

## **An event-related brain potential investigation of multi-level probabilistic expectations in sentence comprehension**

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Prediction during language comprehension occurs in a probabilistic manner at multiple levels of representation. Here we used event-related brain potentials (ERPs) to investigate how these multi-level predictions influence neural processing of incoming words in context. Sentence contexts conveying events or states were strongly or weakly lexically constraining, and were completed with either the most expected word, an unexpected but plausible word, or a word that violated the coarse semantic constraints of the context, creating an impossible meaning representation. ERPs were recorded while participants read sentences word-by-word in a delayed acceptability judgment task. The N400 was larger to impossible words (that mismatched coarse-grained semantic constraints) than to plausible but unexpected words (that mismatched finer-grained semantic constraints). The N400 to both types of semantically unexpected words was, however, insensitive to lexical predictability, underlining the fact that it is primarily a reflection of semantic — as opposed to lexical — constraints. Plausible but unexpected words that violated strong lexical constraint also elicited a late frontal positivity effect. This is consistent with the idea that the late frontal positivity reflects a violation of a high-certainty specific semantic-wordform prediction (lexical prediction) within a coherent meaning representation. In contrast, when these same words created impossible meanings in their contexts, we did not observe any late positivity effect in either strongly or weakly constraining contexts, perhaps because, unlike in previous studies, the contexts did not constrain strongly for a single, specific semantic-syntactic structure.