

Probing the minimally delayed ocular-motor response task in psychosis

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Background: Saccadic eye movements are reliable, well-understood biological phenomena, which can be utilized to examine sensorimotor and cognitive processes in healthy and clinical populations. Participants with psychotic syndromes robustly show evidence for cognitive dysfunction by indexing high error rates and increased latencies on antisaccade and memory-guided saccade tasks, however, the exact mechanisms underlying such disruptions are unclear given the complex task designs.

Methods: In response, this study used the minimally delayed ocular-motor response (MDOR) task, which isolates behavioral inhibition, in a psychiatric sample including participants with schizophrenia (N=45), schizoaffective disorder (N=44) and bipolar disorder with psychosis (N=20) compared to healthy controls (N=45). Inhibition errors and latencies were examined for 200ms or 1000ms target display durations (TDD) for the MDOR task and compared to the antisaccade task.

Results: Groups with diagnosed psychotic disorders displayed higher error rates ($p < 0.001$), increased response latencies on correct trials ($p = 0.017$) and decreased response latencies on incorrect trials ($p = 0.006$) compared to healthy controls. Across all groups, the 200ms TDD trials resulted in fewer errors and increased response latencies than the 1000ms TDD trials. The MDOR task was correlated with anti-saccade percent error ($p < 0.001$) and incorrect reaction time ($p < 0.001$) but reflected no correlations with a control pro-saccade task.

Conclusions: These results indicate that participants with psychotic disorders experience cognitive deficits specifically related to behavioral inhibition demonstrated by the MDOR task. Cognitive impairments associated with additional disrupted executive processes, including attention and working memory, are observed in the antisaccade task.

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