

Aberrant Salience and Probabilistic Reasoning in Distressing Attenuated Positive Psychotic Symptoms: An Examination of a Two Factor Model

Abstract

Theoretical psychological models of positive psychotic symptoms have increasingly emphasized the interaction of multiple cognitive factors. Research into delusions in particular has focused on the interaction of two factors; a perceptual anomaly that gives rise to a need for explanation, and a bias toward premature acceptance of a hypothesis. Recently this two factor approach has been applied to positive psychotic symptoms more broadly. Two candidate factors have received extensive theoretical and empirical interest. The aberrant salience hypothesis posits that salience regulation, mediated by dopamine, goes awry in psychosis, giving rise to a generalized sense of undue significance that is applied to neutral perceptual stimuli. For the person who experiences it, this unwarranted sense of significance seems to demand an explanation. A second candidate factor, the jumping to conclusions bias has come to be regarded as one of the most stable findings in psychosis research. Reliably associated with the presence of delusions, but also associated with positive symptoms more broadly, the bias is seen when psychotic participants make a probabilistic decision on the basis of less evidence than controls. These factors may work in concert to establish unrealistic conclusions about the nature of perceptual inputs, giving rise to psychotic explanations. In a quasi-experimental study, individuals who endorsed an unusually high level of distressing attenuated positive psychotic symptoms (DAPPS) were compared with controls who endorse a lower than average number. Participants completed one behavioral and one self-report measure of aberrant salience, and a commonly used task for assessing the presence of bias in probabilistic reasoning.

Results: Preliminary analyses revealed that participants in the current study did not respond in the expected way to the behavioral measure of aberrant salience. It is possible that the task used is insufficiently sensitive to detect subtle variations in salience processing among non-clinical individuals. In terms of the main results, multiple independent samples t-tests (corrected for multiple comparisons) revealed a group difference only on the self-report measure of aberrant salience. Groups showed no significant difference on the test of probabilistic reasoning, though the group with elevated rates of DAPPS requested more evidence than controls. Logistic regression models predicting group membership from the experimental variables suggested that while the inclusion of aberrant salience significantly improved predictive accuracy, neither probabilistic reasoning nor the interaction between aberrant salience and probabilistic reasoning increased predictive accuracy. This result is consistent with an interpretation on which distressing attenuated positive psychotic symptoms are associated with aberrant salience attribution but not with probabilistic reasoning deficits. Further research is needed to establish whether these variables interact in clinical samples.