
How do adults with autism spectrum disorders perceive and process bodies of other humans?

Miiamaaria Kujala*^{†1,2}, Guillemette Riot^{2,3}, Marie-Anne Hénaff^{1,2}, Pierre Fonlupt^{1,2},
Sandrine Sonie^{1,2,4}, Nicolas Georgieff^{2,3}, and Christina Schmitz^{1,2}

¹Lyon Neuroscience Research Center, INSERM U1028 - CNRS UMR5292 – Lyon Neuroscience
Research Center – DYCOG Team, 69675 Bron Cedex, France

²Université de Lyon 1 – Université de Lyon – France

³CEDA, CH Le Vinatier – CEDA, CH Le Vinatier – France

⁴CRA Rhône-Alpes, CH Le Vinatier – CRA Rhône-Alpes, CH Le Vinatier – France

Abstract

Autism spectrum disorders (ASD) are often studied with respect to implications of social interaction, but much is still unknown about how adults with ASD perceive and process visual representations of human bodies. To investigate this, we recorded the brain activity of 6 adults with ASD without mental retardation (4m/2f) and 11 control subjects (10m/1f), while they observed still images of human bodies and chairs during an 1.5T fMRI scan. Altogether 20 different body and 20 chair images were presented repeatedly in a block design adopted from Downing et al (2001), localizing the extrastriate body area (EBA). Each stimulus was presented for 300 ms with a 500-ms ISI, in blocks comprising 20 stimuli presented in pseudorandomized order; 8 body and 8 chair blocks were presented in total. Subjects' task was to press the button whenever they saw an image repeated twice in succession. Statistical analysis at the individual level revealed robust EBA activation in control subjects, but more variable and weaker EBA activation in individuals with ASD. In control group, EBAs were found bilaterally or lateralized to the right hemisphere from 10/11 subjects at FWE-corrected threshold of $p < 0.05$, whereas the same was true for only the 2 females with ASD. The prevalence of EBA differed between groups ($p < 0.05$, independent-samples Mann-Whitney U test). These preliminary findings suggest the possibility of differences in the brain processing of human bodies in ASD, which may also contribute to the processing of more complex social interactions.

*Speaker

†Corresponding author: miiamaaria.kujala@gmail.com