

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

The impact of frequency on the evolution of category systems

Permalink

<https://escholarship.org/uc/item/4p39z034>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

Authors

Ferdinand, Vanessa

Kemp, Charles

Perfors, Amy

Publication Date

2019

Peer reviewed

The impact of frequency on the evolution of category systems

Vanessa Ferdinand

University of Melbourne, Melbourne, VIC, Australia

Charles Kemp

University of Melbourne, Melbourne, VIC, Australia

Amy Perfors

University of Melbourne, Melbourne, VIC, Australia

Abstract

How do category systems reflect the information content of their environments? One basic kind of information in a linguistic environment is the frequency of objects or meanings: some things are just spoken about more often than others. A great deal is known about frequency effects on the evolution of lexical items (e.g. Lieberman et al, 2007); however analogous effects on category systems are not understood. Two theories point in opposite directions: the generalized context model (Nosofsky, 2011) predicts that categories containing high-frequency items will expand over time, while information theory (Cover & Thomas, 2012) predicts tighter boundaries around high-frequency items. We explore the impact of frequency on the evolution of category systems over time in an iterated category learning experiment that manipulates object frequency. How does this manipulation affect category boundaries? Does the result change if transmission is between different individuals or within the same person over time?

Cover, T. M., & Thomas, J. A. (2012). *Elements of information theory*. John Wiley & Sons.

Lieberman, E., Michel, J. B., Jackson, J., Tang, T., & Nowak, M. A. (2007). Quantifying the evolutionary dynamics of language. *Nature*, 449(7163), 713.

Nosofsky, R. M. (2011). The generalized context model: An exemplar model of classification. *Formal approaches in categorization*, 18-39.