Title:	Finding love: fruit fly males evolving under higher sexual selection are inherently better at finding receptive females
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Abstract:	Courtship is an important component of male reproductive behaviour that enables males to learn about the suitability of their mating partners. Experimental evidence suggests that Drosophila melanogaster males can learn to modify their courtship behaviour based on their prior experience with unreceptive females. This courtship learning is expected to provide a fitness advantage to males and could therefore evolve given suitable heritable variation. We investigated the role of sexual selection in the evolution of courtship learning ability of males, using populations of D. melanogaster evolving under high and low levels of sexual selection for over 170 generations. We exposed males from both types of population to unreceptive females and then tested their ability to discriminate between receptive and unreceptive females in a complex mating environment. After being exposed to unreceptive females, males from both types of population (1) courted females less (both receptive and unreceptive), (2) took longer to initiate courtship, but took less time to start mating after initiating courtship and (3) increased the proportion of courtship directed towards receptive females, indicating the ability of both types of males to learn from previous experience. We did not find any difference in the courtship learning ability of males from the two types of populations. However, males from populations with higher levels of sexual selection were better at recognizing and courting receptive females, even when they were not previously exposed to unreceptive females. Taken together, these results show that sexual selection may not result in improved learning abilities but can lead to the evolution of an improved innate ability of males to assess the receptivity of females.
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