

EYE TRACKING TECHNOLOGY: APPLICATION IN PSYCHIATRY

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Introduction

Recent progress in the development of diagnostic tools lead to the manufacturing of devices that allow for the tracking and analyses of eye movement. Eye movement is controlled and coordinated by several mechanisms involving brain and muscular function. Specifically, eye-tracking technology has been applied to evaluate depression and anxiety. Eye tracking systems sample gaze direction at rates between 60 and 2000 Hz and provide a continuous measure of attentional selection performed via eye movements (EMs; "overt attention"). However, none of the studies have examined one-item screening questions, such as visual analog scales (VAS), paralleled by eye tracking for the diagnosis of depression. **The aim of this study** was to evaluate eye-tracking as a diagnostic tool for diagnosis of depression, using one-item Faces Mood Likert Scale (FMLS) with the clinical standard of assessment of depression using Public Health Questionnaire – 9 scale (PHQ-9).

Material and Methods

26 adults (aged 18 – 65 years) with MDD, as diagnosed by clinical assessment and with severity assessed by PHQ – 9 scale (mild, moderate, or severe) were asked to rate the severity of the depressive symptoms on a FMLS. The individuals were monitored by the eye tracking software device while they are in the process of choosing the right expression of the faces on the FMLS corresponding to their respective moods. Using equipment available from Tobii X2 Series Eye Trackers (USA) the following parameters were registered: time spent to first fixation, total duration of the gaze fixation and time spent, evaluating the graphics on the FMLS. (IRB protocol #L14-178). Data was compared to FMLS and the PHQ-9.

Results

The time spent to first fixation on the scale of happy faces



37.61 msec, 44.25 msec, 39.7 msec, 20.09 msec, 26.42 msec, 55.51 msec (respectively), while total duration of fixation was 4.47 msec, 31.75 msec, 42.48 msec, 11.65 msec, 3.71msec, 21.04 msec, 27.26 msec and total time spent on the picture 5.07 msec, 37.58 msec, 50.11 msec, 12.33 msec, 4.52 msec, 25.03 msec, 34.43 msec. was 36.79

Conclusion

Eye tracking technology could represent a useful tool for the rapid diagnosis of psychiatric disorders.

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