P01-398 - A CLASSIFICATION MODEL OF SCHIZOPHRENIA USING A MULTIVARIATE EYE MOVEMENT PHENOTYPE

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Eye movements are used as an index of neural pathways and mental processes active during visual tasks. The atypical or dysfunctional eye movements observed in the schizophrenia spectrum of disorders are manifest because of abnormal neurodevelopment of particular features of those processes. Schizophrenia patients' eye movements often also mirror the inflexible or perseverative cognitive style associated with the illness. So far no single test of oculomotor function has emerged as a marker for schizophrenia. For example, not all patients show deficits in sustained smooth pursuit ability, and a significant proportion of unaffected controls are prone to the same errors made by patients on identical tasks. The same is true during pro- and anti-saccade tasks. This poses a significant challenge for statistical models. We assessed the power of combined tests in discriminating cases from controls. Eye tracking was recorded in 95 out-patients with a diagnosis of paranoid schizophrenia and 88 unaffected, age-matched controls. Participants performed smooth pursuit, visual exploration and fixation tasks. A decision tree was trained using only eye movement measures from each task to account for performance variation in both groups. The model perfectly distinguished between cases and controls. Additional data from 31 re-test sessions and 70 new observers were also scored. Overall accuracy was 89%. It was possible to unambiguously account for individuals who were misclassified. The discriminatory power of the multivariate model is very impressive. Covariates did not improve classification. The model can be extended to include other illnesses to examine the relationship between psychophysiology and nosology.