

The Global-Local Dimension in Cognitive Control after Left Lateral Prefrontal Cortex Damage: Evidence from the Non-Verbal Domain

Authors : Eleni Peristeri, Georgia Fotiadou, Ianthi-Maria Tsimpli

Abstract : The local-global dimension has been studied extensively in healthy controls and preference for globally processed stimuli has been validated in both the visual and auditory modalities. Critically, the local-global dimension has an inherent interference resolution component, a type of cognitive control, and left-prefrontal-cortex-damaged (LPFC) individuals have exhibited inability to override habitual response behaviors in item recognition tasks that involve representational interference. Eight patients with damage in the left PFC (age range: 32;5 to 69;0. Mean age: 54;6 yrs) and twenty age- and education-matched language-unimpaired adults (mean age: 56;7yrs) have participated in the study. Distinct performance patterns were found between the language-unimpaired and the LPFC-damaged group which have mainly stemmed from the latter's difficulty with inhibiting global stimuli in incongruent trials. Overall, the local-global attentional dimension affects LPFC-damaged individuals with non-fluent aphasia in non-language domains implicating distinct types of inhibitory processes depending on the level of processing.

Keywords : left lateral prefrontal cortex damage (LPFC), local-global non-language attention, representational interference, non-fluent aphasia

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