Autism is a severe neurodevelopmental disorder characterized by qualitative impairment before the age of three in verbal and nonverbal communication, reciprocal social interaction, and a markedly restricted repertoire of activities and interests. In typically developing individuals, it is generally accepted that facial processing involves an area of the fusiform gyrus (FG), while object processing is less clearly understood. In children with autism, there is conflicting evidence as to whether the FG is activated during facial processing, and inconclusive findings regarding object processing. Functional MRI data were collected using a task involving face matching, object matching, and a control condition consisting of morphed images. The experiment consisted of a block design with alternating 24-second blocks of neutral facial expressions (for person matching), objects, and the control condition. The participants included 13 children between 8 and 12-years of age with high-functioning autism and 17 typically developing age-matched children. In the object vs. face condition and face vs. control condition, the results show differential activation between the two groups. In the face vs. control condition, there was robust right and left fusiform gyrus activation in the typical group (p<.001), as compared with weaker activation in right fusiform gyrus only for children with autism (p<.01). The object>face contrast revealed right parahippocampal gyrus activation (p<.01) in the typical group, and stronger bilateral activation of the parahippocampal gyrus (p<.005) in the autism group. Between group analysis indicated the parahippocampal gyrus activation in the autism group is significantly greater than in the typical group (p<.001). These findings support previous research showing atypical activation patterns during complex visual processing in individuals with autism, and demonstrate the need for further exploration of the parahippocampal gyrus in autism to better understand how object processing may differ between these groups.

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