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Spatial Schemas and Abstract Thought

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Introduction

Humans and other animals depend on their ability to perceive and represent spatial aspects of the world. This symposium addresses the question of whether abstract cognition is related to the ability to perceive, represent, and reason about spatial information. We discuss whether the spatial schemas that humans learn by observing the locations and movements of objects and the configuration of our environment might provide mechanisms for cognition, or whether spatial schemas are simply metaphors that help us to understand cognitive processes. Three talks from social, cognitive, and developmental perspectives present new data on the abstract use of spatial information.

Evaluative Consequences of Conceptual and Spatial Congruence

Simone Schnall

A recent theory of conceptual structure proposes that bodily processes constrain cognitive processing, and that the resulting knowledge is structured in a metaphorical way (Lakoff & Johnson, 1980, 1999). According to this view basic spatial concepts (e.g., UP, DOWN) are mapped onto abstract concepts. We investigated the match (or mismatch) of different conceptual relations (e.g., good vs. bad) with their metaphorical spatial relation (UP vs. DOWN). Stimuli were presented in either an UP location, or a DOWN location. Participants' evaluations of how good or bad the stimuli were was influenced by the extent to which stimulus content was consistent with spatial location. The results suggest that evaluations are more positive when explicit spatial representation fits with implicit conceptual structure.

Polarity in Reasoning

Merideth Gattis and Jing Jing Ding

People frequently create correspondences between the positive ends of two dimensions, as for instance, in the association between “more” and “up.” In this talk, I propose that polarity, an organizational structure present in both language and perception, may account for many of these consistent mappings between dimensions. Dimensions that are polar in organization have one end that is “more” and one end that is “less.” Mappings based on polarity align the two positive ends and the two negative ends. Such mappings can take place not only between two linguistic dimensions (as argued by Clark, 1969) but also between two perceptual dimensions (as argued by Smith and Sera, 1992), and between a linguistic and a spatial dimension. I will present data from young children and adults indicating that reasoning with spatial representations is constrained by the polar structure of perceptual and linguistic dimensions.

Conveying Spatial and Abstract Information in Diagrams and Gestures

**Barbara Tversky, Sandra Lozano, Julie Heiser,
Paul Lee, and Marie-Paule Daniel**

How is spatial and non-spatial information conveyed in diagram and gesture? Diagrams are ideal for conveying structure; they use elements in space and spatial relations in diagram space to convey elements and relations in actual space. Conveying abstractions, even changes in space and spatial relations, require extra-pictorial elements. In contrast to diagrams, gestures leave no observable traces. They are ideal for conveying movement, change, but rely on other devices to convey structure. A review of several projects on diagrams and gesture will provide examples.