



Growth Mindset for College Students

RESULTS FOR PENN STATE YORK

Fall 2018

DATE: 2018-10-16

Introduction to the Report

Thank you for participating in Growth Mindset for College Students! This report is provided by the [Project for Education Research that Scales \(PERTS\)](#) to describe the program's impact on students at Penn State York, to let you know how many students at Penn State York participated in the program, and to offer insight into other actionable psychological barriers that may be affecting in your student body.

Impact of Growth Mindset for College Students

PERTS is happy to report that 42,535 across the country and 99 students at Penn State York completed Growth Mindset for College Students. Overall, **the program positively impacted students' levels of growth mindset**. We assessed this impact by randomly selecting students to answer scientifically-validated growth mindset questions (e.g., "How much do you agree or disagree with the following statement: 'You have a certain amount of intelligence, and you really can't do much to change it'") either *before* the growth mindset activity (the "Before Group") or *after* (the "After Group") ¹. 52% of students in the Before Group (N = 11,132) reported thinking with a growth mindset, compared with 64% of students in the "after" group (N = 13,550). The average difference was highly statistically significant, $\beta = 0.32$, $t(42,342) = 29.18$, $p < .001$. ²

Growth Mindset Before and After Program

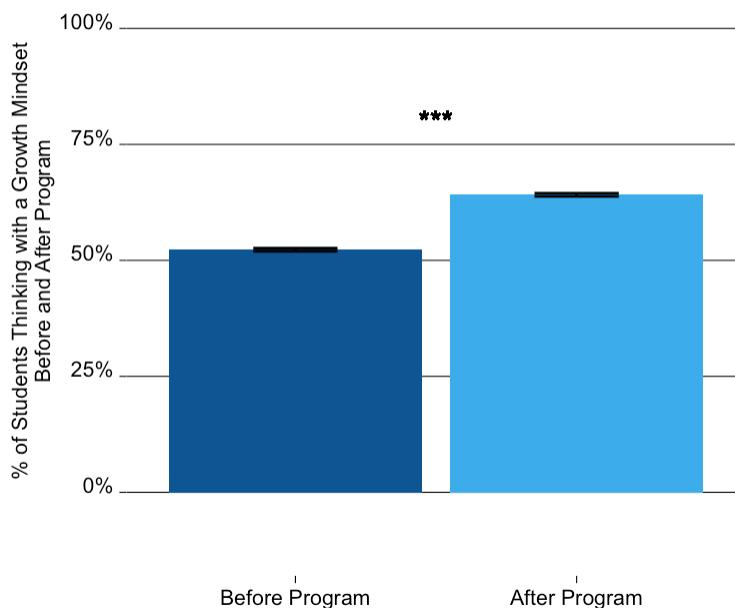


Figure 1. Growth mindset scores before and after the program. The percentages represent students who were higher than 4 on a 6-point scale. Bars represent standard error of the mean. Stars indicate statistical significance of differences in scores before and after the program; * $p < .05$, ** $p < .01$, *** $p < .001$.

Impact at Penn State York

Of the 99 students from Penn State York who participated in Growth Mindset for College Students, 69% in the After Group (n = 42) reported thinking with a growth mindset, compared with 45% of students in the Before Group (n = 57) — a change of 24% points.³ As in the overall sample, the **positive impact of Growth Mindset for College Students was statistically significant.** (Before group M = 3.97, After group M = 4.63 points on a 6-point scale, $\beta = 0.66$, SE = 0.24, $t(96) = 2.76$, $p = 0.007$).²

How Did the Program Change Students' Mindsets?

Developed by expert researchers at Stanford University, Growth Mindset for College Students was designed to teach students to think with a growth mindset. During the program, students were presented with evidence that the brain can change and become smarter. They learned how neural plasticity continues into adulthood, and that people of any age can become substantially smarter with hard work, help from others, and good study strategies. Finally, they completed an exercise in which they explained these concepts to a fictional student.

Importantly, the program did not tell students they “should” adopt a growth mindset, as research in persuasion suggests that telling students to think a certain way may make them feel defensive. Instead, the program concluded with a self-persuasion exercise in which participants considered the fate of other students who have not yet realized that the brain

can become smarter. The exercise noted that these other students may feel hopeless when they struggle academically, because they believe struggle is a sign of limitation, rather than a signal of intellectual growth. Participants were asked to write a letter to these other students, explaining that the brain can get stronger at any age and that having to work hard in a class does not mean that students are “not smart” at the subject. In this way, participants endorsed the idea of a growth mindset by composing an uplifting message for others—a message that was also uplifting for the participants themselves.

Many students wrote letters that included details and examples from their own lives (see below for examples from your students), which gave them an opportunity to reinterpret their own life experiences through a growth mindset lens. In this way, the program led students to generate their own understanding of a growth mindset, tailored to their own life experiences.

What is growth mindset?

When students understand that their basic intelligence can grow like a muscle, research shows that they feel free to approach their coursework with confidence. They understand that their intelligence is always under construction, and so they do not have to worry that the critical work of learning—studying hard, asking questions, and making mistakes—signals a lack of intelligence. On the contrary, these things are how you become smart. The understanding that intelligence can grow is known as a growth mindset, whereas the belief that intelligence is fixed, like eye color, is called a fixed mindset. When students think about school with a growth mindset, research shows that they are more likely to seek challenges, take risks, ask for help, and put effort into their schoolwork—which then leads to higher academic achievement for months or even years to come (e.g., [Yeager et al., 2016](#); [Claro, Paunesku & Dweck, 2016](#); [Aronson, Fried & Good, 2002](#)). For more information, visit <http://mindsetscholarsnetwork.org/learning-mindsets/growth-mindset/>

In Students' Own Words

Below are some examples of what students at Penn State York wrote as part of the program:

“Dear struggling student, just because you’re not the best at a subject right away doesn’t mean that it has to be that way. If you work hard and study consistently you’ll understand more all the time and your brain will grow as you study and learn. It might take a while to notice but over time you’ll become better at the subject and your brain will grow stronger. You’ll also be more prepared to use the same techniques to overcome the next set of challenges you face in what ever subject it is.”

“When you are struggling, whether that be in school, sports, or other activities, just know that no one is a pro when they first start. An example being if you have a hard time with math, there are still many ways to learn and improve your math skills. Don’t build a wall and tell yourself that you can’t become good at math, because you didn’t do well on a past test. You still can become good at it, sometimes it can just take more practice, different approaches, or others ideas to help get you to where you want to be.”

“For the longest time I would compare myself to others; if I did not have the highest grades or do the “best” I would get upset. Naturally I just told myself that my brain was not smart enough, or that they were born smarter. I learned this is 100% incorrect... our brain is a muscle. A baby is not born buff, but when he gets older he might choose to work out and become so. Same with our brain, we need to constantly face new challenges and study hard to give it a work out so that it can grow and develop.”

“A class may be hard, but that doesn’t give you any reason to think that you’re bad or not smart enough to take the class. Even if you’re stuck, you can just ask an instructor or student for help, I am sure that they would be more than happy to help. When you’re doing these challenging assignments, it benefits you because it is challenging your brain. When you’re being challenged, it makes your brain get even stronger. No matter what age you are, your brain is able to get stronger. The brain is just like a muscle, the more you push it to its potential, the more progress you will make.”

“Dear struggling student, if you are having trouble with a class, do not panic. You are not alone, and you are capable of understanding the material. Your brain is able to learn and grow, no matter what age you are. If you get the necessary help and explanations, you will be able to succeed. You are capable of growing your brain, and you are capable of passing this difficult class.”

“Dear struggling student, just because the workload is difficult, it doesn’t mean you cannot overcome it. There are multiple ways of doing so, like going to the professor after class, or employing more or differing studying strategies. You need to challenge yourself and not give up to make sure that your brain improves, as it always should. This is the time in your life where you should develop your brain as much as possible in order to reap the benefits later in life in the workforce and at home. Working through the challenges now will pay off in the long run both literally and figuratively.”

“If a class is difficult for you, keep trying again because you can strengthen your brain. And as your brain gets stronger, your work will get easier. If it seems like you’ll never get through the class, try asking your peers, professors, and tutors. It takes a lot of hard work to succeed, but everybody is capable of it. School may never be easy, but that doesn’t mean it’s not worth it.”

How to Support Your Students Further in Developing Growth Mindsets

It's exciting that Growth Mindset for College Students offered such a dramatic boost in students' levels of growth mindset. Research suggests that these immediate results may carry forward to some extent on their own (see [Yeager & Walton, 2011](#)). Still, many colleges care deeply about their students' development and success, and want to know what more they can do to support their students in thinking about school with a growth mindset. To continue helping your students approach school with a growth mindset, consider the following:

- **Participate in Growth Mindset for College Students again!** PERTS will make Growth Mindset for College Students available again, for free, in the 2019-2020 academic school year. All colleges who participated in the Fall 2018 program will be eligible. You will receive a formal invitation in the next few months, or you can email our team at support@perts.net if you would like to let us know that you are already interested! Please also email us if you would like to share feedback from your experience with the program—we would love to hear how we can make it even better for your students and faculty next year.
- **Visit the PERTS Mindset Kit** www.mindsetkit.org. This free resource offers materials for understanding what a growth mindset is, as well as ideas for using growth mindset language and principles in the classroom. Though originally developed for K-12 educators, many college faculty have told us that they were able to adapt the Mindset Kit's content and ideas for their college courses.
- **Join the PERTS contact list.** In the next 1-2 years, PERTS will have tools available for instructors to receive evidence-based strategy recommendations and track their progress in fostering a growth mindset culture in their courses. If you would like to be put on a contact list for when these tools are available, please email contact@perts.net!

Can My College Conduct Our Own Program Evaluation?

Yes! Continuous program evaluation and improvement are at the core of our mission at PERTS, and we are happy to support these efforts. For a list of student identifiers and students' progress through the activity, please see the Participation button on your Dashboard. If you plan to conduct an evaluation, there are a couple of factors that we suggest to keep in mind:

- **Comparison Groups.** A common evaluation strategy is to compare a group of students who completed the program with a group who did not. It is important to consider how such comparison groups might differ from each other, aside from the program. For example, students who choose to complete the program might be more compliant in general than students who decline to participate: they might be more likely to complete homework, attend class, etc. In that case, a “benefit” of the program could falsely appear in the data due to already-existing differences between the two comparison groups. To mitigate these possibilities, it is helpful to create comparison groups that are as closely matched as possible (e.g., similar prior academic performance, demographics, etc.). For more information on causal inference with different types of data, we recommend [this resource on understanding types of evidence](#), put out by the Mathematica Center for Improving Research Evidence.
- **Statistical Power.** Online growth mindset activities tend to have modest effects on academic outcomes, which means that a large sample is needed to detect effects reliably. Whenever possible, we recommend including at least 500-600 students in each comparison group to achieve a reasonable likelihood of detecting any impact of the program on academic outcomes. If your sample includes fewer than 500 students, you may miss effects of the program.

Participation Summary

The table below shows how many students at Penn State York participated in each session of the program during Fall 2018.

	Number of Students
Opened activity	130
Answered survey questions	109
Completed activity	99

To get the most out of Growth Mindset for College Students, reaching a large number of students is key. When a large number of students complete the program, that group is more likely to contain the lower-performing students that many colleges are passionate about reaching.

If you would like to see higher participation rates in the future, please refer to the tips below:

- Incorporate the program into 1st-year experience programs, developmental classes, or dual enrollment classes.
- If your school uses a learning management system, such as Blackboard or Google Classroom, consider adding the program to that system for easier accessibility.
- Build buy-in with the facilitators by letting them know about the program during the semester before the program launches.
- Send out emails to facilitators reminding them to have their students participate.
- Ask facilitators to schedule make-up sessions for students who are absent.

Do you have tips on what did or didn't work for implementing the program at your school? We'd love to hear from you! Please send an email to support@perts.net if you'd like to share more about your school's experience with the program.

Social-Belonging: Another Addressable Barrier Affecting Student Engagement

We know that the faculty and staff at Penn State York care deeply about students' psychological well-being and motivation—which is why you offered them Growth Mindset for College Students. Research suggests that this program may have a positive impact on students' academic achievement for months, or even years, to come, but growth mindset is only one of many psychological factors that influence students' ability to achieve their potential. Another such factor is known as Social-Belonging. When students feel socially connected, supported, and respected, they are less distracted by insecurities and more likely to engage in learning effectively. See mindsetscholarsnetwork.org/learning-mindsets/belonging/.

When your students completed Growth Mindset for College Students, we also collected information about experiences in college that contribute to students' sense of belonging. The figures below present the results from those survey items. If you notice low levels of belonging among your student body overall, or significant gaps between students from different demographic groups, then social belonging may be worth addressing on your campus.

To support your students in experiencing a stronger sense of belonging, we recommend these resources:

- **Social Belonging for College Students.** Together, PERTS and the College Transition Collaborative are offering Social-Belonging for College Students, open to all 4-year colleges in the U.S. This brief, free online program aims to help all students view challenges encountered in the transition to college as normal and improvable so that they are more able to remain socially and academically engaged in the face of challenges. In previous studies, the program has been effective in improving social and academic engagement on campus, and has increased GPA and retention among socially disadvantaged students. For more information, visit <https://www.perts.net/social-belonging>.
- **The PERTS Mindset Kit,** (<https://www.mindsetkit.org>). This free resource also has a course for educators on Social-Belonging. Though originally developed for K-12 educators, many college faculty have told us that they were able to adapt the Mindset Kit's content for their college courses.
- **The PERTS Contact List.** In the next 1-2 years, PERTS will have tools available for instructors to receive evidence-based strategy recommendations and track their progress in fostering a sense of belonging among students in their courses. If you would like to be put on a contact list when these tools are available, please email [contact@perts.net!](mailto:contact@perts.net)

About PERTS

PERTS is a nonprofit organization that empowers educators to improve student outcomes by applying research-based practices. Education research has a serious problem when it comes to translating ideas into practices. Concepts that are often untested at scale become fads that educators are required to implement in their classrooms without proper training, and students end up suffering the consequences. Promising research is left in the dust when the “Next Big Thing” comes along and policy makers repeat the cycle.

Our mission at PERTS is to improve the equity of learning outcomes by bridging the gap between cutting-edge research and implementation practices. We believe that properly scaling educational research can empower schools to reduce inequity and create better experiences for students and teachers. Learn more at www.perts.net.

Methodological notes

1. Because there was differential attrition in the sample of students who answered the growth mindset questions before vs. after the growth mindset activity (93.28% of students answered them before vs. 85.24% answered them after, $\chi^2(1) = 92.66$, $p < 0.001$), we filtered all analyses to only those students who completed the entire program start to finish. This sub-sample showed no differential attrition (99.71% of students in the control group vs. 99.75% in the treatment group finished the entire program, $\chi^2(1) = 0.6$, $p = 0.44$).

[↩](#)

2. All statistical models fit a fixed effect indicating randomly-assigned membership in the “Before” or “After” group and no other fixed effects. This variable can be interpreted as measuring the effect of the program on students’ levels of growth mindset. The dependent variable was continuous growth mindset scale scores (ranging from 1 - 6 points). The model used for the Penn State York only sample was a simple linear regression with no random effects or covariates. The full-sample analysis fitted a mixed-effects model with a fixed effect of group (before vs. after) and random intercepts for each college, to adjust for inter-college variability in baseline growth mindset. [↩](#)

3. We strongly discourage comparing the base rates of growth mindset at your school with base rates in the overall sample. This comparison is not meaningful because the sample is heterogeneous — over 100 colleges enrolled students, each according to their own participation criteria. For example, some colleges may have enrolled students in remedial programs, whereas others may have enrolled students in honors programs. It is not possible to know how students at your college ought to compare to this sample. Instead, we suggest it is meaningful to learn how the program led to changes in mindset at your college. Differences in effects at Penn State York compared with the overall sample were examined using model identical to the overall sample which included terms for membership in Penn State York vs. the rest of the sample, as well as the interaction between group (Before vs. After) and membership in Penn State York. A statistically significant interaction term is interpreted to show a distinct program impact at Penn State York. [↩](#)