

Visual Exploration of Social Stimuli – Comparisons of Patients with ADHD or Autism and Healthy Controls

Chara Ioannou¹, Divya Seernani¹, Holger Hill², Giuseppe Boccignone³, Tom Foulsham⁴, Monica Biscaldi-Schäfer¹, Christopher Saville⁵, Ulrich Ebner-Priemer², Christian Fleischhaker¹, Christoph Klein^{1,5}

¹Department of Child and Adolescent Psychiatry, Medical Faculty, University of Freiburg, Germany; ²Institute of Sports and Sports Sciences, Karlsruhe Institute of Technology, Germany; ³Department of Computer Science, University of Milan, Italy; ⁴Department of Psychology, University of Essex, England; ⁵School of Psychology, Bangor University, North Wales, United Kingdom; ⁶Department of Child and Adolescent Psychiatry, Medical Faculty, University of Cologne, Germany
chara.ioannou@uniklinik-freiburg.de

While observable social deficits are among the obligatory DSM 5 criteria for diagnosing Autism Spectrum Disorder (ASD), their empirical verification through the analysis of gaze movement patterns of social attention has proven difficult. According to a recent meta-analysis, one of the main abnormalities of ASD patients is processing of social complexity (Chita-Tegmark, 2016). The present study aims to elucidate the impact of social complexity on gaze movement patterns of ASD patients in comparison with ADHD patients, supposed to share aetiological factors (Rommelse et al., 2011). Four images with two levels of social complexity – one person versus four people – are presented, for 120 sec each, to children and adolescents with ADHD, ASD and healthy controls, aged 10-13 years (N=90; all native German speakers).

Eye movement patterns in response to social and non-social cues

Claudia Bonmassar, Francesco Pavani, Wieske van Zoest

University of Trento, Italy
claudia.bonmassar@unitn.it

Gaze and arrow cues cause covert shifts of attention even when they are uninformative. We investigated to what extent oculomotor behaviour helps to explain manual response biases to social and non-social stimuli. We tracked the gaze of 20 participants while performing the cueing task with uninformative cues (gaze vs. arrow), SOA (250 vs. 750 ms) and validity (valid vs. invalid) as within-subject factors. Our results confirmed previous behavioural findings and showed participants were faster when the gaze or arrow cue was correctly directed towards the target. Analyses of initial saccades showed anticipatory movements in response to the cue which were larger in the longer compared to the short SOA condition. Once the target appeared, the eyes fixated closer to the valid target location than to the invalid target location; however, while this happened for both SOAs in gaze-cues, arrow-cues triggered this oculomotor behaviour only in the longer SOA. Moreover, both 'cue-triggered' and 'target-triggered' responses revealed a right-side bias such that eye movements were larger to cues pointing to the right than to the left. This work provides novel insight in the relation between attention and eye movements in response to social and non-social cues.