

Study demonstrates how fear can skew spatial perception

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That snake heading towards you may be further away than it appears. Fear can skew our perception of approaching objects, causing us to underestimate the distance of a threatening one, finds a study published in *Current Biology*.

"Our results show that emotion and perception are not fully dissociable in the mind," says Emory University psychologist Stella Lourenco, co-author of the study. "Fear can alter even basic aspects of how we perceive the world around us. This has clear implications for understanding clinical phobias."

Lourenco conducted the research with Matthew Longo, a psychologist at Birkbeck, University of London.

People generally have a well-developed sense for when objects heading towards them will make contact, including a split-second cushion for dodging or blocking the object, if necessary. The researchers set up an experiment to test the effect of fear on the accuracy of that skill.

[Study participants](#) made time-to-collision [judgments](#) of images on a computer screen. The images expanded in size over one second before disappearing, to simulate "looming," an optical pattern used instinctively to judge collision time. The study participants were instructed to gauge when each of the [visual stimuli](#) on the [computer screen](#) would have collided with them by pressing a button.

The participants tended to underestimate the collision time for images of threatening objects, such as a [snake](#) or spider, as compared to non-threatening images, such as a rabbit or butterfly.

The results challenge the traditional view of looming, as a purely optical cue to object approach. "We're showing that what the object is affects how we perceive looming. If we're afraid of something, we perceive it as making contact sooner," Longo says.

"Even more striking," Lourenco adds, "it is possible to predict how much a participant will underestimate the collision time of an object by assessing the amount of fear they have for that object. The more fearful someone reported feeling of [spiders](#), for example, the more they underestimated time-to-collision for a looming spider. That makes adaptive sense: If an object is dangerous, it's better to swerve a half-second too soon than a half-second too late."

The researchers note that it's unclear whether fear of an object makes the object appear to travel faster, or whether that fear makes the viewer expand their sense of personal space, which is generally about an arm's length away.

"We'd like to distinguish between these two possibilities in future research. Doing so will allow us to shed insight on the mechanics of basic aspects of spatial perception and the mechanisms underlying particular [phobias](#)," Lourenco says.

Provided by Emory University

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