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The multidimensionality of abstract concepts

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The embodied cognition framework, when applied to concrete concepts, highlights the central role of sensory-motor experience in shaping conceptual knowledge. Empirical evidence supports the idea that concrete concepts are represented across distributed, multimodal brain regions. Extending this framework to abstract concepts suggests that these too are grounded along multiple experiential dimensions. Each dimension is thought to correspond to specific brain systems engaged by the relevant domain of experience. For instance, abstract concepts related to emotions (e.g., "love") are supported by affective neural systems.
In this context, we quantitatively demonstrate that most abstract concepts reflect a convergence of multiple salient experiential dimensions. Nonetheless, certain dimensions may be more relevant in capturing a core meaning of specific subsets of abstract knowledge than others. By identifying the most salient dimensions, we further report evidence from behavioural paradigms and brain stimulation studies in both healthy individuals and patients with neurodegenerative diseases. These findings support the existence of distinct types of abstract concepts—such as those related to space, time, social interaction, and quantity—each associated with partially dissociable neural substrates.
In conclusion, while some experiential dimensions may uniquely characterize particular abstract concepts, our results underscore the value of a quantitative, multidimensional approach. Such a framework offers a more comprehensive account of abstract concept representation and should be carefully considered in future investigations of their neural correlates.

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Semantic Memory: A Multidimensional System Under Control

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No

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