

Change in an implicit probabilistic representation captures meaning processing in the brain

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Submitter Milena Rabovsky
Affiliation Freie Universitaet Berlin

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Presentation Abstract Summary The N400 component of the event-related brain potential has attracted interest as an online measure of meaning processing in the brain. However, the functional basis of the N400 has been hard to capture within traditional approaches to language processing. The Sentence Gestalt (SG) model, a neural network that implements an alternative perspective, provides a unified account capturing a wide range of findings. The model treats the N400 as reflecting the Bayesian surprise occasioned by each incoming word of the sentence, reflected in the stimulus-induced change in a learned internal activation state that implicitly represents conditional probabilities of relevant aspects of meaning – a signal that can itself be used to drive learning. We present the full set of findings the model addresses, highlighting new simulations and model comparisons demonstrating that the distinct features of the SG model are crucial to capture the N400.

Co-author Information

* Presenting Author

First Name	Last Name	Affiliation	E-mail
Milena *	Rabovsky *	Freie Universitaet Berlin	milena.rabovsky@gmail.com
Steven	Hansen	Stanford University	sshansen@stanford.edu
James	McClelland	Stanford University	jlmcc@stanford.edu

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