may be partly down to their intrusive

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nature and not solely due to their content. de Boer and colleagues (de Boer et al., 2021) applied sentiment analysis, a machine learning approach, to an important but rarely examined phenomenon - the verbatim content recorded by patients who hear hallucinated voices. They found that the valence of voice content showed a strong association with total distress and disruption of life, but not with the intensity of distress.

Begemann and colleagues (Begemann et al., 2021) used cluster analysis to examine how specific experiences of childhood trauma and hallucinated voices co-associate across two international datasets. They revealed three unique trauma clusters, which were linked to different clinical and phenomenological features of voice-hearing experiences, such as negative content, controllability, and beliefs about voices. Their results implicate “different mechanistic pathways and a need for tailored treatment approaches.”

Aiming to test better understand the interaction between hallucinated voices and voice perception, Amorim and colleagues (Amorim et al., 2021) tested the discrimination of vocal emotions and its association with hallucination-proneness in a large non-clinical sample. The authors reported that hallucination-proneness may dampen the perceived salience of vocal emotions with more emotionally valence auditory stimuli rated as more neutral, potentially giving an insight into how mechanisms for proneness and content relate.

The last set of contributions includes important conceptual work. Smailes and colleagues (Smailes et al., 2021) critically examined measurement practices used in hallucination research. Their analysis of variability in the measurement of hallucinatory experience emphasised that suboptimal measurement practices with suboptimal levels of reliability appear far too frequently. The consequences could include non-replicable results and a reduction in statistical power, highlighting the need to engage in better measurement practices as a key reform priority.

The next paper by Melvin and colleagues (Melvin et al., 2021) discusses whether innovative methods from arts practices could be applied to understanding the complex and multi-sensory nature of hallucinations. Reporting both a conceptual analysis and new data, they note that hallucinations were reported as “infused with sensory features, characterised by embodiment, and situated within lived circumstances” and highlight how traditional scale-based measures would miss most of this important phenomenological detail. This inability to capture more complex phenomena limits current neurocognitive models of hallucinatory experience and the authors open an important door to potential new approaches.

The last article from Wilkinson and colleagues (Wilkinson et al., 2021) makes a powerful argument for centring philosophy in the understanding of hallucinations. The authors present three examples of how philosophical approaches address the real-world experience of hallucinations via phenomenology; how the philosophy of cognitive science examines the viability of explanatory frameworks; and how the philosophy of science and psychiatry clarify key issues in the clinical and diagnostic classification of hallucination.

With this special issue, we hope new directions have not only been explored, but energised, and we look forward to seeing how the field of hallucinations research develops with the new generation of researchers.

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