

DEVELOPMENT OF AN OPEN SOURCE PROCESSING SPEED TASK FOR BRIEF ASSESSMENT OF IMPAIRMENT IN THE FIELD

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Introduction and Aims: Processing speed, or how quickly your brain can work with information is a key function that is impaired following consumption of depressant substances. It is also critical for more complicated cognitive tasks such as working memory. Similarly, some workplace safety tests for behavioural impairments arising from fatigue or substance use have utilised processing speed measures. There are numerous barriers to use of cognitive testing, including cost, access, and learning effects. We aimed to develop a brief, challenging, and repeatable assessment of processing speed for field assessment on mobile devices.

Design and Methods: A new task was adapted from the traditional Symbol Search task; where participants need to examine an array of six symbols to determine if any match either of a pair of target symbols as quickly as possible. Stimuli are comprised of inner and outer components that may produce partial matches to increase task difficulty. Two studies were conducted to validate the task: a 7-day test-retest study, comprising this test and existing measures of processing speed and working memory, in healthy adults (aged 20-60); and an acute alcohol dosing study to determine test sensitivity to intoxication (BrAC=0.05; 0.08; n=36).

Results: The task demonstrated large magnitude correlations with existing measures of processing speed and minimal learning effects on repeat assessments. The task was more sensitive to intoxication than similar duration processing speed tasks.

Conclusions: The new, open source, task provides a valid assessment of processing speed that is also useful for repeat assessments. Norms and interpretation guides are also in development.

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