

## **Studies Bolster Idea of Subliminal Learning**

Science: Subjects mentally registered imperceptible details. The results raise hopes of improved education.

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Start Page: A.24

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Go to almost any classroom and, within minutes, you're likely to hear a frazzled teacher say: "Let's pay attention."

But researchers have long known that it's not always necessary to pay attention to something in order to learn it. Now a team of scientists at Boston University have taken that idea a step further, concluding that it's possible to learn from information that's imperceptible.

Furthermore, the researchers suggest in an article in the journal *Nature* to be published today, the brain can become more skillful at certain tasks, effortlessly, even if the person isn't trying and doesn't know it's happening.

The finding suggests that classrooms could be structured in such a way that students could be learning subliminally even as they are learning consciously, researchers say.

But it also seems to demonstrate that, even if we try to shut out advertising and other informational sounds in the environment, they probably are lodging in our consciousness.

### **Tests Used Slow-Moving Groups of Dots**

The team headed by Takeo Watanabe, an associate professor of psychology, measured subjects' ability to improve at a mundane task: perceiving the tendency of a group of dots to move in one direction.

The moving dots were merely part of the background while the subjects were involved in an unrelated task of memorizing letters.

Moreover, the directional tendency of the dots was so slight that it could not be detected initially.

Even so, the subjects became more sensitive to the moving dots and their direction.

The study could have broader implications, Watanabe said.

"Teachers could show some technical words in biology or math formulas on the blackboard that they wanted students to learn, and students might be better able to memorize them," even if they were merely part of the background, Watanabe said.

Or, if tapes of foreign language speakers played at a barely audible level while students were otherwise engaged, it might improve their pronunciation or vocabulary, he said.

But the downside of the study, he said, is that it shows how receptive the brain is to its environment. That trait served early humans well. But in today's information jungle, it makes avoidance of unwanted information difficult, he said.

The phenomenon Watanabe and his team were studying is referred to by researchers in cognition and brain biology as priming.

It means exposure to stimulus even at an imperceptible level conditions the brain to learn.

Moshe Bar, an assistant professor at Harvard University Medical School, has done experiments in which he flashed images of common objects, such as a desk or a car, on a screen so rapidly that research subjects could not see them. Asked to name the object they'd seen, they could not. Yet, given four choices of what they'd seen, subjects were 21% more likely to choose correctly.

### Research Backs 'Long History' of Claims

Subliminal learning had been controversial until recently because researchers were unable to prove it occurred. But studies such as those done by Bar and Watanabe are finding ways to detect such learning even when it's too subtle for subjects to realize.

"This is a new set of evidence" demonstrating that learning does occur subliminally, Bar said.

"I think it improves the name of subliminal and non-conscious learning, and it's going to attract good scientists who won't shy away from this field of what we are able to learn and perceive without being able to report it," he said.

But researchers emphasize that paying attention to a subject is still a far more efficient and effective way of learning.

"There's a long history of claims of changing the brain effectively by exposure to something while you're not particularly paying attention or when you're sleeping," said Michael Merzenich, the chief scientist at Scientific Learning Corp., a San Francisco Bay area company that uses computer programs to help learning disabled children learn to read. "We'd all love to be able to do that."

Although the phenomenon of priming has been convincingly demonstrated, he said, no one yet knows how to harness that power to help struggling readers, for example, or to speed the learning of a foreign language.

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