

Limits of information processing in language comprehension and production

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Abstract

I argue that some major properties of online language processing—both comprehension and production—can be understood in terms of fundamental limits on information processing arising from information theory. On the comprehension side, I present a computational model where an informational bottleneck on memory gives rise to dependency locality effects and detailed cross-linguistic patterns of structural forgetting. On the production side, I present a model where incremental sentence production is constrained by an information bottleneck on cognitive control. Both models lead to a view where statistical prediction, as performed by modern large language models, is a key part of the way language is comprehended and produced.

About the speaker

Richard Futrell is Associate Professor in the Department of Language Science at the University of California, Irvine. His research focuses on language processing in humans and machines, and how human language is shaped by constraints on processing.

