Lay Abstract

autism

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Change detection of meaningful objects in real-world scenes in adolescents with and without autism spectrum disorder

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While adolescents with Autism Spectrum Disorder (ASD) experience difficulties with aspects of their daily life, they may simultaneously outperform their Typically Developing (TD) counterparts in some areas, including many perceptual tasks. Previous research has suggested that adolescents with ASD are better than TD adolescents in detecting particular non-social (local) details within complex visual scenes. We argue that TD adolescents first focus on the overall (global) meaning of a scene (to identify 'the forest before the trees'), while later vision then focuses their attention to more specific (local) details in the display (e.g. trees, trunks, leaves). This might be different in adolescents with ASD, who seem to focus directly on processing the details of the scene (identifying 'the trees before the forest'). To better understand these differences, we implemented a task referred to as a 'change blindness paradigm' in adolescents with and without ASD. In such tasks, an original and a modified real-world scene, separated by a grey blank image, alternate repeatedly until observers detect the change between the two. Our results indicated that adolescents with and without ASD performed similarly when scenes were presented upright. However, when the scenes were presented upside down (i.e. inverted scenes), only the performance of the TD adolescents became worse. We suggest that these findings result from a more locally biased search strategy in people with ASD (i.e. a focus on individual details), compared to TD participants. In the inverted scene condition, it could be more efficient to directly focus on the details (e.g., the change in the image) than to process the overall scene information, suggesting an area of strength in adolescents with ASD.