

Prediction Error and Updating in Language Processing and Learning

Abstract

The dissertation project aims at answering open questions regarding predictive processing in language comprehension. In the psycho- and neurolinguistic field, it is well established that anticipation plays an important role in language processing. Confirmed predictions have been shown to facilitate processing, while disconfirmed predictions evoke increased processing effort.

Over the past years, the potential of predictive processing being a learning mechanism has come into focus. The notion that constant hypothesizing about the (linguistic) environment and updating one's internal model based on the mismatch between the hypothesis and the perceptual signal (prediction error) is at the center of error-based learning theory (Elman, 1990; Chang et al., 2006) and Bayesian belief update (e.g., Kuperberg & Jaeger, 2016).

The project deals with the question of how the quality of the prediction error influences the extent of subsequent updating. For example, does highly implausible input prompt updating to the same extent as unexpected but plausible input even though the recipient can assume that it does not yield reliable information about the linguistic environment? In addition, the processing of prediction errors by second-language learners of German, will be examined. Since processing a second language is more effortful than processing a native language (e.g., Hopp & Schimke, 2018) which entails judging the plausibility of input, it is likely that updating will look different in L2 learners as well. The methods used to answer these questions comprise behavioral methods like self-paced reading and word recognition tasks as well as pupillometry for a more fine-grained measure of processing.

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