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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Leveling the Playing Field: Environmental Uncertainty Eliminates the Socioeconomic Gap in Working Memory

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Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 48(0)

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Publication Date

2026

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Peer reviewed

Full Title: Leveling the Playing Field: Environmental Uncertainty Eliminates the Socioeconomic Gap in Working Memory

Short Title: SES, Uncertainty and Working Memory

Abstract:

Early-life adversity shapes cognitive development, yet its impact on working memory (WM) remains inconclusive. The specialized-sensitization hypothesis posits that adversity-adapted skills are context-dependent: they remain latent in abstract laboratory settings but are recruited when current demands mirror the unpredictability of the developmental context. We tested whether verbal WM varies with socioeconomic status (SES) across contexts that differ in predictability. Ninety-four children completed a within-subjects verbal WM task under two conditions: Uncertainty and Neutral. Accuracy was analyzed using linear mixed-effects models with random intercepts for participants. Results revealed a significant interaction between SES and task condition. While higher SES was associated with better performance in the neutral condition, this performance gap disappeared under uncertainty. These findings support context-sensitive specialization, suggesting that uncertainty does not universally impair cognition but may instead engage adaptive mechanisms tuned to local environmental demands, leveling the playing field.