

Mura T, Amieva H, Goldberg M, Dartigues JF, Ankri J, Zins M, Berr C

Effect size for the main cognitive function determinants in a large cross-sectional study

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ABSTRACT

BACKGROUND AND PURPOSE - The aim of our study was to examine the effect sizes of different cognitive function determinants in middle and early old age. **METHODS** - Cognitive functions were assessed in 11 711 volunteers (45 to 75 years old), included in the French CONSTANCES cohort between January 2012 and May 2014, using the free and cued selective reminding test (FCSRT), verbal fluency tasks, digit-symbol substitution test (DSST) and trail making test (TMT), parts A and B. The effect sizes of socio-demographic (age, sex, education), lifestyle (alcohol, tobacco, physical activity), cardiovascular (diabetes, blood pressure) and psychological (depressive symptomatology) variables were computed as omega-squared coefficients (ω^2 ; part of the variation of a neuropsychological score that is independently explained by a given variable). **RESULTS** - These sets of variables explained from $R^2 = 10\%$ (semantic fluency) to $R^2 = 26\%$ (DSST) of the total variance. In all tests, socio-demographic variables accounted for the greatest part of the explained variance. Age explained from $\omega^2 = 0.5\%$ (semantic fluency) to $\omega^2 = 7.5\%$ (DSST) of the total score variance, gender from $\omega^2 = 5.2\%$ (FCSRT) to a negligible part (semantic fluency or TMT) and education from $\omega^2 = 7.2\%$ (DSST) to $\omega^2 = 1.4\%$ (TMT-A). Behavioral, cardiovascular and psychological variables only slightly influenced the cognitive test results (all $\omega^2 < 0.8\%$, most $\omega^2 < 0.1\%$). **CONCLUSION** - Socio-demographic variables (age, gender and education) are the main variables associated with cognitive performance variations between 45 and 75 years of age in the general population.

KEYWORDS: Cardiovascular factors; Cognitive functions; Effect size; Lifestyle factors; Psychological factors; Socio-demographic factors

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