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**Working Memory in Children and its Relationship to Academic Achievement  
and Behaviour**

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## Abstract

For children, Working Memory WM capacity underpins the ability to acquire knowledge and skills in school curriculum areas. The present study aimed to examine WM function in a group of New Zealand primary school children, and to investigate a possible association between reading and maths achievement and WM function. It also investigated whether WM deficits are reflected in children's behaviours as observed by teachers in the classroom and parents at home. A related aim investigated the prevalence of learning disorders or experiences that have been linked to WM deficits.

WM ability was assessed with a group of 60 children aged 9 – 11 years using the Automated Working Memory Assessment Screener, AWMA Screener, or fully tested on the Automated Working Memory Assessment – Long version AWMA-L which assesses both verbal and visuo-spatial Short Term Memory STM and WM components. Twenty percent were found to have low scores in at least one component of WM. Two groups of children were selected from the 60 children based on their reading and maths achievement, 13 average and 16 below average. Eighty three percent of children with low WM were below average on academic performance. The below average academic group performed significantly lower than the average academic group on all but one subtest of the AWMA-L. There was a significant difference in performance by age for one of the verbal short term memory subtests of the AWMA-L, but no between group significant differences for sex or ethnicity.

The two groups of children were rated by their teachers on the WM Rating Scale WMRS, and parents on the WMRS-for parents WMRS-PC. The children with low WM scores were rated as having more frequent behaviours relating to WM problems than children with average and above average WM. Children in all WM ability groups were reported as having experiences or disorders related to WM deficits. The results corroborate previous findings and may be of interest to

educators in that WM ability is a building block that may affect the acquisition of information during learning episodes at school. The child with low WM may not have inherent difficulty with the academic work, but in taking in the information. Assessment of WM may identify children who may need to learn in a different way in order to reach their academic potential.

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