

Field studies confirm social network shrinking for aging monkeys

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An elderly female Assamese macaque near the field station in Phu Khieo, Thailand. Credit: Thawat Wisate, German Primate Center

As people get older, they increasingly focus on their more important relationships, often turning to family and close friends. This active

reorientation towards a few, particularly close relationships could explain why aging humans live in ever smaller social networks.

Since [human behavior](#) not only reflects the current conditions of our modern society, but is also the result of our evolutionary past, studies on social aging in our closest relatives can shed light on the biological roots of social behavior.

Scientists from the Research Group Social Evolution in Primates at the German Primate Center (DPZ)—Leibniz Institute for Primate Research and the Department for Behavioral Ecology at the University of Göttingen tested several hypotheses on the drivers of social aging in free-living Assamese macaques in Thailand.

The researchers collected data on the social behavior of females for eight years and found that the size of their social networks decreases with increasing age. The females continued to interact with their close social partners, but gradually withdrew from social interactions altogether. [These results](#), published in the *Proceedings of the Royal Society B: Biological Sciences*, contribute to the understanding of the evolutionary origins of social aging.

Social bonds promote health and well-being. However, as people age, they often reduce their social contacts and focus on the people who are most important to them—family and close friends. So far, it is unclear whether this change in social engagement is motivated by the knowledge of a limited lifespan, by physical limitations of an aging body or perhaps by the social exclusion of older people in modern societies.

Baptiste Sadoughi, first author of the study and former Ph.D. student in the Social Evolution in Primates Group at the German Primate Center turned to long-term social data on female Assamese macaques collected at the DPZ field site at Phu Khieo Wildlife Sanctuary to test the drivers

of social aging in non-human primate species that lack a human-like sense of mortality.

The team has been studying the behavior of Assamese macaques at Phu Khieo for years amassing thousands of hours of detailed observations of their social behavior.

"For the question of social aging, we focused on females, because they remain with their mothers, sisters and daughters in their natal group all their lives, which allowed us to track changes in behavior over their life span," Sadoughi explains.

Active social withdrawal with a constant preference for important partners

Sadoughi found that with increasing age, the females approached other females less frequently and invested less time in actively grooming them. However, less social contact does not necessarily mean that the females are alone more often. In fact, older females were not more often spatially isolated than younger ones, they just interacted less.

"We assume that older females try to keep up with the group at all costs, as proximity to others is one of the best protective mechanisms against predators. However, once they have achieved this, they lack the motivation or energy to engage socially with others," says Sadoughi.

Given the parallels between social aging in humans and macaques, the question now arose as to whether the increasing social selectivity assumed for humans could also explain the results in macaques.

"Assamese macaque females are selective. Who a female has interacted with more in the past predicts who she will interact with now. But this

tendency to be selective and prefer certain partners over others doesn't get stronger with age, as we know it from humans, it stays the same. Something that is constant over age cannot explain something that decreases with age. Selectivity in partner choice is therefore not sufficient to explain the age-dependent reduction of the social network," explains Sadoughi.

Longitudinal data are needed for aging studies

Studying age-related changes is further complicated by another phenomenon that has little to do with what we usually think of as aging. "With age comes a greater risk of death. With poor social integration and fewer partners close by comes a greater risk of death, especially under natural predation pressure.

"This simple fact means that changes in social integration with age are partially confounded by the greater likelihood that individuals who reach old age will be exceptionally well-connected socially, because the less well-connected have already died, a phenomenon called selective disappearance," explains Julia Ostner, head of the Social Evolution in Primates Group and senior author of the study.

Access to longitudinal data has allowed the researchers to solve this problem and distinguish between changes that are truly related to aging, and those that are due to demographic trends.

Only in the last 20 years have scientists recognized that [wild animals](#) also undergo physiological, morphological or social changes associated with the aging process. For a long time, it was assumed that individuals in the wild do not survive long enough to show signs of aging.

"Only now are we beginning to realize the possibilities offered by long-term data on animal populations in their natural environment to study

how individuals deal with the challenges of aging," says Baptiste Sadoughi.

More information: Baptiste Sadoughi et al, Social network shrinking is explained by active and passive effects but not increasing selectivity with age in wild macaques, *Proceedings of the Royal Society B: Biological Sciences* (2024). [DOI: 10.1098/rspb.2023.2736](https://doi.org/10.1098/rspb.2023.2736)

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