Captive great apes follow human pointing gestures

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Abstract

Pointing gestures are one of the most fundamental acts of human communication, appearing early in development across cultures. Whether nonhuman great apes can or cannot comprehend human pointing gestures has fueled theoretical debates over the evolution of cooperative communication. Here, we comprehensively assessed which aspects of pointing gestures would affect how well great apes follow human pointing. We increased, in a dose-response approach, the amount of gestural cueing elements along two dimensions, namely referentiality (more deictic movement elements) and ostension (more elements calling attention to the communicative nature of the gesture), to assess whether limits to pointing comprehension could be rooted in the referentiality or the communicative motive of the signal. Furthermore we improved on prior studies in two ways. First, ecological validity: pointing gestures were derived from observing interactions between great apes and their human caretakers. Second, measurement precision: we tested a large number of great apes (N = 39) of four species with five different gestures over 240 trials. Unlike in many prior studies, great apes followed the human points successfully. However, performance improved only marginally when gestures were maximally ostensive or referential. Large correlations (mean r = 0.52) between performance with different gestures suggested systematic individual differences. We conclude that an ability to follow pointing gestures cannot be upheld as a textbook difference between human and nonhuman great ape social cognition. At the same time, the pattern of results implies that nonhuman great apes have limited understanding of the referentiality or communicative intention of human pointing gestures.