

Direct comparison of two encoding strategies in schizophrenia: Behavioral and neurobiological findings

Episodic memory deficits are a well-established finding in schizophrenia. Such deficits are thought to be related to ineffective stimulus processing, particularly at the encoding stage. Functional neuroimaging studies of individuals with schizophrenia have consistently demonstrated abnormal patterns of encoding-related brain activity in regions associated with semantic processing and successful subsequent memory. However, recent work in this area has suggested that use of beneficial encoding strategies can improve memory performance and encoding-related brain activity in individuals with schizophrenia. The current study compared the influence of two types of verbal encoding (Incidental and Intentional) on brain activity and subsequent memory performance in 18 participants with schizophrenia (SCZ) and 15 control participants. In support of previous findings, SCZ recognized significantly more words seen during Incidental than during Intentional encoding. Furthermore, Incidental (compared to Intentional) encoding in SCZ activated bilateral inferior frontal gyrus (BA 45/47) and left inferior parietal lobe (BA 40), among other regions, while Intentional (compared to Incidental) encoding was not associated with any regions of significant activity in SCZ. SCZ also showed normal subsequent memory effects (greater encoding-related activity for subsequently-remembered items compared to missed items) in left medial frontal gyrus (BA 6) and left inferior parietal lobe (BA 40), among other regions. The results of this study demonstrate a significant role of encoding orientation, both behaviorally and neurobiologically, during memory processing in individuals with schizophrenia. Furthermore, it provides additional evidence that faulty encoding processes underlie memory deficits in schizophrenia and that such impairments can be modulated via orientation to beneficial encoding strategies.