Children with autism spectrum disorder show reduced adaptation to number

Written by PisaVisionLab
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New Research in PNAS

Congratulations to Marco T, David M, and David B whose latest paper has just been published in PNAS!


Autism is known to be associated with major perceptual atypicalities. We have recently proposed a general model to account for these atypicalities in Bayesian terms, suggesting that autistic individuals underuse predictive information or priors. We tested this idea by measuring adaptation to numerosity stimuli in children diagnosed with autism spectrum disorder (ASD). After exposure to large numbers of items, stimuli with fewer items appear to be less numerous (and vice versa). We found that children with ASD adapted much less to numerosity than typically developing children, although their precision for numerosity discrimination was similar to that of the typical group. This result reinforces recent findings showing reduced adaptation to facial identity in ASD and goes on to show that reduced adaptation is not unique to faces (social stimuli with special significance in autism), but occurs more generally, for both parietal and temporal functions, probably reflecting inefficiencies in the adaptive interpretation of sensory signals. These results provide strong support for the Bayesian theories of autism.
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A

Adaptation %

Coefficient of Variation

B

Adaptation %

TD  ASD

C

Coefficient of Variation

Baseline Adaptation

TD  ASD

ns ns

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