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More than a jump to the left

Study on memory for dance moves discovers substantial cross-cultural diversity in human cognition

If your dancing instructor asked you to step left, you would swiftly comply. But how would you react of he asked you to step South? In a new study, a cross-disciplinary team of the Max Planck Institutes for Psycholinguistics (Nijmegen, Netherlands) and Evolutionary Anthropology (Leipzig) found that remembering movements of one's own body varies drastically across human cultures. (Current Biology, December 14, 2009)

Abb.: *While almost all German children produced body-centred responses, the vast majority of Akhoe Hai||om children memorize movements of their limbs in relation to an external reference system anchored in their environment. Paraphrasing, their arms do not move right, but west*

Image: Daniel Haun

Despite the fact that physical space follows similar laws everywhere across the globe, cultures vary as to how space is encoded in their language. Some, for example, do not use egocentric terms such as 'left, right, front, back' to talk about spatial relations, instead using allocentric notions like 'north, south, east, west' at all times for all scales: "The spoon is north of the bowl" or "There is an snake by your Northern leg". Whether not only spatial language but also spatial

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cognition varies across cultures remains a contested question. In a new study, which will be published in next week's issue of Current Biology, Daniel Haun and Christian Rapold present a comparative analysis of how children from different cultures articulate spatial relations in different ways: Germans, whose language preferentially codes space in "right, left, front, back" terms, and the Akhoe Hai||om, a semi-nomadic hunter-gatherer group from Northern Namibia, whose language preferentially codes space in "North, South, East, West" terms.

How can we know the dancer from the dance?

Researchers from the same group had previously shown that cultures differ in the way they represent the locations of objects in space. However, knowing where our own hands and feet are has a strongly "egocentric" organization in the brain in various cultures. Therefore, you might expect all people to remember body movements in essentially the same manner. The new study shows that this expectation needs to be adjusted.

In the present study, the researchers asked children to learn a short dance, during which they move their clasped hands from one side of their body to the other in a right-left-right-right (RLRR) sequence. Then, the participants were rotated 180 degrees around their own axis, and asked to 'dance again'. Afterwards, they danced again in their original orientation. If participants coded the RLRR dance in egocentric coordinates they should produce a RLRR sequence after both Rotations 1 and 2. Alternatively, if participants coded a RLRR dance in allocentric coordinates they should produce a LRLL sequence after Rotation 1 and a RLRR sequence after Rotation 2. While almost all German children produced body-centred responses, the vast majority of Akhoe Hai||om children memorize movements of their limbs in relation to an external reference system anchored in their environment. Paraphrasing, their arms don't move right, but west.

"The human mind varies more across cultures than we generally assume," said Daniel Haun, member of the Max Planck Research Group for Comparative Cognitive Anthropology. "Even everyday tasks that we would never think of doing any other way, like remembering body movements, are done differently in other places. This is the kind of fact that should make us stop and reconsider how little we know about the diversity of human cognition. The Akhoe Hai||om community is an exemplar of indigenous cultures around the world with drastically different concepts of their surroundings, which are the key to understand the plasticity of the human mind. However, these astonishing cultures are constantly vanishing and therefore the documentation of this kind of human variability is a highly urgent task".

In future research the Max Planck research Group for Comparative Cognitive Anthropology aims to document the extent of cross-cultural variability in different domains of human cognition and determine the underlying uniquely human set of psychological mechanisms, which allow and stabilize the astounding cross-cultural cognitive variability across the human species.

[DH]

Original work:

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Variation in memory for body movements across cultures.
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