New study shows birds can learn from others to be more daring

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Yellow pipe cleaners, a purple plastic egg and a blue cocktail umbrella were a few of the new objects introduced to the house sparrows in this behavioral study. Credit: LSU.

House sparrows can be found on nearly every continent including North America, South America, Africa and Australia, where they are not native but an invasive species. New research into these highly social

songbirds reveals that they can learn from each other and adapt their behavior.

"Our study demonstrates that house sparrows can extrapolate information gleaned from the social environment and apply it to new experiences," said Tosha Kelly, LSU Department of Biological Sciences post-doctoral researcher and lead author in this study published in *Biology Letters*.

House sparrows can often be observed in large flocks and this research suggests they may watch and learn from each other. The ability of house sparrows to adjust their behavior after a social experience provides evidence of social learning.

"This is really important because as humans encroach upon and develop wildlife habitats, animals are exposed to a variety of environments and objects that they wouldn't naturally be exposed to. It's critical to understand how quickly new information can pass through a population, which can affect how a species, as a whole, is going to persevere in this era of human-induced environmental change," Kelly said.

Kelly and colleagues video recorded, in a lab environment, how individual house sparrows reacted to a new object placed near the food bowl in their cage. Some sparrows did not hesitate to feed at their bowl despite the new object, while others were more reluctant to approach the bowl with the unusual object nearby. The new objects were harmless to the birds and were introduced one at a time. The objects included a blinking light, a white cover over part of the dish, yellow pipe cleaners, a purple plastic egg, a red-painted dish, a tinfoil hood, three gold bells, pink puffs and an open blue cocktail umbrella. Each bird was exposed to three of these objects one at a time to determine its "personality type."

The researchers paired 10 individual birds with similar responses to the

new objects and 14 birds with contrasting responses to the objects. Then, the pairs were exposed to unusual objects near the food dish that were new to both individuals in each pair's shared cage. Kelly and colleagues observed through video recordings that the more wary individual had the opportunity to observe the more daring individual feed at the bowl near the new object. Then, all of the birds were returned to their individual cages and a week later, they were tested alone again with new objects near the food dish. Surprisingly, the birds that had previously been more cautious but had watched a daring partner began to be more daring when feeding alone at their food bowl, even with a completely new object they had never seen before nearby.

A week after being housed with a more daring partner, cautious house sparrows were on average 2.6 times more likely to feed in the presence of a new object than compared to when initially tested alone. This demonstrates that they learned from their partners that novel objects near the food dish were not a threat, write the authors.

"A lot of species that get introduced don't become established, but house sparrows are very successful. Our findings from this study might be part of what explains their success as an invasive species," said LSU Department of Biological Sciences Assistant Professor Christine Lattin, who is the senior author on this study. "How an individual species responds to novelty can have a big impact on whether or not they can coexist with people in cities and other human-altered environments. It may also indicate whether they are going to be able to benefit from increased food availability and other kinds of opportunities that humans bring along with them or if they are going to just be shut out."

More information: T. R. Kelly et al, No, you go first: phenotype and social context affect house sparrow neophobia, *Biology Letters* (2020). DOI: 10.1098/rsbl.2020.0286

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