

# Explainer: Why are we afraid of spiders?

May 8 2014, by Chris Buddle

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Credit: Pierre J, CC BY-NC-SA

I have personal interest in arachnophobia – the fear of spiders – because I am a spider expert, but also because my daughter has it. She is not alone. According to the American Psychiatric Association, phobias affect more than one in ten people in the US, and of those individuals, up to 40% of phobias are related to bugs (including spiders), mice, snake and bats.

There are clearly a lot of arachnophobes. But do they know why they fear spiders? Can they do something to control those fears?

## Once bitten twice shy?

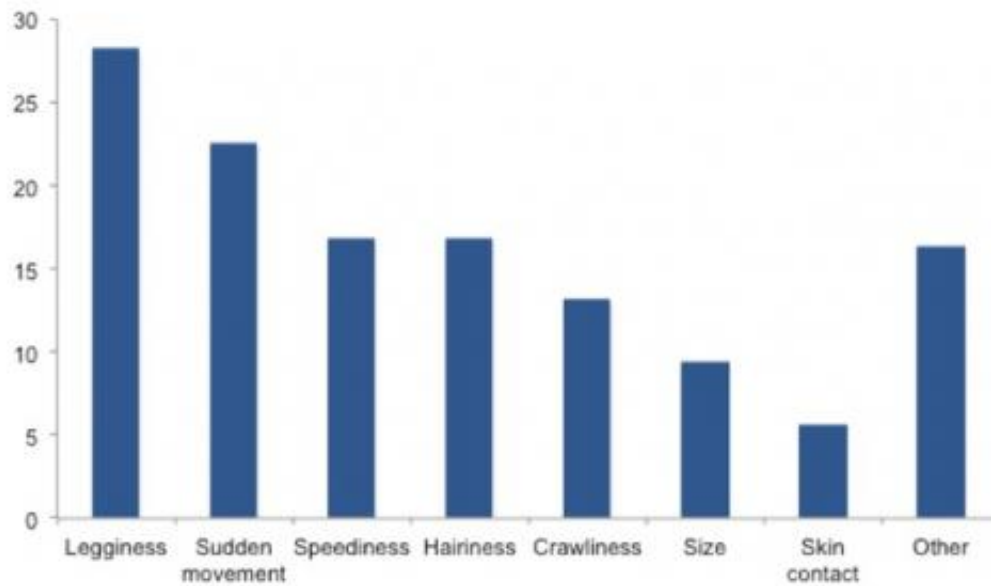
Psychologists believe that one reason why people fear spiders is because of some direct experience with the arachnids instilled that fear in them. This is known as the "conditioning" view of arachnophobia.

In 1991, Graham Davey at City University London [ran a study](#) to understand more about this view. He interviewed 118 undergraduate students about their fears of spiders. About 75% of the people sampled were either mildly or severely afraid of spiders. Of those most were female. (This gender bias in arachnophobia has been supported subsequent research.)

There was also an effect from family. Those people fearful of spiders reported having a family member with similar fears, but the study was unable to separate genetic factors from environmental ones. What is surprising is that Davey found that arachnophobia wasn't the result of specific "spider trauma", which means there was no support for the conditioning view.

So what makes spiders so terrifying? Surely it must be the threat of being bitten? Davey looked at that issue too. It turns out that it is not so much a fear of being bitten, but rather the seemingly erratic movements of spiders, and their "legginess". Davey said:

*Animal fears may represent a functionally distinct set of adaptive responses which have been selected for during the evolutionary history of the human species.*



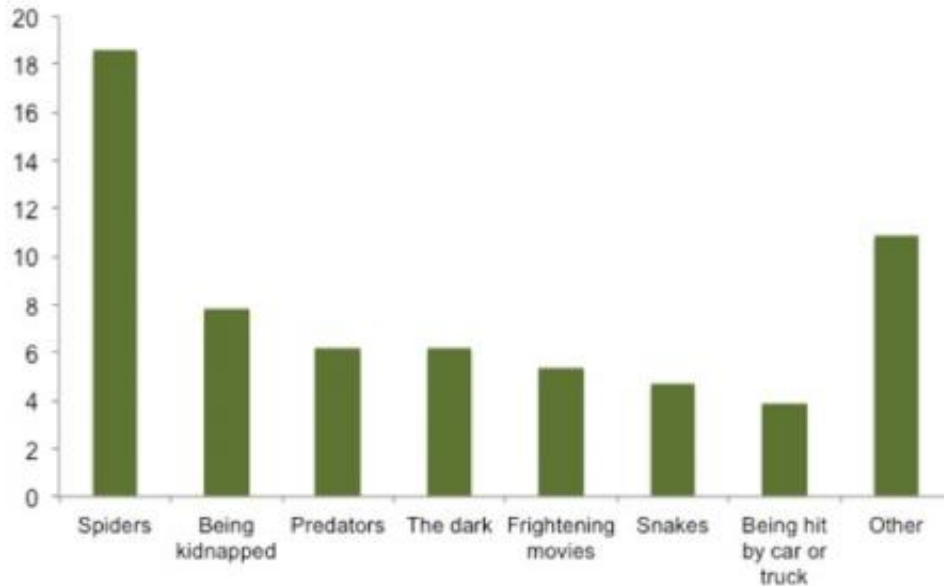
Credit: Graham Davey/Anxiety Research

A criticism of Davey's work is that perhaps "conditioning" cannot be so easily dismissed, because the spider-trauma event may have occurred during childhood, and a specific spider event may be buried deep within memories. In 1997, Peter Muris and his colleagues at the University of Maastricht tried to [looked into this](#).

Not surprisingly, if you give kids a list of things that might be scary for them, the vast majority check off things like not breathing, getting hit by a car, bombs, fire or burglars as quite important. Interestingly, if you give them a free option to tell researchers what sorts of things they fear the most, both boys and girls report "spiders" as their top fear (the second fear is being kidnapped, third is predators and fourth is the dark).

This is surprising. Of all the things kids might report, they list spiders as the number one fear. So in contrast to Davey's work, Muris finds that the

kids that were most fearful of spiders could relate that fear to specific events. Perhaps conditioning is the pathway to arachnophobia.



Credit: Muris et al/Behaviour Research and Therapy

## Genes or environment?

But before we can be sure that conditioning is the main reason, we need to ensure that genetic factors are not involved too. In 2003, John Hettema at the Virginia Institute for Psychiatric and Behavioural Genetics and his colleagues [conducted twin studies](#) to tease apart genetic factors.

Identical twins have identical DNA but tend to live in different environments in adult life, which allows researchers to find out how genes affect behaviour. When Hettema recorded the responses of twins

to "fear-relevant" images (spiders, snakes) compared to "fear-irrelevant" images (circles, triangles). Statistical analysis of the results revealed that genetic influences were "substantial", which means that arachnophobia is inheritable. You need not necessarily experience spiders to be fearful of them.



Peacock spider. Credit: Jurgen Otto, CC BY-NC-ND

## Scare tactics

So, to my dissatisfaction, arachnophobia is here to stay. But there may be a simple technique to reduce the fear these bugs cause. In 2013, Paul Siegel at the State University of New York and his colleague [published a study](#) that helped volunteers lessen their arachnophobia.

They first split the volunteers into phobic and non-phobic groups, based on simple spider-fear tests. After a week of doing these tests, both the groups were then given exposed to images of flowers or spiders, but the exposure was for such a very short time.

The idea was that people can't recognise the images consciously, but it has an effect on their subconscious. When the spider-[fear](#) tests were carried out on both these groups again, those who feared spiders had become less afraid.

While other general conclusions are hard to draw from the literature on arachnophobia, arachnologists like me should rejoice at the results of Hettema's study. If nothing else, at least sharing images of [spiders](#) may help reduce arahnophobia.

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