ERP correlates of prediction and plausibility in sentence comprehension

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We investigated the nature of prediction during reading by manipulating sentence constraint, predictability, semantic relation, and plausibility and examining their impact on ERPs. Previous studies suggest that multiple factors influence the presence and scalp distribution of late positive potentials to less-than-predictable words. A frontal positivity for low-cloze compared to high-cloze sentence completions has been observed in several studies. Thornhill and Van Petten (2012) used high and low constraint sentences ending with either the best completion (highest cloze probability), a word semantically related to the best completion, or an equally plausible word that was semantically unrelated to the best completion and observed that, following the N400, all of the less predictable endings elicited a larger frontal positivity than the high constraint best completion. Other studies have found a parietally distributed positivity for incongruent sentence completions relative to congruent completions, but previous studies have not examined both unpredictable congruent and incongruent completions. We thus expanded the Thornhill and Van Petten stimulus set by adding semantically implausible completions (e.g., "Gary doesn’t think a husband should cheat on his... WIFE/SPOUSE/TAXES/CEMENT."). ERPs were recorded while participants read each sentence. Across participants, each sentence frame was paired with all four ending types. N400 amplitude was modulated by cloze probability and semantic relatedness, confirming previous findings. We found a frontally distributed positivity for all ending types relative to the best completion, suggesting that this potential may reflect a failed lexical prediction of any kind. No sentence type elicited a parietally distributed positivity.