**Vocal displays in wild chimpanzees**

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Abstract

Vocal communication plays an important role in regulating interactions of social animals. The presence of multiple receivers usually comes with costs and benefits for signallers. Long-distance calls and agonistic events provide an ideal context to investigate how audience composition potentially affects strategic signal production. Extensive work has been conducted on the aggressive and competitive lives and the strong social bonds characteristic of male chimpanzees. However, little is known about the vocalisations used during agonistic interactions. In this study, we described the vocal behaviour of wild male chimpanzees during displays and investigated the effects of audience composition and social factors, including the rank, the presence of males, females, and social partners, as well as the display severity and chorusing, on call production and structure. Chimpanzees from the Sonso community produced more vocal displays in the absence of social partners and in the presence of higher rank individuals. Males inhibited calling and drumming when larger numbers of females and males were present, respectively. Our results suggest that displayers flexibly adjust call production based on audience members, including socially important conspecifics. Additionally, the production of each call component was affected by different audience and social factors. This suggests that the call structure varied depending on the social context. Individuals likely interact and maintain contact with out of sight parties through long-distance components and use short-distance ones towards nearby conspecifics. Although audience effects are relatively common in the animal kingdom, chimpanzees’ flexibility extends beyond vocal production/inhibition or small acoustic changes and is observed at the structure level as well. This could allow chimpanzees to enhance their communicative capacities and compensate for a fixed and small vocal repertoire.