

Main Idea Identification: A Functional Imaging Study of a Complex Cognitive Process

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Main idea identification is at the very heart of human thinking, being a skill required in everyday situations such as reading a message, interpreting an interlocutor's utterance, listening to the news and attending a lecture. It is part of the human nature to try to integrate incoming information and build a macrostructure containing the main points of the input, so that this information can be more easily stored in memory and retrieved when needed. Despite its importance in human interaction, the process of main idea identification is yet little understood.

Cognitive brain imaging has provided researchers new possibilities for trying to unravel what happens in the human brain during the performance of various complex tasks. This study uses fMRI to investigate the amount of brain activation in a set of cortical areas in the task of main idea identification. Readers were assigned to two types of reading situations, the difficulty of processing being manipulated as follows: in an easier condition, the passages contained the main idea in an introductory topic sentence, followed by two sentences whose content was difficult to interpret in the absence of the topic setting introductory sentence. In a more difficult condition, the

two such sentences occurred at the beginning of the passage, and the topic sentence occurred last. The greater cognitive complexity in processing the two abstract sentences prior to knowing the topic was expected to translate into an increase in brain activation in the right hemisphere for the hard condition.

Results indicate that the complex task of main idea identification is associated with increased neural activity in a range of brain regions of both hemispheres, including the temporal lobe, the extrastriate cortex, the parietal lobule and the inferior frontal gyrus, regardless of the position of the main idea in the paragraph. Furthermore, particularly prominent activity is found in the temporal regions of both cerebral hemispheres when compared to the other areas.

This work was supported by grant BEX0300/99-3 from CAPES-Brasilia-Brasil, grant MH29617 from the National Institute of Mental Health and grant PO1NS35949 from the National Institute for Neurological Disorders and Stroke.