

Abstract:

Discourse is something that people use in daily life without much conscious thought. Discourse, being the connection between two or more sentences or phrases, is an important aspect to understanding the context behind communication. Whether it be reading a textbook or listening to a friend's story, people expect a pattern to emerge. Language is thought to be primarily located in the left temporal lobe and primarily in Broca's and Wernicke's areas, located in the anterior temporal lobe and the posterior temporal lobe respectively. However, language is a widespread cortical process that can be seen bilaterally in the temporal lobe (both anteriorly and in the posterior superior temporal sulci), the inferior frontal gyrus, and the inferior precuneus. In examining activation in the prefrontal cortex during language discourse tasks, the role of the prefrontal cortex when presented with discourse tasks can be determined. Using functional near-infrared (fNIR) techniques, activation levels in the prefrontal cortex can be seen during different levels of discourse. Subjects were presented with varying levels of narratives each 60 words in length. Narratives go from very low discourse, consonance only word-like units, to randomized words in sentence form, to randomized sentences all the way to full narratives. At each level of discourse, activation levels in the prefrontal cortex are recorded. Analysis of the changes in oxygenation in the voxels specifically related to narrative creation and narrative reading will be performed in addition to the differences in voxels specifically related to the reading of randomized sentences and full narratives. It is hypothesized that the narrative level of discourse will result in less activation than the randomized sentences and that narrative creation will show more activation than narrative reading.