

A growth-mindset intervention boosts interest in math and science among liberal arts students

June 7 2023



Credit: Pixabay/CC0 Public Domain

College students are often urged to "find" their passion, but such advice could discourage them from exploring other disciplines or developing

new skills if they feel their passion or interests have already been "found." A new study by Yale-NUS College and Stanford University found that cultivating a growth mindset about interest in undergraduates who initially professed that they were not a "math or science person," led to increased interest and better final grades in their mandatory math and science courses.

This study built on [past research](#) showing that people can hold different beliefs about the nature of interest. Those with a "growth [mindset](#) of interest" tend to believe that interests can be developed, whereas those with a "fixed mindset of interest" tend to believe that interests are inherent and relatively unchangeable. A growth mindset, therefore, has the potential to encourage students to pursue learning opportunities in new and different areas, helping them develop a broad range of skills that are highly valued in the job market. In their research, published in the *Journal of Educational Psychology*, the team designed a brief intervention that portrayed interests as developable, not fixed, and examined its influence on liberal arts students as they engaged in their mandatory math and science courses during their first year of university.

The research was conducted by Associate Professor of Social Sciences (Psychology) Paul A. O'Keefe and Senior Research Fellow E. J. Horberg from Yale-NUS, in collaboration with Stanford School of Humanities and Sciences researchers Carol S. Dweck, the Lewis and Virginia Eaton Professor of Psychology and Professor of Psychology Gregory Walton.

In the intervention, incoming liberal arts students—those who typically hold strong interests in the arts, humanities, and social sciences—completed a 30-minute online activity during their university orientation. It included several reading and reflective writing exercises that prompted them to think about the developable nature of interests and how developing new interests in college could be beneficial. This brief intervention caused students to more deeply engage in areas outside

of their existing academic interests. By the end of the academic year, among students who did not initially identify as a "math and science person," the intervention led to greater interest and higher achievement in their compulsory math and science courses, as compared to students in the control group.

The researchers conducted both studies—a [pilot study](#) with first-year undergraduates at a small liberal arts college and another with matriculating students in the school of arts and social sciences of a large university—where students are proficient in mathematics and science yet had varying interest levels in these fields.

Moreover, the researchers found that those in the growth-mindset group who earned higher grades in their math and [science courses](#) did so precisely because they developed more interest in their coursework. Learning that is rooted in enjoyment and interest tends to last longer and is more likely to be integrated with their existing interests. A [student](#) with a fixed mindset might approach math and science lessons with the goal of retaining just enough material to get a passing grade, then later forget it altogether. By contrast, a student with a growth mindset might approach the same lessons with curiosity and openness, or connect what they learnt to their [existing interests](#) in novel ways.

"Schools and organizations can cultivate cultures that promote a growth mindset of interest," said lead author Paul A. O'Keefe. "When opportunities are provided to explore new areas, it signals that interest development is valued and welcome. Innovative companies often provide such opportunities by encouraging interdisciplinary. Similarly, schools at all levels can do this by requiring students to engage in a diverse curriculum, and by reducing the stakes of their academic exploration. This can be done by, for example, offering courses on a pass/no pass basis, or offering ungraded terms."

Yale-NUS Senior Research Fellow E. J. Horberg added, "It is important to establish a culture of interest development early in student education. Cultivating a [growth mindset](#) when students are relatively young may inspire their joy of learning, by sparking their curiosity and exploration across a diversity of topics and activities. Carrying this openness and curiosity forward into adulthood may also enable lifelong learning."

With the push towards interdisciplinary education in Singapore and around the world, removing a key psychological barrier—the belief that interests are fixed—could help foster new interests for students across all disciplines and enhance appreciation of the arts and social sciences among students in science, technology, engineering, and [math](#) disciplines, and vice versa. In today's global economy, this may help the new generation of engineers, scientists, and mathematicians to work collaboratively across diverse disciplines to develop integrated and creative innovations.

More information: Paul A. O'Keefe et al, A growth-theory-of-interest intervention increases interest in math and science coursework among liberal arts undergraduates., *Journal of Educational Psychology* (2023). [DOI: 10.1037/edu0000798](https://doi.org/10.1037/edu0000798)

Provided by Yale-NUS College

Citation: A growth-mindset intervention boosts interest in math and science among liberal arts students (2023, June 7) retrieved 20 April 2024 from <https://phys.org/news/2023-06-growth-mindset-intervention-boosts-math-science.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.