



Working Memory Assessment in Preschoolers

Aishi Dharmani

University of St Andrews, India

Abstract

Working memory (WM) is a cognitive system that temporarily holds and manipulates information. It is commonly assessed using the delayed-match-to-sample (DMTS) paradigm in early childhood. However, standard DMTS format may impose additional knowledge-based, cognitive and verbal demands on preschoolers, making it difficult to determine whether poor performance reflects WM limitations alone or also difficulty engaging with these demands. Causal task-framing was assumed to reduce additional demands, make the task more developmentally appropriate and allow clearer interpretation of preschoolers' WM abilities. This study examined how task framing, age and delay influenced preschoolers' performance on a modified DMTS, and whether standard format obscured performance, whereas more developmentally appropriate, causal task-framing supported it. 72 children (2-4-year-olds) completed either arbitrary-matching condition (n=34) or causally-framed object-location condition (n=38), across 2- and 8-second delays. Accuracy was higher in object-location condition than in arbitrary-matching condition. The effect of condition varied by age: 3 and 4-year-olds outperformed 2-year-olds in object-location condition, but no age differences emerged in arbitrary-matching condition. Delay-related effects were non-significant, possibly due to delay manipulation limitations. Overall, WM performance was shaped by task-framing, with a more developmentally appropriate DMTS supporting performance and potentially allowing developmental variation to emerge more clearly. Conversely, standard DMTS may underestimate preschoolers' WM and obscure developmental variation. These findings provided insights into early WM development, highlighted the need for cautious interpretation of preschoolers' performance on non-adapted, developmentally inappropriate paradigms and underscored the importance of developmentally appropriate assessments to inform educational and clinical practice, including tailored interventions and teaching strategies.

Keywords: Child and developmental psychology, cognitive development, working memory, assessment