

MEG Study of Lexical Integration in Individuals with Aphasia

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This project is aimed to test the general hypothesis that a deficit with lexical integration may contribute to sentence comprehension deficits in Broca's aphasia. Previous studies using electroencephalography (EEG) and magnetoencephalography (MEG) in normal populations have shown the N400 effect when sentences fail to meet semantic expectations. An N400 effect is an increased negativity in electrical impulses (event-related potentials, ERP) 250-500 ms after stimulus onset. In this study, we are going to be recording ERP activity as a sentence is presented. The sentence frame will vary in its cloze probability; that is, the probability of the target word completing the particular sentence frame. Kutas and Hillyard (1984) found that the N400 amplitude has an inverse relationship with the cloze probability of a word. Therefore, we are testing this N400 effect by varying the cloze probability (high vs low cloze) and comparing this across populations (normal vs Broca's aphasia). Another manipulation tests whether comprehension failure in complex sentences (i.e passives or object relatives) may be due to difficulty with lexical integration as indicated by a severe reduction/absence of N400 effects. This presentation will cover the theories and hypotheses, the current stimuli, the proposed populations, and the expected results.