Just Seeing Things? Personality and Neurocognitive Correlates of Openness and Psychotic-like Experiences

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Positive symptoms include hallucinations and delusions. These occur across a variety of diagnoses, like schizophrenia, personality disorders, and mood disorders, and in the general population as "psychotic-like experiences." One framework for explaining positive symptoms involves "apophenia," or the tendency to perceive meaningful patterns where none actually exist. Though hallucinations and delusions represent extreme instances of apophenia, it can also include any instance of a false positive cognition, such as seeing animals in the clouds or hearing your name in noise. Importantly, apophenia may be the result of heightened pattern seeking, a tendency positively associated with the personality trait openness. We propose that pattern detection and associated traits are, in turn, underlaid by neural networks associated with experiential simulation and cognitive control, specifically, the default and frontoparietal networks. Here, we conducted a series of studies (N > 2500) using tests of pattern detection sensitivity, functional magnetic resonance imaging (fMRI), and questionnaires. Across samples, positive associations were found among openness and psychotic-like experiences. Both traits were positively associated with tendencies toward false positive errors. Resting state fMRI data suggested psychotic-like experiences and openness were related positively to default network connectivity and negatively to frontoparietal connectivity. Taken together, these findings suggest that pattern sensitivity and associated brain networks may underlie openness and psychotic-like experiences. Overall, our results advance understanding of the personality and neurocognitive correlates of psychotic-like experiences, while adding to a growing body of research characterizing the biology of psychiatric features through the use of large, nonpatient samples.