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How beliefs shape effort and learning

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If it was easy to learn, it will be easy to remember. Psychological scientists have maintained that nearly everyone uses this simple rule to assess their own learning.

Now a study published in an upcoming issue Psychological Science, a journal of the Association for Psychological Science, suggests otherwise: "Individuals with different theories about the nature of intelligence tend to evaluate their learning in different ways," says David B. Miele of Columbia University, who conducted the study with Bridgid Finn of Washington University in St. Louis and Daniel C. Molden of Northwestern University.

It has long been known that these theories have important effects on people's motivation to learn. So-called "entity theorists" believe each person possesses a fixed level of intelligence, and no amount of effort can change it. "As a result, entity theorists tend to disengage when something is challenging. They decide that they're not really capable of learning it," says Miele. Meanwhile, "incremental theorists" believe that intelligence is malleable. "They keep forging ahead when faced with a challenge, believing that more time and effort will yield better results."

To test whether these theories also affect the way people assess their own learning, the researchers conducted two experiments. In the first, 75 English-speaking students studied 54 pairs of Indonesian to English translations that varied in terms of how effortful they were to learn. The easy pairs consisted of English words that were nearly identical to their Indonesian counterpart (e.g, Polisi-Police) and required little effort to

learn; many of the medium pairs were still connected in some way (e.g, Bagasi-Luggage) but required more effort to learn than the easy pairs; and the difficult pairs were entirely dissimilar (e.g., Pembalut-Bandage) and required the most effort to learn. After studying each pair for as long as they liked, the participants reported how confident they were about being able to recall the English word when supplied the Indonesian word on an upcoming test. Once they had finished studying and reporting their "judgments of learning" for all of the pairs, they then took the recall test. Finally, at the end of the experiment, they completed a questionnaire which assessed the extent to which they believed that intelligence is fixed or changeable.

The results of the experiment showed that, although all of the students did better at recalling the easy pairs compared to the difficult pairs, only entity theorists (who expressed more confidence the less time they spent studying) accurately predicted the magnitude of this effect. Incremental theorists (who expressed more confidence the more time they spent studying) tended to be overconfident about how likely they were to remember the difficult pairs and under confident about how likely they were to remember the easy pairs. This finding was also supported by the results of the second experiment. Thus, simply holding different beliefs about the nature of intelligence can lead people to form very different impressions of their own learning.

And which theory of intelligence is correct? "The truth lies somewhere in between," he says. "We have to be sensitive to personal limitations"—say, a learning disability—"and at the same time not feel those limitations are the end all–be all. Effort can always lead to some amount of improvement, but you also need to be aware of the law of diminishing returns."

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