

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Transcranial magnetic stimulation of primary motor cortex does not change meaning construction from action sentences

Permalink

<https://escholarship.org/uc/item/7sg438qz>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 46(0)

Authors

Solana, Pablo

Escàmez, Omar

Casasanto, Daniel

et al.

Publication Date

2024

Peer reviewed

Transcranial magnetic stimulation of primary motor cortex does not change meaning construction from action sentences

Pablo Solana

University of Granada, Granada, Spain

Omar Escámez

University of Granada, Granada, Spain

Daniel Casasanto

Cornell University, Ithaca, New York, United States

Ana B. Chica

University of Granada, Granada, Spain

Julio Santiago

University of Granada, Granada, Spain

Abstract

In a preregistered experiment, we tested whether interfering with primary motor cortex (M1) activation can change how people construe meaning from language. Participants were presented with sentences describing motor actions and asked to choose between a concrete and an abstract interpretation of their meaning. Prior to this task, participants' M1 was disrupted using repetitive transcranial magnetic stimulation (rTMS). The results suggested strong evidence against the idea that M1-rTMS affects meaning construction. Additional analyses and experiments suggest that the absence of effect cannot be accounted for by failure to inhibit M1, lack of task validity, or lack of power to detect a small effect. These results do not support a causal role for primary motor cortex in building meaning from action language.