

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Revisiting Real-Time Digging-In Effects: No Evidence from NP/Z Garden-Paths

Permalink

<https://escholarship.org/uc/item/8f9434gx>

Journal

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

Authors

Maina-Kilaas, Amani

Levy, Roger P

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

Revisiting Real-Time Digging-In Effects: No Evidence from NP/Z Garden-Paths

Amani Maina-Kilaas (amanirmk@mit.edu) & Roger Levy

Department of Brain and Cognitive Sciences, MIT

Abstract

Digging-in effects, where disambiguation difficulty increases with longer ambiguous regions, have been cited as evidence for self-organized sentence processing, in which structural commitments strengthen over time. In contrast, surprisal theory predicts no such effect unless lengthening genuinely shifts statistical expectations, and neural language models appear to show the opposite pattern. Whether digging-in is a robust real-time phenomenon in human sentence processing—or an artifact of wrap-up processes or methodological confounds—remains unclear. We report two experiments on English NP/Z garden-path sentences using Maze and self-paced reading, comparing human behavior with predictions from an ensemble of large language models. We find no evidence for real-time digging-in effects. Critically, items with sentence-final versus nonfinal disambiguation show qualitatively different patterns: positive digging-in trends appear only sentence-finally, where wrap-up effects confound interpretation. Nonfinal items—the cleaner test of real-time processing—show reverse trends consistent with neural model predictions.