

Atypical visual evoked potentials in children with autism generated by both low and high spatial frequency gratings

Results:

There are reports of atypical visual perception in individuals with autistic spectrum disorders (ASD) meaning that they perceive the world differently to typical observers. It remains unclear whether atypical perception reflects abnormality in the visual system, i.e. bottom-up processes, or in higher level cognition and information processing biases, i.e. top-down processes. The aim of this study was to investigate basic visual perception in participants with autistic spectrum disorder by measuring the visual evoked potentials elicited by simple visual stimuli in 20 children / adolescents with autistic spectrum disorder and 20 typically developing controls. We predicted, based on existing literature, that low frequencies will be specifically atypical in autism and that high spatial frequencies may be intact. The VEP elicited by Gabor patches presented at different spatial frequencies was measured (0.5 – 8 cycles/°). We found significant differences in the VEP elicited in the two groups. Specifically, the latency to peak was faster in the children with ASD than in the controls, and the amplitude of the C1 component was reduced in the majority of children with ASD. These data provide evidence of abnormality at a very early stage of visual processing in ASD, possibly at the level of V1. The finding reported here reflects the fact that 61.2% of the participants with autism did not have a negative component in their waveforms. This lack of C1 in some participants does not appear to correlate with age, IQ, severity of symptoms (as measured by the ASQ & CARS) or behavioural performance. It is now crucial to determine if such impairment influences the development of social cognitive functions such as face processing.

Published work:

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