

Female nursery web spiders judge males based on gift quality, not the wrapping paper

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Female nursery-web spiders show no interest in the silk that their potential partners secrete. They focus on the quality of the gift. Credit: Sabrina Weber

One of the central features of courtship behavior in the nursery-web spider (*Pisaura mirabilis*) is that the male must have a gift on hand in order to make a good impression on the females. So before setting out to look for a mate, the male spider traps a prey insect and wraps it festively in silk threads ready for presentation. If accepted, the food parcel is

consumed by the female during mating. A new study carried out by LMU biologist Cristina Tuni reveals that successful mating depends solely on the quality of the gift, as the female does not react to any sex chemicals (pheromones) present in the male's silk. – This is rather surprising, in light of the fact that chemical communication via volatile or tactile pheromones is such a widespread feature of mating and reproductive behavior in the animal world. The new study appears in the journal *Behavioral Ecology and Sociobiology*.

Because pheromones can potentially be incorporated into spider silk, Tuni and her colleagues at LMU's Behavioral Ecology Group wanted to define the role played by chemical signals in mating and reproduction in *P. mirabilis*, which belongs to the family of the wandering hunter spiders. To test whether the silk in which the males wrap their nuptial gifts might serve as a source of pheromones to attract mates, the researchers performed a series of experiments on a total of 100 nursery web spiders.

The tests revealed, however, that male and female nursery web spiders react differently to the silk that their potential partners secrete. Threads spun by the females indeed appear to contain pheromones that attract males. However, females themselves show no interest whatsoever in the threads made by the male. They show no reaction either to the threads in which the nuptial gift is wrapped or to the 'draglines' secreted by the males during their visits to females. These findings imply either that male nursery spiders do not emit any volatile pheromones and must therefore rely on the effect of the gift itself, or that the females have learned to disregard any [male pheromones](#) in order to focus on the quality of the gift.

More information: Michelle Beyer et al. Does silk mediate chemical communication between the sexes in a nuptial feeding spider?, *Behavioral Ecology and Sociobiology* (2018). [DOI:](#)

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