

**EMBARGOED until Feb 18<sup>th</sup> 2014: 7 am EST; 12 midday UK time**



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## **Asian elephants reassure others in distress**

Asian elephants console others who are in distress, using physical touches and vocalizations, finds a study to be published in the open access journal *PeerJ* (<https://PeerJ.com>). The findings are the first empirical evidence of consolation in elephants, says lead author Joshua Plotnik, who began the research as a graduate student of psychology at Emory University.

"For centuries, people have observed that elephants seem to be highly intelligent and empathic animals, but as scientists we need to actually test it," he says.

Consolation behavior is rare in the animal kingdom, with empirical evidence previously provided only for the great apes, canines and certain corvids.

"With their strong social bonds, it's not surprising that elephants show concern for others," says co-author Frans de Waal, an Emory professor of psychology and director of Living Links at Emory's Yerkes National Primate Research Center. "This study demonstrates that elephants get distressed when they see others in distress, reaching out to calm them down, not unlike the way chimpanzees or humans embrace someone who is upset."

Plotnik received his Ph.D. from Emory in 2010 and is currently a lecturer in conservation biology at Mahidol University in Thailand and CEO of Think Elephants International, a non-profit focused on education and conservation. His main research interest is convergent cognitive evolution: The independent evolution of similar features of intelligence in species of different lineages.

While Plotnik was still at Emory, he and de Waal provided evidence that elephants can both recognize themselves in a mirror – a test of self-awareness passed only by some apes, dolphins and magpies – and problem-solve cooperatively.

"Humans are unique in many ways, but not in as many ways as we once thought," Plotnik says.

The current study focused on a group of 26 captive Asian elephants spread over about 30 acres at an elephant camp in northern Thailand. For nearly a year, the researchers observed and

recorded incidences when an elephant displayed a stress reaction, and the responses from other nearby elephants.

The initial stress responses came from either unobservable, or obvious, stimuli: Events such as a dog walking past, a snake or other potentially dangerous animal rustling the grass, or the presence of another, unfriendly elephant. "When an elephant gets spooked, its ears go out, its tail stands erect or curls out, and it may emit a low-frequency rumble, trumpet and roar to signal its distress," Plotnik says.

The study found that nearby elephants affiliated significantly more with a distressed individual through directed, physical contact following a stress event than during control periods. As a typical example, a nearby elephant would go to the side of the distressed animal and use its trunk to gently touch its face, or put its trunk in the other animal's mouth.

The gesture of putting their trunks in each other's mouths is almost like an elephant handshake or hug, Plotnik says. "It's a very vulnerable position to put yourself in, because you could get bitten. It may be sending a signal of, 'I'm here to help you, not hurt you.'"

The responding elephants also showed a tendency to vocalize. "The vocalization I heard most often following a distress event was a high, chirping sound," Plotnik says. "I've never heard that vocalization when elephants are alone. It may be a signal like, 'Shshhh, it's okay,' the sort of sounds a human adult might make to reassure a baby."

In addition, elephants frequently responded to the distress signals of other elephants by adopting a similar body or emotional state, a phenomenon known as "emotional contagion," which may be related to empathy. Groups of nearby elephants also were more likely to bunch together, or make physical contact with each other.

As an example of emotional contagion in humans, Plotnik describes a couple watching a movie: "When a character on the screen is scared, the hearts of the couple watching might race and they might move a bit closer and hold each others hands."

Decades ago, de Waal was one of the first to provide evidence of reconciliation in non-human primates, showing how chimpanzees make up with one another after a fight. De Waal's research also demonstrated consolation behavior: After two chimpanzees fight, a third individual may come over and console the distressed loser of the battle with an embrace.

Reconciliation behaviors have since been demonstrated in many more species than those that have shown the capacity for consolation. "One hypothesis for why we don't see consolation as often is that more complex cognition may underlie it," Plotnik says. "Rather than just functioning as a way to maintain or repair relationships in a social group, consolation may also require empathy: The ability to put yourself emotionally into someone else's shoes."

The current elephant study's limitations include the fact that it was restricted to captive animals. "This study is a first step," Plotnik says. "I would like to see this consolation capacity demonstrated in wild populations as well."

Wild populations of elephants, however, are becoming increasingly scarce: Both Asian elephants and African elephants are endangered.

In addition to conducting research, Plotnik strives to educate children in Thailand and the United States about the importance of conserving elephants and their shrinking habitats.

"I really believe that to save elephants and other endangered species, we must educate children about them," he says. "Part of our Think Elephants International curriculum is getting kids directly involved in the research we do, so they learn first-hand about these amazing animals. Elephants are incredibly majestic and there is still so much to learn about their behavior and intelligence."

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## **Movies**

There is a Supplemental Movie file (4 Mb) also available. Email [press@peerj.com](mailto:press@peerj.com) to receive a copy.

**Movie Title:** Asian elephants reassure others in distress

**Credit:** Joshua Plotnik, Think Elephants International ([www.thinkelephants.org](http://www.thinkelephants.org))

**Caption:** "Asian elephants console others who are in distress, using physical touches and vocalizations, finds a study to be published in the open access journal PeerJ. The findings are the first empirical evidence of consolation in elephants, says lead author Joshua Plotnik, who began the research as a graduate student at Emory University. Consolation behavior is rare in the animal kingdom, with empirical evidence previously provided only for the great apes, canines and certain corvids."

## Images



**Title:** Elephants at the Golden Triangle Asian Elephant Foundation, Chiang Rai, Thailand.

**Credit:** Elise Gilchrist

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Emory University is known for its demanding academics, outstanding undergraduate experience, highly ranked professional schools and state-of-the-art research facilities. Emory encompasses nine academic divisions as well as the Michael C. Carlos Museum, The Carter Center, the Yerkes National Primate Research Center and Emory Healthcare, Georgia's largest and most comprehensive health care system.

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### **About Think Elephants International**

Think Elephants International, Inc. ([www.thinkelephants.org](http://www.thinkelephants.org)) is a U.S. non-profit public charity (501(c)3) based in New York and currently working in Thailand and elsewhere to link elephant behavior and intelligence research with conservation education.

TEI is currently working with Thai universities and the Thai government to build a conservation education curriculum that aims to teach children who live in elephant range countries about the link between scientific research and conservation in practice. The curriculum not only teaches students about elephant behavior and human/elephant conflict, but also gets them directly involved in research about these topics. TEI believes that with the rapid loss of elephant habitat and populations in Asia and

Africa, research and education with a focus on children are paramount to reversing course before it's too late.

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### Abstract (from the article)

Contact directed by uninvolved bystanders toward others in distress, often termed consolation, is uncommon in the animal kingdom, thus far only demonstrated in the great apes, canines, and corvids. Whereas the typical agonistic context of such contact is relatively rare within natural elephant families, other causes of distress may trigger similar, other-regarding responses. In a study carried out at an elephant camp in Thailand, we found that elephants affiliated significantly more with other individuals through directed, physical contact and vocal communication following a distress event than in control periods. In addition, bystanders affiliated with each other, and matched the behavior and emotional state of the first distressed individual, suggesting emotional contagion. The initial distress responses were overwhelmingly directed toward ambiguous stimuli, thus making it difficult to determine if bystanders reacted to the distressed individual or showed a delayed response to the same stimulus. Nonetheless, the directionality of the contacts and their nature strongly suggest attention toward the emotional states of conspecifics. The elephants' behavior is therefore best classified with similar consolation responses by apes, possibly based on convergent evolution of empathic capacities.