Does the Wechsler Adult Intelligence Scale Predict Functioning on the Trail Making Test Part B in a Clinical Adult Population Sample

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Introduction

- This study aims to test if the Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV) Indexes predicts functioning on the Trail Making Test B (TMT B).

Methodology

- N= 392
- Racial distribution of the sample:
  - 51.1% White
  - 14% Black
  - 25.4% Latinx
  - 9.5% Other
- The diagnostic make-up of the sample:
  - 38.7% psychiatric
  - 30.5% neurological
  - 21.4% mixed
  - 9.2% had no diagnosis.
- The mean age of participants was 33.
- The mean level of education of participants was 13.
- 56.7% of participants were female and 43% were male.
- De-identified Adult Clinical database.
- A hierarchical multiple regression was conducted to determine if the Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV) Indexes predicts functioning on the Trail Making Test B (TMT B).

Data

Predictors	B	SE	P	Part
Age	.041	.035	.243	.002
Education	-1.225	.243	.000	.041
Gender	.092	.963	.024	<.001
White	-1.442	1.685	.393	.001
Black	.697	.987	.481	<.001
Latinx	-.550	.592	.354	.001
VCI	.050	.044	.260	.002
PRI	.092	. 045	.039	.006
WMI	.180	.043	.000	.027
PSI	.291	.039	.000	.089

References

- Crowe S. F. (1998). The differential contribution of mental tracking, cognitive flexibility, visual search, and motor speed to performance on parts A and B of the Trail Making Test. *Journal of Clinical Psychology, 54*(5), 585–591. https://doi.org/10.1002/(sici)1097-4679(199808)54:5<585::aid-jclp4>3.0.co;2-k

Results

- A hierarchical multiple regression model was significant, F(10, 381) = 23.87, p < .001, R2 = .385. Overall, PRI accounted for 0.7% of the variance, WMI 2.8%, PSI 8.9%, and education 4.1% of the variance. VCI, age, gender, and race were nonsignificant.

Discussion

- The results indicate the strongest predictor of TMT B performance is processing speed followed by education.
- Crowe (1998) suggested working memory could explain more variance of TMT B than alternation factors such as set shifting.
- However, the results of this study indicate working memory is a much smaller contributor.
- Working memory may be a less significant predictor since the alphabet and numbers are already learned.
- Still, education was a moderately strong predictor, which was consistent with previous literature as TMT B performance increases with higher levels of education and decreases with lower levels of education.
- Approximately 61.5% of the overall variance was not accounted for, which may reflect the contribution of cognitive flexibility.