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Creating number semantics through finger movement perception.

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Source

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Abstract

Communication, language and conceptual knowledge related to concrete objects may rely on the sensory-motor systems from which they emerge. How abstract concepts can emerge from these systems is however still unknown. Here we report a functional interaction between a specific meaningful finger movement, such as a finger grip closing, and a concept as abstract as numerical magnitude. Participants were presented with Arabic digits to recall before or after they perceived a biological or non-biological hand movement. The results show that perceiving a grip closing slows down the processing of large magnitude numbers. Importantly, we show that this motor-to-semantic interaction differs from the reverse semantic-to-motor interaction, and that it does not result from a general movement amplitude processing as it is only observed for biological hand movements. These results demonstrate the functional link between number meaning and goal-directed finger movements, and show how abstract concept semantics can emerge from the sensory-motor circuits of the brain.

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