

Working Memory: From Basic Research to Clinical Applications

Abstract

Working memory is the core cognitive function, yet its capacity and precision are extremely limited. Firstly, the research reveals separate neural mechanisms underlying the quantity-quality representation of working memory and establishes a causal relationship between brain activity and behavior. Secondly, it employs cognitive regulation methods such as attention, reward, and volunrariness, as well as neural modulation like transcranial electromagnetic stimulation, to effectively modify the task performance of working memory. Lastly, it will explore alterations in working memory and their mechanisms in specific populations, such as those with schizophrenia and Alzheimer's disease, providing potential tools for translational research on working memory.