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Research reveals innate ability to learn language

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News Office

Children apparently have an inherent ability to form words and sentences independent of the capacity they have to imitate the language of their parents, research at the University shows.

By studying two sets of deaf children in the United States and Taiwan who communicate with gestures rather than conventional sign languages, Susan Goldin-Meadow, Professor in Psychology, discovered that youngsters can develop complex sentence structures on their own without learning them first from their parents.

The discoveries support theories that emphasize the robustness of language in humans and provide evidence for the inevitability of structured communication in children.

The findings are reported in the journal *Nature* in the article "Spontaneous Sign Systems Created by Deaf Children in Two Cultures." Carolyn Mylander, Project Researcher in Psychology, is co-author of the article.

The researchers found that deaf children in Taiwan and the United States developed gesture systems similar to each other's -- systems that do not reflect the structures of either Mandarin Chinese or English.

"Given the salient differences between Chinese and American cultures, the structural similarities in the children's gesture systems are striking," Goldin-Meadow said. "These structural properties -- consistent marking of semantic elements by deletion and by ordering, and linking of propositions within a single sentence -- are developmentally robust in humans."

Goldin-Meadow, who has been studying gesture in deaf children for more than 20 years, bases her research on videotapes of children gesturing with their mothers. She studies the gestures of children who do not learn conventional sign language, because their language patterns are the least influenced by other language systems, and they therefore

provide clues about how the mind develops independent of behavioral influences in the child's environment.

The number of children who do not receive training in sign language is relatively small, however. For their paper, Goldin-Meadow and Mylander studied the gestures of four American children and four Taiwanese children as they communicated with their mothers. The data contain more than 10,000 individual gestures between the mothers and children.

Goldin-Meadow has found in earlier research that these deaf children develop language first by pointing to objects as they identify nouns. They continue their language formation by combining gestures for nouns with gestures for verbs, but the grammar they use is different from that used in English or Mandarin, although some aspects are found in certain conventional languages.

The deaf youngsters put the object of the action before the verb, Goldin-Meadow said. "If for example, a deaf child produced the gesture sentence 'boy hit,' it is likely that the boy was the hittee rather than the hitter in the scene under description."

One difference between the two cultures is that mothers of the Taiwanese children used gesture patterns that resembled their children's, while the American mothers did not.

"Indeed, American children's gestures had more in common with Chinese children's gesture than with their own mothers'," Goldin-Meadow and Mylander write. "American children thus appear to be responsible for the structural aspects of their systems.

"In contrast, Chinese mothers' gestures resemble their children's, at least in part. Chinese children may therefore have learned segments of their systems from their mothers, or, more likely given that Chinese and American children's gestures follow the same patterns, the mothers may have learned them from their children." The researchers are not sure why the differences between the mothers exist.
