

Plausibility and Sentence Comprehension. An ERP Study.

Alex Geyer*, Phillip Holcomb PhD*, Gina Kuperberg MD PhD*, Neal Perlmuter^

** Tufts University, Medford, MA*

^ Northeastern University, Boston, MA

In 1984, Kutas et al. found that the N400 component is sensitive to Cloze Probability manipulations. Their participants showed the highest amplitude N400s to sentence final words with lowest cloze ratings, the lowest N400s to final words with highest cloze ratings, and mid-size N400s for final words with intermediate cloze ratings. The aim of Experiment 1 was to determine whether these findings would extend to the conditions when sentence Plausibility was manipulated. Participants were presented with three types of sentences, where the direct object of the sentence varied in plausibility with respect to the preceding verb across three levels (i.e., Plausible, Implausible, or Anomalous). A comprehension question followed each sentence. Our results revealed larger N400s to Anomalous condition compared to Plausible condition. However, there was no difference in the N400s between Implausible and Anomalous conditions. We hypothesized that these results reflected the fact the participants were able to answer comprehension questions without attending to sentence plausibility.

In Experiment 2, we used the same stimulus lists but introduced a Plausibility Judgment task to ensure that the participants attend to plausibility. Like Experiment 1, there were no significant differences in the amplitude of N400 between Implausible and Anomalous conditions. However, we found that introduction of a Plausibility Judgment task did result in a P600 effect, in the anomalous condition. We argue that P600s elicited by the Anomalous sentences in Experiment 2 played some role in attenuating the N400s, resulting in no differences in the amplitudes of N400s elicited by Implausible and Anomalous conditions.