# Visual Processing Abnormal in Schizophrenia

VITALS

**Major Finding:** Electroencephalographic monitoring found the P1 component reduced in individuals at risk for psychosis. The deficits were related to worse performance on working memory in a task with short stimulus presentation times, though high schizotypes were no different from controls in central executive and memory tasks that allowed longer stimulus duration.

**Data Source:** Prospective study conducted at the University of Manchester with volunteers.

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BY CAROLINE HELWICK

FROM THE ANNUAL CONGRESS OF THE EUROPEAN COLLEGE OF NEUROPSYCHOPHARMACOLOGY

AMSTERDAM – Visual processing abnormalities can be observed not only in schizophrenia but in persons at risk for psychosis, according to a study by investigators in the United Kingdom presented at the congress. "We wanted to clarify the importance of early visual deficits for the formation of cognitive deficits in the schizophrenia spectrum," said Ivan Koychev, a doctoral candidate at the University of Manchester, Neuroscience and Psychiatry Unit.

"Our study confirmed that visual deficits are not due to the overt clinical phenotype, but are rather characteristic of the schizophrenia spectrum."

Mr. Koychev and his colleagues carried out an event-related potential (ERP) study using a working memory task on volunteers exhibiting high and low levels of schizophrenia-like personality traits. The hypothesis was that the high schizotypes would have early visual deficits (P1 component reduction) and working memory similar to that observed in persons with schizophrenia and their first-degree relatives. They also hypothesized that the working memory deficits would be more pronounced on tasks that allow only short stimulus presentation, but would be more difficult to demonstrate in tasks that allow ample time for stimulus processing.

Participants completed a visual delayed discrimination task where they were shown stimuli briefly (400 ms),

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MR. KOYCHEV

which they compared to target cues presented after a 6-second delay.

Researchers also recorded their performance on several tests of cognition.

The high schizotypal and low schizotypal (control) subjects did not differ in their reaction times to the task, which increased significantly with the working memory load ($P$ less than .001). However, the performance on the task was significantly worse in the high schizotypes, as they identified correctly a lower number of target cues ($P = .034$), Mr. Koychev said.

"There was no difference in reaction times but their behavior was different in that the high schizotypes were recognizing fewer objects. We then asked if this was reflected in visual deficits, and we found reduced potential in the high schizotypes. This was true for encoding and retrieval. When subjects were shown images, the visual cortex did not respond as robustly," he said in an interview.

The P1 ERP component was significantly reduced in the high schizotypes' sample, both in the encoding ($P = .034$; effect size, .0351) and retrieval ($P = .029$; effect size .353) phases of the task. None of the later components (N1, P2) was significantly different between the groups. The P1 abnormality in the schizotypal subjects was reflected by abnormalities in the alpha evoked oscillations (Neuropsychologia 2010;48:2205-17).

"Our study confirmed the hypothesis that the P1 component is reduced in individuals at risk of psychosis," Dr. Koychev said. ■