

**POSSIBLE CUMULATIVE CULTURE IN CHIMPANZEES: INVENTION, MODIFICATION, AND SOCIAL LEARNING OF TOOL-USE TECHNIQUE**

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Behavioral diversity among chimpanzee communities has been considered as evidence for “culture” in chimpanzees. However, it has been suggested that only humans show cumulative culture, with successive generations building on earlier achievements. Here we present two studies which investigated chimpanzees’ capacity for cumulative culture. The first is the observation of a new tool-use behavior in a wild chimpanzee in Bossou, Guinea. At this site, ant-fishing in trees had never been observed in over 27 years, although ant-dipping on the ground is customary. In the first observation of ant-fishing, the chimpanzee employed wands of similar length to those used for ant-dipping. Two years later, his tools for ant-fishing were shorter and more suitable for the targeted ants. This suggests the chimpanzee generalized ant-fishing behavior on the ground to the trees, and adjusted his tools accordingly. The second is an experimental study showing that captive chimpanzees can learn a more efficient tool-use technique by observing a skilled conspecific. Chimpanzees changed their technique when drinking juice with a straw, from a dipping technique to a more efficient sucking technique, after social observation. This suggests chimpanzees’ capacity for cumulative social learning of tool-use techniques. These two studies indicate that chimpanzees have the ability to adopt a novel behavior based on their prior repertoire of tool-use skills, and that newly developed tool-use behaviors can diffuse to other members of a community. Therefore, chimpanzees might possibly show cumulative culture if conditions are right.

Keywords: cumulative culture, invention and modification of tool-use, social learning, tool-use technique