

Evidence of model based transmission bias in captive chimpanzees: initial tool choice matches proficient groupmate

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Key Words: Social learning, Culture, Selective learning, Tool Use

Social learning theories predict biased transmission dictating what and whom is copied. We presented a novel tool-use task to six groups of captive chimpanzees (*Pan troglodytes*) to investigate a model proficiency bias. The study included six groups totalling 54 chimpanzees (24 males) housed in six social groups at the KCCMR, University of Texas, U.S.A. Subjects were aged 12- to 43-years-old ($M = 24.5$ years, $SD = 7$). In each of four groups ($N = 33$, Males = 18), two models were trained to use one of two visually and functionally different ‘hook’ and ‘spoon’ tools to obtain baskets containing food that were otherwise out-of-reach. Once trained, the models demonstrated their tool-use in the presence of the group. The two models differed in their novel-task-solving proficiency as ascertained by prior interactions with novel tasks (also observed by group members) and caregiver ratings of each chimpanzee’s general proficiency. Two groups of ‘control’ chimpanzees ($N = 21$) had no prior information regarding the task and saw no conspecific demonstrations. Within the experimental groups, significantly more chimpanzees touched the tool used by the ‘high proficiency’ model than the one used by the ‘low proficiency’ model ($p < .001$), demonstrating some degree of model-based social learning bias. The tool used in observing chimpanzees’ first attempts and first successes, however, did not differ as a function of which model used the tool. This was likely because the task could be easily learned asocially. We propose that the chimpanzees’ tool-use behaviour was guided by biased stimulus enhancement alongside asocial learning. As with humans, chimpanzees demonstrate an ability to discern the most proficient model but also show the flexibility to asocially acquire multiple successful methods. Thus, chimpanzees and humans both demonstrate adaptive social learning strategies dictating when and whom they copy.