

Chimpanzees communicate extensively through various vocalizations and facial expressions that are interpreted by other individuals in their species. Grooming behavior of chimpanzees is one type of social aspect that has been studied and observed to see how the animals communicate. Lip-smacking, and many others, is an example of how chimpanzees initiate grooming and are able to communicate their needs. This behavior is mostly observed in studies by focal animal sampling and through direct observations of chimpanzee behavior. Primates have developed an extent of sensory modalities that help with perceiving the environment, and more specifically communicating with others during grooming and other activities. Chimpanzees specifically are very social animals that tend to interact a lot within their large social groups (Parr et. al. 2005). They interact with their environment and others through various senses, and using communication is important. Grooming is a social behavior that builds social relations within the group, and has led to adaptations in primates. Chimpanzees specifically are seen to have larger brains and increased cognitive abilities that are related to better communication with others (Parr et. al. 2005).

Studies were done to see exactly how grooming in chimpanzees can be initiated or reciprocated and how that benefits the animal overall. Researchers interested in understanding lip-smacking observed chimpanzees grooming behavior and found that lip-smacking is prevalent throughout interactions. The studies of Fedurek and Nishida both found that lip-smacking in chimpanzees initiated grooming and this led to a longer grooming session (Fedurek 2015). This was further supported with another group of chimpanzees, when lip-smacking was more frequent during grooming sessions (Nishida 2004). This suggests that lip-smacking as a vocalization behavior is important for chimpanzees to communicate their needs specifically for grooming. Chimpanzees are observed to utilize this behavior to communicate to the others about the length and reason of the grooming session (Watts 2016). This suggests this type of behavior helps chimpanzees communicate and build better social relations within their group. Ultimately leading to increased fitness, mating, and resources if they are able to communicate without conflict in their groups.

Chimpanzees utilize lip-smacking and grooming behavior to build better relations with other individuals and provide benefits for the future. Observations of chimpanzees' behavior when their caregivers mimicked the same behaviors was recorded. It was found that chimpanzees were more receptive when the caregiver used chimpanzee behaviors rather than their normal behavior (Jensvold 2008). At a longer developmental stage, it was found that chimpanzees develop gestures and requests at early stages (Bard 2014). This suggests how unique behaviors to chimpanzees seem to have evolved to benefit their fitness. Long term observations of social connections in chimpanzees and results found that grooming was reciprocated more among individuals who encountered each other often (Gomes et. al. 2009). Researchers were interested in finding proximate and ultimate reasons for why chimpanzees would adapt to communicating

their needs through grooming. Studies such as Bard and Gomes observed the development stages of how behaviors are interpreted in chimpanzees. They suggest that chimpanzees are able to initiate behaviors early on and be able to remember individuals for reciprocation in the future. Even among species of primates, the way that they use lip-smacking to initiate grooming are very similar (Allanic et. al. 2020). Observing the adaptations of facial muscles in primates, it was found that they evolved in a way that was beneficial to creating facial expressions in social groups (Burrows et. al. 2016). This suggests that chimpanzees use social behavior to strengthen their bonds and benefit in groups, however much is still unknown about the actual mechanism.

Through these studies, it can be seen how chimpanzees may use their social behavior during grooming to help them build social relations, and communicate their needs during the grooming session. A lot of the proximate causes from lip smacking during grooming was found to be beneficial for chimpanzees in terms of building social bonds and improving fitness long term. Ultimate mechanisms are still unclear but there is support for morphological adaptations that were pressured from primates living in complex social groups. Future research can be done more into the different benefits that chimpanzees gain from this, and how much they can communicate within their social group.

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