

When using gestures, rules of grammar remain the same

June 30 2008



Speakers in four different languages all use the same word order when making gestures to communicate ideas. They put the subject first, followed by the object and then the verb, despite the order used in many spoken languages.

The mind apparently has a consistent way of ordering an event that defies the order in which subjects, verbs, and objects typically appear in languages, according to research at the University of Chicago.

"Not surprisingly, speakers of different languages describe events using the word orders prescribed by their language. The surprise is that when

the same speakers are asked to 'speak' with their hands and not their mouths, they ignore these orders – they all use exactly the same order when they gesture," said Susan Goldin-Meadow, the Bearsdley Rum Distinguished Service Professor in Psychology and lead author of the paper, "The Natural Order of Events: How Speakers of Different Languages Represent Events Nonverbally" published in the current issue of the *Proceedings of the National Academy of Sciences*.

For the study, the team tested 40 speakers of four different languages: 10 English, 10 Mandarin Chinese, 10 Spanish and 10 Turkish speakers. They showed them simple video sequences of activities and asked them to describe the action first in speech and a second time using only gestures. They also gave another 40 speakers of the same languages transparencies to assemble after watching the video sequences. Some of the videos portrayed real people and others animated toys that represented a variety of sentence types: a girl waves, a duck moves to a wheelbarrow, a woman twists a knob and a girl gives a flower to man.

When asked to describe the scenes in speech, the speakers used the word orders typical of their respective languages. English, Spanish, and Chinese speakers first produced the subject, followed by the verb, and then the object (woman twists knob). Turkish speakers first produced the subject, followed by the object, and then the verb (woman knob twists).

But when asked to describe the same scenes using only their hands, all of the adults, no matter what language they spoke, produced the same order — subject, object, verb (woman knob twists). When asked to assemble the transparencies after watching the video sequences (another nonverbal task, but one that is not communicative), people also tended to follow the subject, object, verb ordering found in the gestures produced without speech.

The grammars of modern languages developed over time and are the result of very distant cultural considerations that are difficult for linguists to study.

Newly emerging sign languages, however, offer intriguing corroborating evidence that the subject-object-verb (SOV) order is a fundamental one.

SOV is the order currently emerging in a language created spontaneously without any external influence. Al-Sayyid Bedouin Sign Language arose within the last 70 years in an isolated community with a high incidence of profound prelingual deafness. In the space of one generation, the language assumed grammatical structure, including the SOV order.

Moreover, when deaf children invent their own gesture systems, they use OV order. Chinese and American deaf children, whose hearing losses prevent them from acquiring spoken language and whose hearing parents have not exposed them to sign language, use the OV order in the gesture sentences they create.

The research challenges the idea that the language we speak inevitably shapes the way we think when we are not speaking. This study is the first to test the notion with respect to word order.

"Our data suggest that the ordering we use when representing events in a nonverbal format is not highly susceptible to language's influence," Goldin-Meadow and her co-authors write. "Rather, there appears to be a natural order that humans use when asked to represent events nonverbally. Indeed, the influence may well go in the other direction—the ordering seen in our nonverbal tasks may shape language in its emerging stages."

Source: University of Chicago

Citation: When using gestures, rules of grammar remain the same (2008, June 30) retrieved 10 April 2024 from <https://medicalxpress.com/news/2008-06-gestures-grammar.html>

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