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Proceedings of the Annual Meeting of the Cognitive Science Society

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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

Modality-specific temporal assimilation in a bisection task

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Time perception is fundamental to adaptive behavior, yet its neural mechanisms remain debated. This study tests centralized versus distributed temporal processing models by investigating whether the temporal assimilation effect, in which target intervals are underestimated after short distractors, generalizes across sensory modalities. In Experiment 1 ($n = 20$), auditory targets showed assimilation only with auditory distractors, not visual ones. Experiment 2 ($n = 20$) found that auditory frequency variations did not affect assimilation, highlighting modality specificity over stimulus dissimilarity. To further explore this, a tactile-vibratory device was developed and tested. Experiment 3 ($n = 20$) investigated auditory-tactile pairings but yielded no significant effects, potentially due to the specific interval durations used. These results are consistent with time perception models already reported in the literature, such as state-dependent networks. Taken together, our findings raise questions about centralized models of time perception and suggest the possibility of modality-specific temporal encoding.