

CAN BRIEF NEUROPSYCHOLOGICAL TESTS PREDICT THE DRIVING BEHAVIOR OF PATIENTS WITH PARKINSON'S DISEASE (PD)?

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Abstract

OBJECTIVE: Goal of the present research was to explore the predictive value of brief neuropsychological tests in driving behavior of PD individuals under low and high traffic conditions on a rural driving environment.

METHODS: Nineteen PD individuals (Age:63±11,1years) and forty-two cognitively intact individuals (Age:59,5±8,7years) participated in the study. Participants completed neuropsychological measures, including Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment (MoCA), Clock Drawing Test (CDT), Frontal Assessment Battery (FAB), Trail Making Test- Trails A & B (TMT A & B), assessing general cognitive ability and executive functions. All individuals underwent a driving simulator experiment, where parameters of driving behavior were measured: average speed, lateral position, average reaction time and headway distance.

RESULTS: By applying t-test for independent samples, significant differences were found between PD patients and the control group in average speed ($p<0,01$) and in average reaction time ($p=0,002$) under high traffic conditions on rural road. A regression model using PD individuals, with the neuropsychological tests as predictors, explained 38% of the variance in headway distance under high traffic conditions and thus identified the predictive value of CDT, TMT A and TMT B.

CONCLUSION: The results of the present study indicate that the driving behavior of PD individuals differed significantly from those of healthy individuals. Neuropsychological tests may have a predictive value. Future studies should include a larger sample size and additional assessments of executive functions.