

New paper sheds light on bonobo language

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What happens when linguistic tools used to analyze human language are applied to a conversation between a language-competent bonobo and a human? The findings, published this month in the *Journal of Integrative Psychological and Behavioral Science*, indicate that bonobos may exhibit larger linguistic competency in ordinary conversation than in controlled experimental settings.

The peer-reviewed paper was written by Janni Pedersen, an Iowa State University Ph.D. candidate from Denmark whose interests in the language-competent bonobos at Great Ape Trust of Iowa led her to the United States, and William M. Fields, director of bonobo research at Great Ape Trust.

Their findings run counter to the view among some linguists, including the influential Noam Chomsky, professor emeritus of linguistics at the Massachusetts Institute of Technology, who argue that only humans possess and use language. In his hierarchy of language, Chomsky believes that language is part of the genetic makeup of humans and did not descend from a single primitive language evolved from the lower primate order, and it must include formal structures such as grammar and syntax.

Fields said the publication opens an important new chapter in a decades-long debate about the linguistic capabilities of apes. "The resistance to this in the scientific community is enormous," he said. "For the first time, we have a student who is using linguistic tools that have normally been applied to humans now being applied to non-humans. This is a

move toward using the kinds of methodology that are appropriate in ape language, based on Savage-Rumbaugh's 1993 monograph, *Language Comprehension in Ape and Child*."

For her paper, Pedersen analyzed a videotaped conversation between the bonobo Panbanisha and Dr. Sue Savage-Rumbaugh, now a scientist with special standing at Great Ape Trust, but a researcher at Georgia State University's Language Research Center when the video was made about 15 years old. Since 2000, students working in the bonobo laboratory have systematically reviewed archived video to track the development of competencies such as language in each of the bonobos for comparison with their current competencies.

"This is a long-term project, starting from the beginning of where we have data," Fields said. "All of this is contextualized with our current research and larger programs, such as forgiveness research. The students are looking at the earlier data, while investigators are looking at new data."

He expects Pedersen's paper to be the first in a series of many. "This paper serves as an investigation into the early ontogeny of these kinds of competencies," he said. "These papers will eventually be assembled in a larger volume to look at issues in the development of forgiveness and other cultural dimensions of the apes' lives."

In the video that is the subject of Pedersen's publication, Panbanisha was in the forest with Savage-Rumbaugh and an assistant, who had a dog in tow that Panbanisha didn't like.

Though Panbanisha and Savage-Rumbaugh moved from topic to topic in the conversation, Panbanisha repeatedly used the lexigrams to express her desire to be carried by the assistant, who was tending to the dog. Savage-Rumbaugh offered other resolutions, but Panbanisha remained

firm. Ultimately, the ape prevailed and was carried from the forest by the assistant.

After applying conversational analysis tools, Pedersen asserted that language is more than the simple act of transferring information, but a conversational interaction between active participants. Language-competent bonobos use lexigrams, which are made up of arbitrary symbols that represent words, as the basis for conversations with humans.

Pedersen said linguistic aspects of the conversation included turn taking, negotiation, pauses and repetition, and went far beyond information sharing made possible through the use of lexigrams symbols.

"She was using language to get at what she wanted," Pedersen said. "She is very, very clever and is fully capable of following the conversation the same way a human does. This tells me that Panbanisha's knowledge of language is far beyond understanding the words, to understanding how to use them in a conversation to get what she wants."

"One of the things Janni has affirmed, and affirmed in a way the lay person can understand, is the aspect of turn-taking. If there is anything universal in human language, it's turn of talk," Fields said. "The fact that Panbanisha has done this, and it's accessible even to an untrained reviewer, I think is an important aspect of her paper. She has looked at the whole social action, and the meaning. Ideational flow – going back and forth – is obvious.

"Originally, repetition was thought of something that happens normally in human language," he said. "Traditionally, repetition in ape communicative behaviors is assumed to be proof that they don't have language. It's a kind of dichotomy or unfairness."

Fields said Pedersen, who has a master's degree in philosophy from the University of Aarhus, Denmark, and is working toward a Ph.D. in ecology and evolutionary biology in ISU's Anthropology Department, "has been able to do something unique" that Chomsky, long regarded as the father of contemporary linguistics, was unable to do.

Pedersen expects to complete her dissertation in ape language research, the second to focus on data collected with the world-famous bonobos at Great Ape Trust. The first was Pictorial Primates – A Search for Iconic Abilities in Great Apes, by cognitive scientist Tomas Persson from Sweden's Lund University. He argued that the bonobos at Great Ape Trust readily grasped the meaning of abstract symbols, such as those found on the lexigrams board, and, like humans, are able to interpret.

"The importance of Janni's Ph.D. can't be overstated," Fields said. "Hers will be the first Ph.D. produced in ape language since the research moved to Iowa."

The ape language research program moved from Georgia to Des Moines in 2005, and Great Ape Trust is the only place in the world where such research takes place. "Janni is an important part of the future, and she will help carry ape language research further," Fields said.

Source: Great Ape Trust of Iowa

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