

# Study examines how pandemic-related changes affect college students' motivation

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When the worsening COVID-19 pandemic prompted colleges to shutter their campuses and shift to remote learning in spring 2020, concerns arose that many underrepresented students in science, technology,

engineering and mathematics disciplines would be demotivated and drop out in even greater numbers.

However, a study of 182 [undergraduate students](#) in a biology course at one university found little evidence to support that belief. Instead, across all demographic groups, the impact varied: Some students were more motivated, some were less so, and some saw no changes in their level of interest in the subject matter, researchers at the University of Illinois Urbana-Champaign found.

"There's resilience and a lack of resilience across all groups," said educational psychology professor Jennifer Cromley, the first author of the study, which was co-written by graduate [student](#) Andrea Kunze.

Published in the *Journal of Microbiology and Biology Education*, the findings are a caution against making stereotypical assumptions about individuals' commitment and persistence based on their demographic characteristics such as socioeconomic status or being a first-generation student, according to the researchers.

"We shouldn't assume that they're going to be resilient or not resilient," Cromley said.

"We should check in with them and see how they're doing. Stereotyping people as downtrodden or resilient doesn't reflect the realities of the situation."

The students were participants in an introductory biology course that was traditionally taught with in-person lectures but changed to online instruction during the final eight weeks of the Spring 2020 Semester. When face-to-face instruction was suspended to mitigate the spread of COVID-19 on campus, most students moved back home.

At the time, the researchers had a semester-long study of changes in motivation among the biology students in progress. When instruction went online, they shifted their focus to examine how the motivation of at-risk students—specifically, women, students from underrepresented minority and [ethnic groups](#), and first-generation students—was affected.

Students who agreed to participate in the study were surveyed monthly from January to April, repeatedly completing the same two of 10 possible questionnaires that examined various factors associated with motivation according to several theories.

For example, some of the questionnaires asked about students' goals, such as whether their aim was to thoroughly understand the concepts being taught or to just avoid performing worse than their classmates or failing. Other surveys explored whether the students believed they could master the material in the course or if they considered themselves good at biology.

Some surveys asked students whether they intended to remain in a STEM major and whether they believed the effort required would be worth it in the end. While 42% of the students indicated they were completely committed to remaining in STEM when surveyed in January, the researchers found that this declined as the semester progressed.

By April, changes in each of the motivational variables indicated more students were at risk of dropping out. However, the team found no significant differences between [demographic groups](#), Cromley said.

Because the students experienced numerous changes concurrently—such as concerns about health, their finances and living at home with their families and away from social and academic supports they had on campus—changes in their motivation could not be ascribed to remote learning alone, Cromley said.

While the researchers had hypothesized that students' interest in the material would decline during the semester, they found that some students' interest increased instead. Media stories about scientists' efforts to decipher COVID-19 and develop effective vaccines promoted a greater appreciation for the utility and societal value of science for some students, Kunze said.

This effect was particularly significant among some first-generation students, who represented 24% of those surveyed, according to the study.

One of these students, who also was from an underrepresented minority or ethnic group, wrote that she was motivated every day to achieve her dreams of becoming a doctor "and helping to end disparities within the healthcare system."

Despite predictions that underrepresented students' achievement and persistence would be adversely affected by the challenges associated with remote learning, some "students weren't just giving up. Some were inspired and still trying," Kunze said.

Women showed greater declines in the self-oriented variables, and the researchers hypothesized that their separation from supportive friends on campus may have negatively affected their confidence and feelings of competence in the course.

Conversely, living at home may have been beneficial for some first-generation students, whose academic goal orientation shifted during the semester from failure avoidance to a focus on future achievement and economic mobility. Separation from the highly competitive academic environment and social milieu on campus may have helped these students focus on more positive goals, the researchers said.

Students were asked an open-ended question on the surveys about any factors in their lives that influenced their feelings about their courses that day, and their answers provided glimpses into the impact of family dynamics on the students' achievement.

For example, one student wrote about having to lock themselves in the bathroom to escape pressure from their family members and get their schoolwork done in peace, Cromley said.

**More information:** Jennifer Cromley et al, Motivational Resilience during COVID-19 across At-Risk Undergraduates, *Journal of Microbiology & Biology Education* (2021). [DOI: 10.1128/jmbe.v22i1.2271](https://doi.org/10.1128/jmbe.v22i1.2271)

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