

Can the time needed to process visual information following a saccade be used to predict variations in neural measures of working memory and well-being?

ABSTRACT:

Background

Distorted perceptual experience have been proposed as a risk factor for psychotic symptoms and illnesses, but little is known about its relationship with schizotypal personality traits in the general population. In addition, it has been suggested that early visual processes are important for higher cognitive functioning (like working memory) known to be impaired in the schizophrenia spectrum.

Aims

Here we investigated a) the relationship between fundamental visual processing (visual acuity, contrast sensitivity and eye-movement related visual processing) and schizotypy and b) the degree to which visual acuity and contrast sensitivity predict working memory performance.

Method

We first measured (in 37 participants) visual acuity and contrast sensitivity using the Acuity-Plus test, visual processing time and eye-movements with the Eye Movement and Integrated Saccade Latency test and schizotypy with the Multidimensional Schizotypy Scale-Brief. In a second experiment using EEG (in 26 participants), we also measured ERPs during a working memory task.

Results

The first experiment found that the disorganised dimension of schizotypy predicted visual acuity. The second experiment showed a relationship between visual acuity and neural measures of working memory.

Conclusions

These results of the two experiments suggest that first diminished visual acuity may serve as a relevant biomarker in schizophrenia and schizotypy. It highlights the clinical and subclinical importance of understanding how vision can be affected in people with schizotypal behaviour. Second, the results also showed the importance of basic visual processes for being able to maintain information in working memory and may underlie their impairment.

Keywords

EEG, Visual acuity, Eye-movements, Working memory, Schizotypy

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Llapashtica, E., Barbur, J., & Haenschel, C. (in press) Reduced visual function in schizotypal traits: An exploratory study. *Schizophrenia Bulletin*.

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