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REGULAR ARTICLE

The Roles of Gestural and Symbolic Schematizations in Inhibition as a Component of Executive Functions

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Abstract

The role of gestural schematization in enhancing thinking processes has been the subject of a large body of works. In this process, contextually unimportant or irrelevant information related to a concept (or a system of concepts) is deleted or ignored, while relevant spatial information is maintained. This process is a special type of inhibition, which is one of the key components of executive functions. In this short paper, it is suggested that gestural schematization is a special type of *symbolic schematization*, a much more general process through which irrelevant information related to features of a concept (or a system of concepts) is suppressed, while relevant information (spatial and non-spatial) is maintained. Through symbolic schematization, abstract structural similarity between two concepts or between two systems of concepts can be discovered. In this way, an individual's knowledge about the first situation can be generalized to the second situation. Symbolic schematization is the basis of abstraction, knowledge generalization, and knowledge development. This is particularly the case with abstract mathematical thinking. This proposal offers a picture of cognitive mechanisms through which knowledge of abstract mathematical concepts is created and developed in the mind.

Keywords Executive functions · Gesture · Gestural schematization · Suppression · Symbolic schematization