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Working memory in South Africa

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Abstract

Working memory allows for continual updating and maintenance of information for cognitive and behavioural guidance. It provides continuity of experience and is integral to complex and adaptive human functioning. This study investigated performance on a selection of computer-based neuropsychological tests of working memory in a sample of 105 South African adults. The central aim was to examine whether demographic and computer performance variables affected performance on the computer-administered tests. Another key research question was whether commonly used tests of working memory measured domain-specific components of working memory, or tapped into domain-free executive attention. In particular, the study examined the *n*-Back Test, which had been used extensively in international research but was not sufficiently validated in the literature. An exploratory factor analysis was conducted to investigate the validity of this test.

The study found that the ability to manipulate a computer mouse affected performance particularly on the timed computerised tests, and that computer ability was also related to prior experience using a computer, confidence using a computer, gender and home language. Computer mouse ability was subsequently partialed out of the analysis as a covariate. No significant main effects of computer experience, confidence, gender or home language were found when computer mouse ability was removed from the analysis. This suggested that the demographic differences in performance found on the tests may have been informed by experience and confidence using a computer rather than reflect true differences in performance between the groups. Once computer mouse ability had been partialed from the results the 2-Back condition of the *n*-Back Test correlated significantly with the backward condition of the Digit Span Test, the forward condition of the Spatial Span Test, and part B of the Trail Making Test around the use of complex executive attention, which provided some evidence for the *n* -Back Test as a measure of the executive component of working memory. However, the *n*-Back Test did not load onto the same factor as these tests, but it appeared that the *n*-Back and Digit Span Tests factored around the type of executive resource demanded by each test.

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