



Mindset Programs that Forecast Common Challenges Prior to the Transition of College Can Reduce Achievement Gaps

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Is it possible to ease a difficult life transition before it takes place? Mindset Scholars [David Yeager](#), [Greg Walton](#), [Dave Paunesku](#), [Angela Duckworth](#), [Geoff Cohen](#), [Carol Dweck](#), and colleagues explored in three studies whether online exercises delivered before college can effectively prepare students for certain challenges they may face during the transition to college.

The transition to college is a difficult time for many students. Some students lack adequate academic preparation or familiarity with how to navigate the college environment, have limited financial resources, or need to balance family obligations and social ties at home. But the experience of day-to-day challenges in both academic and social situations on campus can also cause individuals to question whether they belong or will be able to be successful in college.¹ These worries are common but can increase the likelihood of negative outcomes, such as diminished well-being, poor grades, or even dropping out of college.

For some students, these worries can be more harmful than others. Being the first in one’s family to attend college or being a member of an underrepresented group increases the persistence and pervasiveness of these worries because these students are aware of negative stereotypes about their ability to succeed in college. As a result, the heightened psychological friction experienced by many students of color and first-generation college goers in the transition to college is an important contributing factor to the persistent achievement gaps on college campuses.^{2,3}

KEY FINDINGS:

- Mindset programs delivered before students arrived on campus improved retention, academic and social integration, and first-year grades among African American, Latino, Native American, and Pacific Islander, first-generation students in the transition to college
- These programs reduced achievement gaps between these students and other populations
- Such “preemptive” mindset programs have the potential to combat difficulties with life transitions and reduce social inequalities more broadly in combination with systemic reforms

Research has shown that it is possible to equip college students to reframe day-to-day challenges and setbacks in ways that change how they respond and adapt to them as they arise.⁴ But is there a way to improve the transition to college by ameliorating such worries *before* students even arrive on campus?

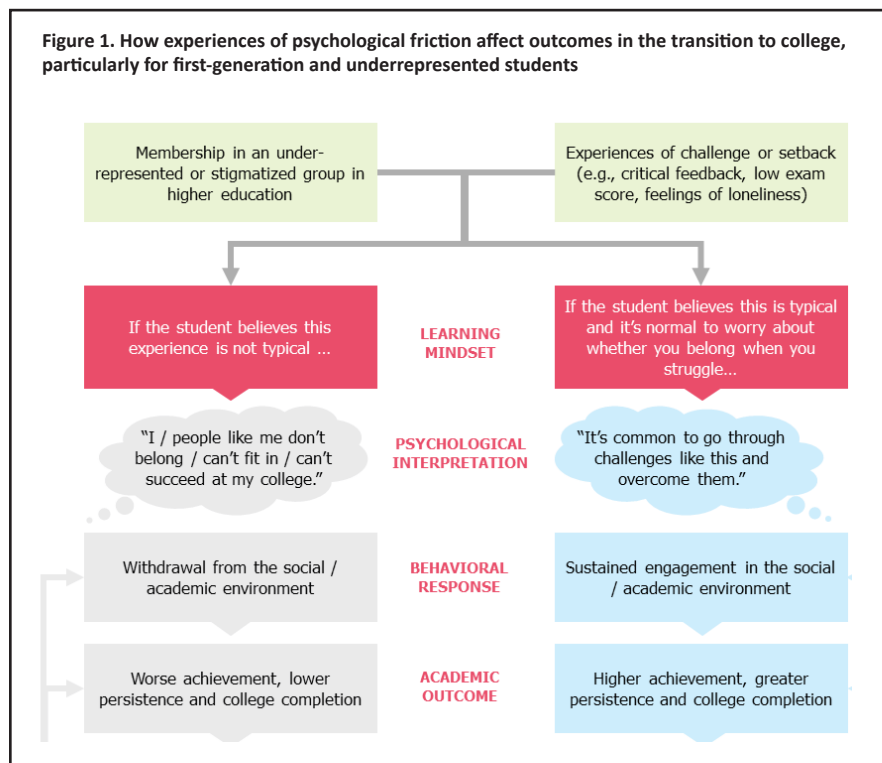
This research summary highlights findings from the following paper: Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Gretchen, R., Duckworth, A. L., Urstein, R., Gomez, E. M., Markus, H. R., Cohen, G. L., & Dweck, C. S. (2016). Teaching a lay theory before college narrows achievement gaps at scale. *Proceedings of the National Academy of Sciences*, 113, E3341-E3348.

MINDSET
SCHOLARS
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Hosted at the Center for Advanced Study in the Behavioral Sciences at Stanford University, the Mindset Scholars Network is a group of leading social scientists dedicated to improving student outcomes and expanding educational opportunity by advancing our scientific understanding of students’ mindsets about learning and school.

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Mindset Scholars Network researchers hypothesized that equipping students to frame most academic and social challenges as common, non-threatening experiences before they begin college could have a positive impact on how students respond to actual challenges *after* they arrive. By changing how they managed the psychological friction they could encounter, these students would thus be better positioned to persist and excel academically in college from their first day on campus. Such efforts could be an important complement to systemic efforts to change negative intellectual stereotypes in society, increase equitable access to high quality K-12 education, and reduce the financial burden of attending college.



WHY DO CONCERNS ABOUT BELONGING AND NEGATIVE STEREOTYPES HURT COLLEGE OUTCOMES?

Concerns about belonging and negative stereotypes about academic ability undermine students' persistence and performance by reducing the likelihood that they will engage in the kind of adaptive behaviors that they would have in the absence of these worries. Students feel stressed by the extra pressure to succeed, they ask fewer questions in class, they study less often with others, and they take less advantage of professors' office hours. They miss out on opportunities to learn strategies that could help them succeed socially and academically, and can find it harder to concentrate on studying and tests.⁵

These experiences spark recursive processes. When students don't engage in these types of productive academic behaviors they become more isolated and less equipped to succeed academically, which reinforces their initial concerns. Over time, students who experience persistent, pervasive concerns of this nature are more likely to underachieve and disengage from school. Programs to alleviate this type of psychological friction in the transition to college have the potential to be highly effective not because they eliminate bias but because they interrupt a negative recursive cycle and replace it with a positive one that leads to improved academic and social integration on campus over time.

Figure 1 provides a visualization of the mechanisms by which individuals' beliefs about challenges can affect their performance. It outlines the recursive relationship between the overall perspective an individual has about the transition to college with behavioral responses to specific situations and, ultimately, the effects on their academic outcomes.

Prior small-scale studies suggested it was possible to create exercises for college students that could disrupt these recursive processes, changing their social and academic behaviors in ways that improved their outcomes.^{4,5} In this new set of studies, researchers sought to understand how these recursive processes work in multiple settings and on numerous educational outcomes, and to determine whether it was possible to implement such programs at an institutional-level scale *before* students arrived on campus.

Although multiple programs were used in the studies, each one contained the same basic ingredients and was delivered in a one-time, online session:

- Depictions of potential difficulties in college as common and changeable;
- Stories from older students about overcoming struggles;
- Readings that share data corroborating the core program messages; and,
- An opportunity for students to take ownership over and internalize the key messages from the program by putting them into their own words through a series of writing exercises.

STUDY 1

The first study was conducted with high school seniors currently attending a high performing charter school who had been admitted to either a two- or four-year college. Almost all of the students identified as either African American, first-generation, or both.

In the first piece of the study, researchers gave 185 graduating students a survey to assess their level of concern about belonging in college. Enrollment data was collected at the end of their first year of college.

Expectations about belonging in college strongly predicted college persistence. The results of this initial correlational study found that outgoing high school seniors' expectations of belonging in college were a stronger predictor of actual college persistence than IQ, SAT, and high school grade point average (GPA).

The second piece of the study looked at how randomly assigning high school students to receive a social-belonging program affected their college outcomes.

High school seniors assigned to the social-belonging program were more likely to remain enrolled full-time in college and to be academically and socially integrated on campus. The program produced a 34% increase in the proportion of students who remained full-time enrolled through their first year of college. The students who received the program were also more likely to use academic support services, join extracurricular activities, and to live on campus during their first year in college.

A growth mindset program in conjunction with the social-belonging program did not increase full-time enrollment in this particular population of students. A subgroup of the study participants was also given a growth mindset program. However, the growth mindset program did not have an additive impact on full-time enrollment—likely because these particular students had already been familiarized with the concept at their high school.

STUDY 2

The second study expanded on Study 1 by assessing the effect of delivering programs to incoming college students pre-matriculation. In this study incoming students at a selective public university were randomly assigned to receive social-belonging or growth mindset programs through their orientation process. The researchers explored whether the programs had a particularly beneficial effect on groups that had a history of lower rates of success at the university: African American, Latino, and first-generation college students.

A social-belonging program reduced the university's achievement gap in full-time enrollment by 40%. On average, African American, Latino, and first-generation students in the control group were 10 percentage points less likely to be enrolled full-time at the end of their freshman year than their peers. The social-belonging program raised the enrollment rate for these students from 69% to 73%. (The program did not change full-time enrollment rates for continuing-generation students and students from other racial and ethnic groups.)

A program designed to promote a growth mindset was also beneficial to students. In contrast to the results of Study 1, the growth mindset program had a positive effect on full-time enrollment among first-generation students and African American and Latino students in this sample.

Both types of mindset programs eliminated the gap in 'drop-out risk.' The researchers asked students about their friendships, use of school-support services, connections with professors and participation in extracurricular activities to identify students at risk of dropping out. African American, Latino, and first-generation students in the control group were more likely to be labeled as at risk of dropping out (13%) than their continuing-generation peers and those from other racial and ethnic groups (8%). Exposure to either the social-belonging or growth mindset program decreased the proportion of these students labeled 'at risk,' completely eliminating the group difference.

Implementation with a full cohort of matriculating students suggested the programs decreased inequality campus-wide.

After the initial randomized controlled experiment, the university randomly assigned an entire first-year cohort to receive either the social-belonging or growth mindset program as part of orientation; none of the students received a control condition in this cohort. Prior to the introduction of these programs, 81-82% of all African American, Latino, and first-generation students remained enrolled throughout the fall term; but in the year the programs were given to the entire entering cohort, this rate rose to 84%. By contrast, the full-time enrollment rates of their more advantaged peers did not change, remaining a steady 90% before and after the introduction of the programs. This piece of the study presents positive correlational data about the relationship between campus-wide enrollment and mindset interventions and suggests researchers should continue to explore this relationship in order to provide causal evidence.

STUDY 3

The third study took place at a selective private university. Such schools tend to experience extremely low levels of drop-out, so the researchers instead examined the effect of multiple mindset programs on students' cumulative GPA at the end of their first

year. The programs tested included the social-belonging and growth mindset programs mentioned above, as well as two other mindset programs focused on cultural fit and the receipt of critical feedback.

Multiple mindset programs reduced GPA gaps between African American, Latino, Native American, and Pacific Islander students and first-generation white students, and their Asian American and continuing-generation white peers. The baseline gap between these groups was measured at 0.29 grade points among students in the control condition. The mindset programs raised the GPAs of students of color and first-generation students by an average of 0.09 grade points—a 31% reduction in the achievement gap.

The programs also improved these students' social and academic integration on campus. They reported having more friends, having a close mentor, being involved with extracurricular groups, and making use of academic services at higher rates than their peers who did not receive the program.

IMPLICATIONS FOR POLICY & PRACTICE

The findings from these studies provide evidence that pre-transition mindset programs can help smooth the transition to college among students who tend to be at greatest risk of poorer educational outcomes. One-time, online mindset programs improved college outcomes in both academic measures (dropout rates, GPAs, use of academic services) and social measures (rates of mentorship, number of friends, participation in extracurricular activities). Additionally, these programs disproportionately

benefited students of color and first-generation college students, providing an opportunity to reduce achievement gaps. While these findings suggest one potential pathway toward greater educational equity, they do not represent a one-step solution. They do not change negative stereotypes and bias in society, nor do they eliminate systemic barriers to college success, such as inequitable access to high quality academic preparation and insufficient financial support. Mindset programs equip students enrolling in college to take advantage of the opportunities that are present by reducing certain concerns in the transition to college, and are intended to complement other systemic efforts to promote diversity, equity, and inclusion on college campuses.

More broadly, this research suggests the ability to preemptively intervene before difficult life transitions in ways that improve individuals' well-being and outcomes. Future research by the [Mindset Scholars Network](#) and the [College Transition Collaborative](#) continues to explore how, where, and when these programs can have the greatest effect.

This brief was edited by Lisa Quay, Managing Director of the Mindset Scholars Network.

¹ Stinebrickner, R., & Stinebrickner, T. (2014). Academic performance and college dropout: Using longitudinal expectations data to estimate a learning model. *Journal of Labor Economics*, 32, 601–644.

² Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52, 613–629.

³ Ryu, M. (2012). *The education gap: Understanding African American and Hispanic attainment disparities in higher education*. American Council on Education.

⁴ Walton, G. M. & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331, 1447-1451.

⁵ Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92, 82-96.