

Elephants strive to cooperate with allies, until the stakes get too high

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Elephants in the Myaing Hay Wun elephant camp, Myanmar. Credit: Li-Li Li, Li L-L et al., *PLOS Biology*, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

Asian elephants are keen to cooperate with friends and have evolved strategies to mitigate competition in their social groups, but cooperation

breaks down when food resources are limited, according to a study publishing September 28th in the open-access journal *PLOS Biology* by Li-Li Li at the Chinese Academy of Sciences in Yunnan, China, and colleagues. The study sheds light on the evolution of cooperative behavior in mammals.

The researchers tested nine semi-wild Asian elephants (*Elephas maximus*) at the Myaing Hay Wun Elephant Camp in Yangon, Myanmar with a simple, open access cooperative task. The elephants were offered two trays of food, which could only be accessed by pulling two ropes simultaneously—a task requiring two trunks.

They found that pairs of elephants successfully cooperated in 80% of trials. Some elephants tried to cheat, for example by "freeloading" and stealing part of the reward from another cooperating pair. While competitive behaviors were common, elephants used mitigation strategies—such as fighting back or moving sides—to prevent cheating and maintain cooperation.

Next, the researchers repeated the trials with a single food tray, meaning that one partner could dominate the reward, leaving the other with no food. In this more competitive scenario, elephants showed more costly competitive behaviors, like fighting, to gain access to the reward, and cooperation quickly broke down.

This the first experiment to test elephants in a rope-pulling cooperative task, but similar results have been found for [non-human primates](#), suggesting that distantly [related species](#) have convergently evolved similar strategies to maintain cooperation in their [social groups](#), the authors say. Unlike many primates, elephants are generalist browsers and grazers that are unlikely to encounter monopolizable [food resources](#) in the wild, which may explain why cooperation broke down in the more competitive scenario.



Elephant in the Myaing Hay Wun elephant camp, Myanmar. Credit: Li-Li Li, Li L-L et al., *PLOS Biology*, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

"We found that Asian elephants have a diverse repertoire of behaviors to use when cooperating with others, and are careful about how to mitigate competition based on their relationships," adds Li. "This is an exciting demonstration of how flexible and socially intelligent elephants are!"

More information: Li L-L, Plotnik JM, Xia S-W, Meaux E, Quan R-C (2021) Cooperating elephants mitigate competition until the stakes get too high. *PLoS Biol* 19(9): e3001391.

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