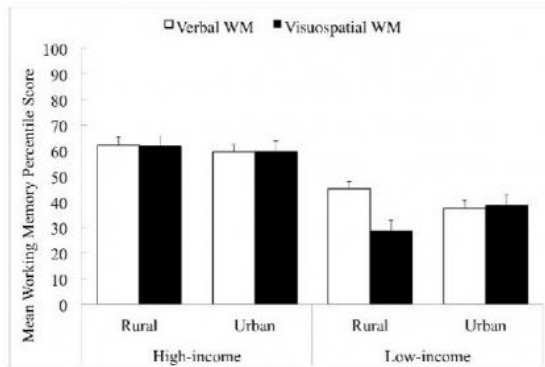


Study shows difference in cognitive ability between low-income rural, urban children

15 October 2013

Figure 1. Mean Verbal and Visuospatial Working Memory Percentile Scores as a Function of Developmental Context



Dartmouth researchers have found that children growing up in rural poverty score significantly lower on visual working memory tests than their urban counterparts. However, children in urban poverty score slightly lower on tests of verbal working memory. Credit: Michele Tine

Studies have long shown a difference in cognitive ability between high- and low-income children, but for the first time, scientists have found a difference between low-income children growing up in rural areas and those growing up in urban environments.

Researchers at Dartmouth College have found that children growing up in rural poverty score significantly lower on visual working memory tests than their urban counterparts. However, children in urban poverty score slightly lower on tests of verbal working memory.

Working memory is the ability to keep information in mind while using that information to complete a task. It is a better predictor of academic success than IQ and is crucial to skills as diverse as reading, math processing, and decision making.

The results of the Dartmouth study appear online in the [Journal of Cognition and Development](#) and will be included in the journal's next print edition.

The study results were also groundbreaking because they demonstrated a gap between the verbal and visual working memories of children living in rural poverty. None of the other groups included in the study – kids from high-income rural, high-income urban, and low-income urban backgrounds – performed significantly better in one area than the other.

Follow-up research is needed to conclusively determine the cause of the disparities found in the study, but author Michele Tine, assistant professor of education and principal investigator in the Poverty and Learning Lab at Dartmouth, suggests they may be connected to seemingly minor differences in the daily lives of country- versus city-dwellers.

For example, rural areas tend to have less noise pollution than urban ones, and chronic [noise pollution](#) has been shown to hurt verbal working memory. On the other hand, [rural areas](#) lack visual stimuli common in cities – such as traffic, crowds, and signs – and this may give rural children less opportunity to develop their visual working memory, Tine surmises.

Prior research has shown environmental factors do not impact the cognitive ability of high-income children as much as low-income children, which is consistent with Tine's finding that wealthy [children](#) had almost identical [working memory](#) abilities, regardless of whether they lived in urban or rural environments.

Provided by Dartmouth College

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