

# Motivation, study habits—not IQ—determine growth in math achievement

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It's not how smart students are but how motivated they are and how they study that determines their growth in math achievement. That's the main finding of a new study that appears in the journal *Child Development*.

The study was conducted by researchers at the University of Munich and the University of Bielefeld.

"While intelligence as assessed by [IQ tests](#) is important in the early stages of developing mathematical competence, motivation and study skills play a more important role in students' subsequent growth," according to Kou Murayama, [postdoctoral researcher](#) of psychology at the University of California, Los Angeles (who was at the University of Munich when he led the study).

Murayama and colleagues looked at six annual waves of data from a German [longitudinal study](#) assessing [math ability](#) in 3,520 students in grades 5 to 10. They investigated how students' motivation, study skills, and intelligence jointly predicted long-term growth in their [math achievement](#) over five years.

Intelligence was strongly linked to students' math achievement, but only in the initial development of competence in the subject. Motivation and study skills turned out to be more important factors in terms of students' growth (their learning curve or ability to learn) in math. Students who felt competent; were intrinsically motivated; used skills like summarizing, explaining, and making connections to other materials; and

avoided rote learning showed more growth in math achievement than those who didn't. In contrast, students' intelligence had no relation to growth in math achievement.

"Our study suggests that students' competencies to learn in math involve factors that can be nurtured by education," explained Murayama.

"Educational programs focusing on students' motivation and study skills could be an important way to advance their competency in math as well as in other subjects."

Provided by Society for Research in Child Development

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