

# Orangutan mothers found to engage in displaced reference

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A tiger model presented to wild orangutans to elicit alarm vocal responses.  
Credit: Adriano R. Lameira

A pair of researchers with the University of St Andrews has observed orangutan mothers engaging in displaced reference after observation of a perceived threat. In their paper published in the journal *Science*

*Advances*, Adriano Lameira and Josep Call describe experiments they carried out with wild orangutans and what they learned from them.

Displaced reference is a term for conversations in which people describe things that have occurred in the past. Until now, it has only ever been observed in humans—it was assumed that other animals are not capable of understanding the idea of things happening in the past or the future. In this new effort, the researchers have shown that is not the case with orangutans, at least regarding the past.

To learn more about communication in orangutans, the researchers set up an experiment in which they covered themselves in a sheet and crawled on all fours for two minutes on the ground below mother orangutans and their offspring in a tree above. To see if [orangutan](#) communications would change depending on a perceived [threat](#), the researchers tried differently colored sheets—tiger-like, random colors, all white, and all white with some multi-colored spots. Prior research has shown that when orangutans observe a threat, they emit a sound comparable to human kissing noises.

After conducting multiple trials with multiple mother orangutans, the researchers found that the mothers delayed emitting the threat sound—one for as long as an hour. The delay times varied by perceived threat level and discretion of the mother, but averaged seven minutes. The researchers claim this is an example of displaced reference. They suggest the [mothers](#) were waiting for the threat to pass before warning their offspring with the threat noise. Meanwhile, they collected their little ones and moved them silently higher up in the tree.

The researchers further suggest that delaying a threat signal is a sign of intelligence and is perhaps a building block of the development of higher language skills. Still, the researchers also acknowledge that their findings will have to be replicated by others before their claims can be accepted.

**More information:** Adriano R. Lameira et al. Time-space–displaced responses in the orangutan vocal system, *Science Advances* (2018). [DOI: 10.1126/sciadv.aau3401](https://doi.org/10.1126/sciadv.aau3401)

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