

# Honeybees, ants may provide clues to suicide in humans

January 27 2016

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Could human suicide have evolutionary roots in self-sacrificial behaviors like those seen in species such as honeybees and ants?

A Florida State University researcher who is one of the nation's foremost experts in suicide is trying to find out.

Thomas Joiner, the Robert O. Lawton Distinguished Professor of Psychology, led a team of researchers in examining scientific knowledge and drawing parallels between suicide in humans and the self-sacrificial behaviors of colony-like—or eusocial—species such as shrimp, mole rats and insects.

"The idea that something mysterious and scary like suicide in humans could have some sort of analog in animals is not only kind of fascinating, but also really promising in terms of trying to figure it all out," Joiner said.

In a paper [recently published in the journal \*Psychological Review\*](#), the researchers theorize that humans exhibit the characteristics of eusocial species such as relying on multigenerational and cooperative care of young and utilizing division of labor for successful survival.

"Humans are a species that is eusocial, and that's an important starting point," Joiner said. "That suggests a certain set of characteristics, including some really striking self-sacrifice behaviors."

Those eusocial behaviors, understood as part of what is called inclusive fitness in evolutionary biology, are adaptive.

"The idea is if you give up yourself, which would include your genes, it can be evolutionarily speaking 'worth it' if you spare or save multiple copies of your genes in your relatives," Joiner said. "It's a net benefit on the gene level."

However, when the researchers look at human suicide in a modern context, they surmise that suicide among humans represents a derangement of the self-sacrificial aspect of eusociality.

"It seems highly maladaptive and very psychopathological," Joiner said. "That's the quandary we're facing with this paper. Is it possible that modern human suicide is a maladaptive or deranged version of the adaptive, behavioral model for self sacrifice that all eusocial species have?"

The hope is this theory will spur a search for exactly what that disorder is at the brain level in order to demystify the phenomenon of suicide and further suicide prevention efforts.

"If you can identify animal models for this behavior and understand its circuitry at the neurochemical and neurophysiological levels, then it might lead to new insights about similar circuitry that fail in [human](#) suicide," Joiner said.

Provided by Florida State University

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