Latent learning occurs without any explicit teaching

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Long before they enter a classroom, people learn to identify commonplace objects like a "dog" and a "chair" just by encountering them in everyday life, with no intent to learn about what they are.

A new study is one of the first to provide experimental evidence that adults learn from incidental exposure to things that they know nothing about and aren't even trying to understand.

Exposure to new objects makes humans "ready to learn," said Vladimir Sloutsky, co-author of the study and professor of psychology at The Ohio State University.

"We often observe new things out in the real world without a goal of learning about them," Sloutsky said.

"But we found that simply being exposed to them makes an impression in our mind and leads us to be ready to learn about them later."

Sloutsky conducted the research with Layla Unger, a postdoctoral researcher in psychology at Ohio State and lead author of the study. The study was published May 26, 2022 in the journal *Psychological Science*.

The study included five different experiments with 438 adults, with all experiments showing similar results.

In the studies, participants first took part in an "exposure phase" in which they played a simple computer game while seeing colorful images

of unfamiliar creatures. The game did not provide any information about these creatures, but for some participants, unbeknownst to them, the creatures actually belonged to two categories—Category A and Category B.

Similar to real-world creatures such as dogs and cats, Category A and Category B creatures had body parts that looked somewhat different, such as different-colored tails and hands. Control group participants were shown images of other unfamiliar creatures.

Later in the experiment, the participants went through "explicit learning," a process in which they were taught that the creatures belonged to two categories (called "flurps" and "jalets"), and to identify the category membership of each creature.

The researchers measured how long it took participants to learn the difference between Category A and Category B in this explicit learning phase.

"We found that learning was substantially faster for those who were exposed to the two categories of creatures earlier on than it was in the control group participants," Unger said.

"Participants who received early exposure to Category A and B creatures could become familiar with their different distributions of characteristics, such as that creatures with blue tails tended to have brown hands, and creatures with orange tails tended to have green hands. Then when the explicit learning came, it was easier to attach a label to those distributions and form the categories."

In another experiment in the study, the simple computer game that participants played in the exposure phase involved hearing sounds while seeing the images of the creatures. Participants simply hit a key

whenever the same sound was played two times in a row.

"The images were randomly attached to the sounds, so they could not help participants learn the sounds," Sloutsky said. "In fact, the participants could completely ignore the images and it would not affect how well they did."

Still, participants who were shown the images of Category A and B creatures later learned the differences between them more quickly during the explicit learning phase than participants who were shown other unrelated images.

"It was pure exposure to the creatures that was helping them learn faster later on," Sloutsky said.

But was it possible that they had already actually learned the difference between Category A and B creatures during the early exposure, without needing the explicit learning?

The answer is no, Unger said.

In some of the studies, the simple computer game in the exposure phase involved first seeing a creature in the center of the screen. Participants were then asked to hit one key if the creature jumped to the left side of the screen and a different key if it jumped to the right, as quickly as possible.

Participants were not told this, but one type of creature always jumped to the left and the other always jumped to the right. So if they learned the difference between the two creature categories, they could respond faster.

Results showed that participants did not respond faster, suggesting they

didn't learn the difference between Category A and Category B creatures in the exposure part of the experiment.

But they still learned the difference between them more quickly in the explicit learning part of the experiment than those participants who were exposed to images of other creatures during the earlier exposure phase.

"The exposure to the creatures left participants with some latent knowledge, but they weren't ready to tell the difference between the two categories. They had not learned yet, but they were ready to learn," Unger said.

Sloutsky said this is one of few studies that has shown evidence of latent learning.

"It has been very difficult to diagnose when latent learning is occurring," he said. "But this research was able to differentiate between latent learning and what people learn during explicit teaching."

More information: Layla Unger et al, Ready to Learn: Incidental Exposure Fosters Category Learning, *Psychological Science* (2022). DOI: 10.1177/09567976211061470

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