

**Exploring fixation patterns and social cognition after
traumatic brain injury**

GREENE, Leanne, BARKER, Lynne <<http://orcid.org/0000-0002-5526-4148>>, REIDY, John <<http://orcid.org/0000-0002-6549-852X>>, MORTON, Nicholas and ATHERTON, Alistair

Available from Sheffield Hallam University Research Archive (SHURA) at:

<https://shura.shu.ac.uk/22391/>

This document is the Published Version [VoR]

Citation:

GREENE, Leanne, BARKER, Lynne, REIDY, John, MORTON, Nicholas and ATHERTON, Alistair (2018). Exploring fixation patterns and social cognition after traumatic brain injury. *Journal of Neurology and Neuroscience*, 9, p. 71. [Article]

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

EXPLORING FIXATION PATTERNS AND SOCIAL COGNITION AFTER TRAUMATIC BRAIN INJURY

Leanne Greene¹, Lynne Barker¹, John Reidy¹, Nicholas Morton² and Alistair Atherton³

¹Sheffield Hallam University, UK

²Rotherham Doncaster and South Humber NHS Trust, UK

³Sheffield Community Brain Injury Rehabilitation Team, UK

Objectives: Social cognition (SC) impairments after traumatic brain injury (TBI) are pervasive. The movie for the assessment of social cognition (MASC) measures different facets of social interactions over the three stages of SC; social perception, social knowledge retrieval and response selection. The mechanisms underpinning SC deficits after TBI are poorly understood but aberrant eye fixation patterns could play a role. The present research explored fixations across social interactions to determine group differences and correlations between eye tracking and behavioural data.

Design: Group differences in response selection during the MASC and fixation duration/count to areas of interest (eyes, nose and mouth) were examined.

Methods: 18 TBI participants were recruited from the NHS and age/gender matched controls were recruited using stratified opportunity sampling. The MASC allows for quantification of incorrect answers; excessive theory of mind (ToM), reduced ToM and absence of ToM errors. The MASC was presented on a Tobii T120 eye tracker monitor.

Results: TBI participants had significantly lower correct scores on the MASC and higher excessive/reduced errors compared to controls. There was no significant interaction between automated optical inspection (AOI) and group. However, significant main effects of group for fixation duration/count indicated that if AOI was ignored, controls displayed longer/more fixations overall suggesting a difference in visual scanning patterns between TBI and control groups. No significant correlations were established.

Conclusions: TBI and controls exhibited disparate visual strategies during the MASC and this effect could underpin some SC impairments displayed by TBI participants. TBI participants also displayed insufficient and over-interpretative mental state reasoning compared to controls but it is unclear why. The present research outlines the multifaceted nature of SC impairments after TBI and highlights potential areas for SC intervention post-TBI

Biography

Leanne Greene has completed her BSc in Psychology and an MSc in Applied Cognitive Neuroscience. She is about to complete her PhD on Social Cognition and Saccadic Eye Scan Patterns in TBI and Control Groups which is supported by Sheffield Hallam University. She currently works as an Assistant Psychologist for Rotherham Doncaster and South Humber NHS Trust in the Neuro Rehabilitation Outreach and Stroke team. Socioemotional problems post-TBI are often not assessed or rehabilitated (Kelly, McDonald & Frith, 2016) and Leanne is passionate about raising awareness of social cognition after TBI in the future developing contemporary and ecologically valid clinical assessments and rehabilitation programmes.

l.greene@shu.ac.uk