

Camp stability predicts patterns of hunter-gatherer cooperation

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Agta camp members. Credit: Daniel Smith / UCL Anthropology

Reciprocal food-sharing is more prevalent in stable hunter-gatherer camps, shows new UCL research that sheds light on the evolutionary roots of human cooperation.

The research explores patterns of food-sharing among the Agta, a population of Filipino hunter-gatherers. It finds that reciprocal food-sharing is more prevalent in stable camps (with fewer changes in membership over time); while in less stable camps [individuals](#) acquire resources by taking from others - known as 'demand sharing'.

Exploring social dynamics in the last remaining groups of present day hunter-gatherers is essential for understanding the factors that shaped the evolution of our widespread [cooperation](#), especially with non-kin.

The study, published today in the Royal Society journal *Open Science*, is the first to report a real-world association between patterns of cooperation

and group stability.

First author of the study, Daniel Smith (UCL Anthropology), said: "Cooperation between unrelated individuals is rare in animals, yet extensive among humans. Reciprocity - the principle of "you scratch my back, I scratch yours" - may explain this non-kin cooperation, yet requires stable groups and repeated interactions to evolve.

"Our research shows that hunter-gatherer cooperation is extremely flexible - reflecting either reciprocity or demand sharing depending on the frequency of repeated interactions between camp members."



Agta camp member participating in the study. Credit: Daniel Smith / UCL Anthropology

The authors looked at two types of food-sharing data. Firstly, details of actual food-sharing from six Agta camps were examined to explore whether

differences in camp stability predicted patterns of food-sharing. Secondly, games were also conducted in which individuals were asked to distribute resources between themselves and other camp-mates. These games were conducted with 324 Agta over 18 separate camps.

In one of the games, participants were shown their own picture, along with other randomly selected adults from camp. They were then given a number of small wooden tokens, each representing 125g rice, equal to the number of camp-mates' photos. Not every picture including the subject's could end up with rice on it, introducing a social dilemma regarding whether to share, as it would be impossible for everyone to receive rice. Participants then decided, token by token, whether to keep the rice for themselves, or to give to a camp-mate.

The results showed that, firstly, stable camps were more likely to display reciprocity in the actual food-sharing analyses. Patterns of food-sharing in unstable camps were not reciprocal, consistent with demand sharing, whereby individuals take resources from others rather than being given them. Secondly, individuals from more stable camps were increasingly likely to give resources to others and less likely to take resources in the games.

Despite differences in cooperation, individuals from both stable and unstable camps received resources from others. This distribution of resources among camp-mates is crucial for hunter-gatherers' survival. As foraging success is variable it is likely that, on any given day, an individual may return to camp with no resources. Food-sharing is therefore essential to reduce the likelihood of individuals going without resources for extended lengths of time.

Last author, Professor Ruth Mace (UCL Anthropology), added: "Food sharing and cooperation are at the centre of hunter-gatherers lifestyle. No other Apes share food or cooperate to the extent that humans do. A complex network of sharing and cooperation exists within camps and between camps in different hunter-gatherer groups, regulated by social rules, friendship ties, food taboos, kinship and supernatural beliefs. Sharing is

a crucial adaptation to hunter-gatherers' lifestyles, central to their resilience - and central to the evolution of mankind."

More information: Camp Stability Predicts Patterns of Hunter-Gatherer Cooperation, *Royal Society Open Science*, rsos.royalsocietypublishing.org/.../10.1098/rsos.160131

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