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Compositionality in chimpanzee communication?

Researchers using a comparative approach to language evolution are highly interested in answering the question whether precursors to human language are present in other primates. Therefore, they investigate the commonalities and differences between various features of human language and non-human primate communication. One important feature of human language, compositionality, lends language a high degree of flexibility and is thought to be a uniquely human characteristic. Therefore, the aim of this study was twofold. We studied visual multimodal expressions in our closest living relative, the chimpanzee, and investigated (1) whether gestures had consistent 'meanings', as is typically assumed in current research, and (2) whether hand gestures and facial expressions recombined to create different complex meanings. In our analysis, 'meaning' was attributed to signals on the basis of both context of use and response of recipients.

Specifically, we focused on two variations of the extended arm gesture in isolation and in combination with two facial expressions, the bared teeth face and the funneled lip face in two semi-wild chimpanzee groups. With respect to our first research question, we found that, typically, the context in which a gesture and facial expression are used has a strong influence on the recipient's response. That is, the same combination of arm gesture and facial expression receives affiliative responses in positive contexts but nonaffiliative responses in negative contexts. This finding contradicts the recent trend of assigning specific 'meanings' to chimpanzee gestures. Interestingly, a different arm-face combination in our study was not affected by context, suggesting that different combinations have different interpretations.

All in all, the study suggests that we have only begun to understand the richness of meaning and interaction between different visual chimpanzee signals and their combinations. In contrast with studies seeking compositionality in vocal sequences alone, we suggest that our findings, while not yet supporting compositionality, serve to underscore the importance of a compositional and multimodal approach to understanding the communication of chimpanzees and other species.