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ASSESSING DISTRACTIBILITY BY EYE MOVEMENTS IN A BINOCULAR RIVALRY TASK

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Introduction: Attention deficit hyperactivity disorder (ADHD) is a neurobehavioral disorder, characterized by developmentally inappropriate levels of overactivity, inattention and impulsivity. Measuring inattention is a controversial question in ADHD diagnosis. Eye movement could provide a method to assess distractibility. Several studies have related visual attention and perceptual dominance in binocular rivalry.

Objectives: To assess visual attention through the measurement of fixations in a binocular rivalry task in ADHD children and control groups.

Aims: We proposed a task for the assessment of distractibility and to enhance the diagnosis of attention disorders.

Methods: Forty children, 20 with ADHD-combined type and 20 controls, matched by gender, age and intelligence, were tested with a binocular rivalry task (i.e. an anaglyph image) with an exogenous distractor appearing regularly. The stimulus was divided in four Areas of Interest (AOI). Measurements of duration of the periods of exclusive dominance, perceptual alternations in dominance / suppression and fixations were taken by an eye tracker and a response box. Analysis of Variance was used to test differences between ADHD and control groups.

Results: Significant differences between ADHD and control groups were found in dwells at the main AOI. Also, significant differences between groups in "Fixation over alternations ratio" were found.

Conclusions: ADHD participants looked at the relevant region (AOI_1) for a shorter time than the control group; they also looked at the no demanded regions (AOI_2, AOI_3, AOI_4) longer than the control group. Moreover, the ratio fixations/alternations were greater for the control group than the ADHD group.