

Dissertation

Neurobiological foundations of language comprehension system: Embodied cognition

Abstract

First part of the dissertation describes classical neuroanatomical structures of language processing. From an anatomical perspective, language comprehension system consists of many cortical and subcortical areas. Currently, new technologies depict pictures of bundles of nerve fibres connecting the brain eloquent structures. This line of research supports ideas about cognitive functions mediated by large neuronal networks. Part two focuses on the description of several important non-linguistic cognitive systems that are involved in the analysis of spoken language. Another aim of this part of the text is to monitor the actual language representations and their processing in the language comprehension system. Comprehension is viewed as a process of advancing from perception to creation of mental images (simulations) representing the outcome of this process in a healthy population. Part three takes into account lesion studies that are primarily focused on the manifestations of specific language symptoms in people with aphasia, right hemisphere damage, and dementia. The three distinct neurological units (in terms of damage localization) constitute three different types of disturbances in language understanding system (in terms of impairments of different levels of language representation and language processes). The last part of the text discusses cognitive theories enabling to see the language from an evolutionary point of view as a highly organized symbolic apparatus. Many current cognitive theories (embodiment or grounded cognition) assumed that language is inherently associated with physical world through specially organised biological systems of human perception and motor behaviour.

Key words

language processing system, language comprehension system, embodied cognition, grounded cognition, neurocognitive network, working memory, semantic memory, procedural memory, conceptual system, executive function, syntactic parsing, neuropragmatics, mental simulation, theory of mind, aphasia, right hemisphere damage, dementia, figurative language, mirror neurons, neural theory of language