



Visual backward masking: Deficits in locating targets are specific to schizophrenia and not related to intellectual decline

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1. INTRODUCTION

Visual backward masking deficits have been put forward as potential vulnerability markers for schizophrenia. This study was conducted to investigate diagnostic specificity of a location and an identification variant of the backward masking task for schizophrenia and analyze masking performance during the course of the tasks. The influence of schizophrenic patients' intellectual decline on masking performance was also examined.

2. METHODS

Twenty-eight schizophrenic patients (m/f: 14/14, age: 35.4 (SD: 9.5)) were compared to 28 patients with unipolar depression (m/f: 12/16, age: 35.9 (SD: 10.4)) and 28 healthy controls (m/f: 16/12, age: 35.6 (SD: 10.6)) on two different backward masking paradigms, a letter location task and a letter identification task applying a mask with low spatial frequency that should activate the transient channel system. All patients fulfilled criteria for the DSM - IV diagnosis of schizophrenia or major depressive disorder and were clinically remitted (PANSS positive subscale < 10, PANSS negative subscale < 45; MADRS: < 20). Cognitive decline was measured by subtracting percentile ranks of the MWT- B (Mehrfachwahl-Wortschatztest), a crystallized, and ZVT (Zahlenverbindungstest), a fluid intelligence test.

3. RESULTS

On the location task schizophrenic patients made significantly more detection errors than healthy controls at ISIs 16.7, 33.3, 50, and 66.7 ms, and compared to unipolar patients they made significantly more errors at an interstimulus interval (ISI) of 50 ms. Thus, the location masking dysfunction of schizophrenia patients was

distinctive at a rather long interstimulus interval (50 ms). On the identification task the performance of schizophrenic patients did not differ from that of the two control groups. Identification but not location masking performance improved during the course of the task for all groups. Intellectual deterioration of schizophrenic patients was not correlated with identification or location masking performance.

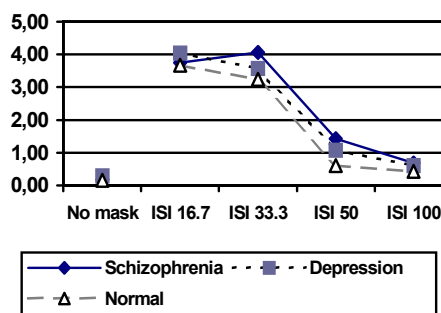


Figure: Mean error rate in the identification task as a function of interstimulus interval (ISI)

4. DISCUSSION

Schizophrenic patients are characterized by specific impairments in spatial visual processing which appear to be independent of intellectual decline. The results underline diagnostic specificity of the location-masking paradigm for schizophrenia.

Due to the fact that deficits occurred rather late in the masking function, subcortical transient channel functions seem to be intact, so the distinctive location masking deficits observed in schizophrenic patients could be primarily mediated by central mechanisms.

