

Mongoose enjoy lifelong benefits of 'silver spoon effect'

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The benefits of the 'silver spoon effect' in mongoose pups extend across their lifetime, a new study has shown.

Banded mongooses live in social groups where pups are consistently cared for one-to-one by a single adult known as an "escort" – not their mother or father.

Escorts carry, groom and protect the pups, who inherit lifelong habits and behavioural traits, such as developing niche diets, from these [role models](#).

This 'silver spoon effect' – or the access to extra care and resources during early life—gives the pups a life-long advantage, such as increased fitness and reproductive success.

The new study, led by Professor Michael Cant from the University of Exeter, Dr. Emma Vitikainen from the University of Helsinki, and Harry Marshall from the University of Roehampton, has shown that the care the mongooses receive in the first three months of life plays a pivotal role in the success of both male and females.

Pups that were closely escorted were heavier as they achieved sexual maturity – which is associated with higher reproductive success.

Crucially, for female pups, the amount of care received had the biggest impact to how successfully they reproduced throughout their adult life, over and above effects of larger size.

The study suggests that the pups that receive the most nurturing and attentive escorting in their formative first months in life are the ones that breed most successfully – meaning the 'silver spoon effect' extends into future generations.

The findings offer a fascinating insight into how helping behaviour shapes the life history of social mammals including humans, that evolved in cooperative family groups in which offspring were cared for by

helpers (grandparents, older sibs) as well as their parents.

Professor Michael Cant, of the Centre for Ecology and Conservation on the University of Exeter's Penryn Campus in Cornwall said: "Our study shows that the impacts of early life care extend well past the initial caring period. As humans are also very sensitive to early life conditions, these 'durable benefits' of cooperation may have played an important role in shaping the development, health, and life history of our own species."

The study is published in the journal "Philosophical Transactions B" on Monday, February 25th 2019.

The theory of 'kin selection' explains why some animals and other organisms adopt altruistic behaviour: to boost fitness of their relatives. For example, cooperative breeders like mongooses help to raise offspring that are not their own.

Although the benefits of kin selected behaviour have been well studied, they have predominantly focused on short term effects rather than looking at the entire life history of recipients of care.

The new study focuses on both the immediate and lifelong benefits that banded mongooses gain from their adopted role models, by studying a 17-year dataset.

It shows that despite being born on the same day, pups within the same litter are not equal: some pups spend all day with their escort while others are left to fend for themselves from an early age.

The study highlights that the care that the pups receive in the first three months of life has a lasting effect on both their survival and later [reproductive success](#) – long after the period of care ended.

The lead author of the paper, Dr. Emma Vitikainen from University of Helsinki, Finland, added: "We know that care and resources received early on in life have profound effects on health and wellbeing in humans. Our study shows that also in mongooses, these early differences accumulate, with bigger pups receiving more care and doing better overall."

"Live long and prosper: durable benefits of [early-life](#) care in banded mongooses," by Michael Cant, Emma Vitikainen, Faye Thompson and Harry Marshall is published in *Philosophical Transactions B*.

More information: Emma I. K. Vitikainen et al. Live long and prosper: durable benefits of early-life care in banded mongooses, *Philosophical Transactions of the Royal Society B: Biological Sciences* (2019). [DOI: 10.1098/rstb.2018.0114](https://doi.org/10.1098/rstb.2018.0114)

Provided by University of Exeter

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