

Bold spiders ensure a bright future for the whole colony

June 9 2014, by Jean-Paul Gagnon



Come dine with me. Credit: berniedup, CC BY-NC-SA

Stegodyphus dumicola is a social spider. This curious little creature lives in shared nests with more than [2,000](#) others. They hunt together, act collectively to subdue the prey stuck in their sticky web and share the catch.

In a [new study](#), Jonathan Pruitt and Carl Keiser, researchers at the

University of Pittsburgh, looked at the "personalities" of individual spiders. They found that bold individuals enhance the survival prospects of the whole colony.

In their experiments, Pruitt and Keiser ranked individual spiders for their "boldness". Bolder individuals, usually females, are the ones most likely to start the charge to subdue prey. They named these bold spiders "keystone individuals".

Their finding suggests that colonies with a very bold keystone individual will have fitter members (measured by mass) than colonies with no such keystone individuals. Such individuals, it seems, have a direct impact on the fitness and survival prospects of an entire colony.

This happens because keystone individuals seem to affect the decisions of other spiders in the colony. When a keystone moves after prey to subdue it, more individuals are likely to follow her. It is as if the keystone's personality emboldens other spiders which results in more productive action.

Pruitt and Keiser are careful to say that their study is laboratory bound. Findings might be different in the wild. That said, their results indicate that one individual with a remarkably bold personality can enhance the mass of the colony and the survival of other individuals.

Of spiders...and humans?

Studies on the effects of individual or collective personality have been done in other animal groups. Cetaceans, for example dolphins, and other social insects, such as ants and honeybees, are examples but so too are human beings.

John Breuilly, of the London School of Economics, [argues](#) that not only

are humans influenced by other individuals but also by the institutions that exist around us.

It brings to mind ideas about ["big man" or "big woman" personality](#), [heroic leadership](#), or research on [why people follow others](#).

Humans are of course not the same as [spiders](#) but scientific studies into the social behaviours of non-humans have a purposeful neatness to them.

It is this neatness, the clarity of the argument needed for it to be reproduced by other scientists, that inspires reflection on specific areas of human society. In this case it is the effect of keystone individuals. keystones can sway others with their charisma and actions.

This can go horribly wrong when we follow bad leaders blindly but *S. dumicola* shows us that this can also be a positive phenomenon. Bold action by one individual spider, a champion phenotype, can improve the survival prospects of an entire colony.

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