

Bayesian Pragmatics Provides the Best Quantitative Model of Context Effects on Word Meaning in EEG and Cloze Data

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We contrast three views of how words contribute to a listener's understanding of a sentence and compare corresponding quantitative models of how the listener's probabilistic prediction on sentence completion is affected in online comprehension. The Semantic Similarity Model presupposes that the predictor of a word given a preceding discourse is their semantic similarity. The Relevance Model maintains that utterances are chosen to maximize relevance. The Bayesian Pragmatic Model assumes a relevance- guided modulation of a word's lexical meaning that can be regarded as a Bayesian update of statistical regularities stored in memory. In addition to a Cloze test, we perform an EEG study, recording the event-related potential on the predicted word and take the N400 component to be inversely correlated with the word's predictive probability. In a multiple regression analysis, we compare the three models with regard to Cloze values and N400 amplitudes. The Bayesian Pragmatic Model best explains the data