

Is suicide a tragic variant of an evolutionarily adaptive set of behaviors?

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Credit: George Hodan/Public Domain

What do snapping shrimp, naked mole rats, ants, honeybees, and humans all have in common? They all share a similar colony-like organizational system that biologists have termed eusociality. Eusocial species have been remarkably successful in both surviving and thriving through the use of colony-level cooperation. One cooperative behavior used by all eusocial species is the self-sacrifice of individuals to defend the colony.

For example, a eusocial bee may sting a predator to stop an attack but die in the process. This same self-sacrificial tendency is seen among humans across cultures and time periods, including among military recruits, first responders, and parents.

In an article recently published in *Psychological Review*, Joiner et al. (Online first) draw from this scientific knowledge and argue that a tendency towards [self-sacrifice](#) among humans is adaptive in some situations—for instance, a firefighter willingly risking his or her life to save someone from a burning building. However, when individuals mistakenly view their own deaths as being worth more than their lives, results can be needlessly lethal. Specifically, Joiner et al. propose a framework in which suicide is viewed as a tragic variant of what typically serves as an adaptive tendency towards self-sacrifice among humans.

Evidence for this framework can be seen in the numerous striking parallels between eusocial self-sacrificial behaviors among non-humans and death by suicide in humans. As one example, insects often become highly agitated prior to sacrificing themselves to defend their colony. Similarly, extreme overarousal and sleep problems are typically seen immediately prior to death by suicide among humans. Joiner and colleagues explain that these parallels in behavior point to the possibility that suicide is one unfortunate step away from adaptive sacrificial behaviors. So when do individuals take this tragic step? According to Joiner et al., when individuals believe that others or society as a whole will be better off without them, they miscalculate the worth of their lives and conclude that their deaths will be more valuable. This misperception, in conjunction with a tendency toward self-sacrifice, may then result in the individual's death by suicide. This represents a devastating variant of what otherwise is an adaptive tendency.

Although research is needed to test this novel framework, these ideas are

an important step towards demystifying the phenomenon of suicide and furthering suicide prevention efforts. This framework may ultimately inform our ability to identify individuals at acute risk for [suicide](#) and aid in the development of new clinical interventions.

More information: Thomas E. Joiner et al. Suicide as a Derangement of the Self-Sacrificial Aspect of Eusociality., *Psychological Review* (2015). [DOI: 10.1037/rev0000020](https://doi.org/10.1037/rev0000020)

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