UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Conditional probability of novel word sequences predicts immediate serial recall performance

Permalink

https://escholarship.org/uc/item/05h858cg

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 44(44)

Authors

Jacobs, Cassandra
Schwering, Steven
MacDonald, Maryellen

Publication Date

2022

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

eScholarship.org Powered by the California Digital Library
University of California

Conditional probability of novel word sequences predicts immediate serial recall performance

Cassandra Jacobs
University at Buffalo, Buffalo, New York, United States

Steven Schwering
University of Wisconsin-Madison, Madison, Wisconsin, United States

Maryellen MacDonald
University of Wisconsin-Madison, Madison, Wisconsin, United States

Abstract

Many theories of verbal working memory have claimed that novel word lists are unlike natural language. As a result, recall of the novel word lists is not affected by sequential statistics in natural language and must be governed by short-term memory. We analyzed memory for novel, dative-like word lists (e.g., ADJ-NOUN-GAVE-ADJ-NOUN-NOUN) across three experiments. We used a powerful neural language model (Ng et al., 2019) to compute the surprisal associated with the critical words in each list, because surprisal indexes psycholinguistic processing difficulty (Levy, 2008). Surprisal at critical words strongly predicted the number of words recalled in each list. These results demonstrate lexico-syntactic factors can support syntactic structure even in novel word lists and that continuous measures of processing difficulty may be used to characterize similarity of novel lists to natural language. We discuss implications for theories of verbal working memory.

In J. Culbertson, A. Perfors, H. Rabagliati & V. Ramenzoni (Eds.), *Proceedings of the 44th Annual Conference of the Cognitive Science Society*. ©2022 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY).