

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Multisensory Input Boosts Early Numerical Performance

Permalink

<https://escholarship.org/uc/item/56c8n17c>

Journal

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

Authors

Jordan, Kerry

Karami Isheqlou, Leyla

Publication Date

2026

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

Multisensory Input Boosts Early Numerical Performance

Kerry Jordan (Kerry.jordan@usu.edu) and **Leyla Karami Isheqlou**

Department of Psychology, Utah State University

The Approximate Number System (ANS) predicts mathematical achievements. Acuity in children can increase with multisensory task presentation, consistent with the Intersensory Redundancy Hypothesis in which synchronized multisensory input better supports attention, learning, and memory than single modality input. However, it remains unclear whether multisensory stimulation advances early symbolic number mapping and computations. This study used a longitudinal design across three ANS tasks (non-symbolic, symbolic, and arithmetic), with quantities presented auditorily, visually, or audiovisually. Data from 3065 trials completed by 46 children aged 3–5 years were analyzed using a generalized linear mixed-effects model. Accuracy was significantly higher on audiovisual ($M = .61$) relative to visual ($M = .57$; $p = .04$) trials; this difference was stable across tasks. Thus, multisensory stimulation can support preschool ANS performance across different domains, suggesting an avenue for accelerating early numerical abilities.