Universität Basel

Research Project

Simulation Hallucinations Using Mixed Reality

Third-party funded project

Project title Simulation Hallucinations Using Mixed Reality
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Departement Psychologie
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Background: Reality discrimination (RD), the ability to discriminate between perception and imagination, is central to the assessment of psychiatric health, especially in the context of psychotic disorders. Impairments in RD are associated with auditory and visual hallucination proneness in patients with psychotic disorders as well as the general population. However, there are currently no instruments available that allow for the combined assessment of auditory and visual RD performance. Furthermore, RD paradigms are limited in their ability to account for the complex phenomenology of natural hallucinations. More sensitive assessment methods are crucial to improve patient care, diagnosis, and treatment.
Objectives: The overall goal of the proposed research is to develop a dual-modality RD paradigm to investigate the cognitive mechanisms underlying visual and auditory hallucinations and their relation to psychotic disorders. The first objective is to simulate hallucinatory perceptual experiences using a novel immersive technology method to manipulate the visual and auditory perception of natural environments. The second objective is to extend this simulation into a dual-modality RD paradigm based on the signal detection framework. Thereafter, the RD paradigm will be applied in healthy adults from the general population (Objective 3) and patients diagnosed with psychotic disorder (Objective 4).
Methods: A first study will test the hypothesis that visual and auditory RD performance is associated with hallucination proneness in the general population (N=100). A second study will evaluate visual and auditory RD performance in a sample of patients with psychotic disorders (N=30) and will test the hypothesis that these patients are impaired in RD relative to matched controls from Study 1. In both studies, participants will complete the newly-designed RD paradigm as well as assessments of hallucination proneness and predisposition to psychosis (Study 1) or psychosis severity (Study 2).
Expected Value of the Proposed Project: This research will contribute to the understanding of visual and auditory hallucinations and their shared cognitive mechanisms in the general population and patients with psychotic disorders. The novel RD paradigm may provide an improved measure of psychosis proneness that is more objective and behaviorally sensitive to hallucinatory experiences. This research may have important implications for the assessment, treatment, and early detection of psychotic disorders and will provide an ecologically valid framework from which innovative psychological interventions can be developed.

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