



DEPARTMENT OF PSYCHOLOGY
DOCTORATE IN CLINICAL PSYCHOLOGY (DCLINPSY)
MAJOR RESEARCH PROJECT

**Emotion processing after childhood Acquired Brain Injury
(ABI): an eye tracking study**

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"I certify that all material in this assignment / assessment which is not my own work has been identified and properly attributed. I have conducted the work in line with the BPS DCP Professional Practice Guidelines."

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Emotion recognition from faces following childhood brain injury: an eye tracking study.

Few studies have explored emotion processing abilities in children following Acquired Brain Injury (ABI). This study develops previous research in this area by exploring emotion processing skills in children with focal ABI, using eye tracking technology. It was hypothesised that children with focal ABI would demonstrate impaired emotion recognition abilities relative to a control group and that, similar to adult eye tracking studies, they would show an atypical pattern of eye moments when viewing faces. Sixteen participants with focal ABI (10-16 years) and 27 healthy controls (10-16 years) completed one novel and one adapted visual emotion processing task, presented using a T120 Tobii eye-tracker. The eye-tracker measured eye-movement fixations in three areas of interest (AOIs; eyes, nose, mouth), as participants viewed the stimuli. Emotion perception accuracy was recorded. All participants from the ABI group also completed neuropsychological assessment of their immediate visual memory, visual attention, visuospatial abilities, and everyday executive function.

The results of the study showed no significant difference in accuracy between the ABI and control groups. However, on average children with ABI appeared slightly less accurate than the control group in both emotion recognition tasks. Within-subjects analysis revealed no effect of lesion location and laterality or age at lesion onset upon emotion recognition accuracy. Eye tracking analysis showed that children within the ABI group presented with an atypical pattern of eye movements relative to the control group, demonstrating significantly greater fixation times within the eye region, when viewing disgusted, fearful angry and happy faces. The ABI group also showed reduced mean percentage fixation duration within the nose and mouth regions, relative to controls. Furthermore, it was observed that the ABI group took longer on average to give an accurate response to sad, disgusted, happy and surprised faces and this difference reached statistical significance for the accurate recognition of happy and surprised faces. It is suggested that the atypical fixation patterns noted within the ABI group, may represent a difficulty with dividing visual attention rapidly across the whole of the face. This slowing may have an impact upon functioning in everyday social situations, where rapid processing and appraisal of emotion is thought to be particularly important. It is therefore suggested that eye tracking technology may be a valuable method for the identification of subtle difficulties in facial emotion processing, following focal ABI in childhood, and may also have an application in the rehabilitation of these difficulties in future.

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