

# Growth Mindset Interventions

Intervention Brief | Supporting Postsecondary Success  
Topic Area

WHAT WORKS  
CLEARINGHOUSE™

January 2022

NCEE 2022-006  
U.S. DEPARTMENT OF EDUCATION

A Publication of the National Center for Education Evaluation at IES

Large numbers of students who enroll in college do not complete a degree. Yet, earning a college degree is one of the primary pathways for economic success and is increasingly required for good jobs and high wages.<sup>1</sup> The way students interpret early academic struggles in college may affect whether or not they remain enrolled. If students attribute their academic challenges to a perceived lack of intelligence or inability to succeed in college, they may be less likely to persist.<sup>2</sup> *Growth Mindset* interventions aim to improve college persistence and academic achievement by encouraging students to view intelligence as a “malleable” characteristic that grows with effort, and to view academic challenges as temporary setbacks that they can overcome.<sup>3</sup>

This What Works Clearinghouse (WWC) report, part of the WWC’s Supporting Postsecondary Success topic area, explores the effects of *Growth Mindset* interventions on postsecondary students’ academic achievement, college enrollment, and progressing in college. The WWC identified 15 studies of *Growth Mindset* interventions. Six of these studies meet WWC standards. The evidence presented in this report is from studies of the impact of *Growth Mindset* interventions on postsecondary students—including Black, White, Hispanic, first-generation, and Pell grant-eligible students—in both public and private postsecondary settings.

## What Happens When Students Participate in *Growth Mindset* Interventions?<sup>4</sup>

The evidence indicates that implementing *Growth Mindset* interventions:

- may increase academic achievement
- may result in little or no change in college enrollment
- may result in little or no change in progressing in college

Findings on *Growth Mindset* interventions from six studies that meet WWC standards are shown in Table 1. The table reports an effectiveness rating, the improvement index, and the number of studies and students that contributed to the findings. The improvement index is a measure of the intervention’s effect on an outcome. It can be interpreted as the expected change in percentile rank for an average comparison group student if that student had received the intervention.

**Table 1. Summary of findings on *Growth Mindset* interventions from studies that meet WWC standards**

Outcome domain	Effectiveness rating <sup>a</sup>	Study findings	Evidence meeting WWC standards (version 4.0)	
		Improvement index (percentile points)	Number of studies	Number of students
Academic achievement	Potentially positive effects	+13	5	5,301
College enrollment	No discernible effects	+1	2	8,194
Progressing in college	No discernible effects	-2	3	8,351

Note: The improvement index can be interpreted as the expected change in percentile rank for an average comparison group student if that student had received the intervention. For example, an improvement index of +13 means that the expected percentile rank of the average comparison group student would increase by 13 points if the student received a *Growth Mindset* intervention. The improvement index values are generated by averaging findings from the outcome analyses that meet WWC standards, as reported by Aronson et al. (2002), Bostwick & Becker-Blease (2018), Broda et al. (2018), Fink et al. (2018), Suh et al. (2019), and Yeager et al. (2016). A positive or negative improvement index does not necessarily mean the estimated effect is statistically significant. Academic achievement outcomes reported in these studies include semester or quarter grade point average (GPA), final exam score, and course passing rate. College enrollment outcomes reported in these studies include full-time enrollment rate, which is the percentage of students enrolled full-time. Progressing in college outcomes reported in these studies include the percentage of students completing 12 or more college credits in a semester and the rate of retention to the following semester. The effects of *Growth Mindset* interventions are not known for other outcomes within the Supporting Postsecondary Success topic area, including college attendance, postsecondary degree attainment, credential attainment, employment, or earnings.

<sup>a</sup> Effectiveness ratings were determined according to version 4.0 of the WWC Procedures Handbook. Version 4.1 of the WWC Procedures Handbook introduces fixed-effects meta-analysis and a revised approach to determining effectiveness ratings. Effectiveness ratings may differ depending on whether an intervention is assessed using the version 4.0 or version 4.1 WWC Procedures.

## BOX 1. HOW THE WWC REVIEWS AND DESCRIBES EVIDENCE

The WWC evaluates evidence based on the quality and results of reviewed studies. The criteria the WWC uses for evaluating evidence are defined in the [Procedures and Standards Handbooks](#) and the [Review Protocols](#). The studies summarized in this report were reviewed under WWC Standards (version 4.0) and the [Supporting Postsecondary Success](#) topic area protocol (version 4.0).

To determine the effectiveness rating, the WWC considers what methods each study used, the direction of the effects, and the number of studies that tested the intervention. The higher the effectiveness rating, the more certain the WWC is about the reported results and about what will happen if the same intervention is implemented again. The following key explains the relationship between effectiveness ratings and the statements used in this report:

Effectiveness rating	Rating interpretation	Description of the evidence
Positive (or negative) effects	The intervention is <i>likely</i> to change an outcome	Strong evidence of a positive (or negative) effect, with no overriding contrary evidence
Potentially positive (or negative) effects	The intervention <i>may</i> change an outcome	Evidence of a positive (or negative) effect with no overriding contrary evidence
No discernible effects	The intervention <i>may result in little to no change</i> in an outcome	No affirmative evidence of effects
Mixed effects	The intervention <i>has inconsistent effects</i> on an outcome	Evidence includes studies in at least two of these categories: studies with positive effects, studies with negative effects, or more studies with indeterminate effects than with positive or negative effects

## How are Growth Mindset Interventions Implemented?

The following section provides details of how postsecondary institutions implemented *Growth Mindset* interventions. This information can help educators identify the requirements for implementing *Growth Mindset* interventions and determine whether implementing these types of interventions would be feasible in their institutions. Information on *Growth Mindset* interventions presented in this section comes from the studies that meet WWC standards (Aronson et al., 2002; Bostwick & Becker-Blease, 2018; Broda et al., 2018; Fink et al., 2018; Suh et al., 2019; and Yeager et al., 2016) and from correspondence with a researcher in the field.

- **Goal:** *Growth Mindset* interventions aim to improve students' academic achievement and college persistence by helping students view intellectual ability as something that can grow over time with effort and practice rather than as an innate, fixed quantity. These interventions also aim to change students' mindsets to regard academic challenges as learning opportunities rather than permanent impediments.
- **Target population:** *Growth Mindset* interventions implemented in postsecondary settings tend to target students who are entering or are in their first semester of college, particularly those who may interpret early academic difficulties as an indication that they do not have—and cannot develop—the ability to succeed academically in college.<sup>5</sup>
- **Method of delivery:** *Growth Mindset* interventions in postsecondary settings are delivered to students individually or in groups, through online modules or in classroom settings.

**Comparison group:** In the six studies that contribute to this intervention report, students in the comparison group were typically exposed to alternative, non-growth-mindset information and then asked to describe, in their own words, how they would apply this information to their own learning or use it to advise another student. Some studies encouraged students in the comparison group to remember that individuals have different intellectual strengths and weaknesses (Aronson et al., 2002; Bostwick & Becker-Blease, 2018); other studies offered students advice on adjusting to the physical environment of the campus and surrounding area (Yeager et al., 2016) or tips for academic success in college, such as getting sufficient sleep or engaging in stress reduction or time management activities (Broda et al., 2018; Fink et al., 2018; and Suh et al., 2019).

- **Frequency and duration of service:** *Growth Mindset* interventions in postsecondary settings typically occur once, either at the start of a student's first year of college enrollment or around the time that students complete their first or midterm course exams, and are administered in one or more sessions, each lasting about 30 minutes.
- **Intervention components:** *Growth Mindset* interventions for postsecondary students typically include an exposure component, in which students are exposed to messages that intelligence is malleable and can grow with effort, and an application component, in which students describe in their own words how to apply these growth mindset messages. Refer to Table 2 for additional details.

**Table 2. Components of *Growth Mindset* interventions**

Key component	Description
<b>Exposure to growth mindset concepts</b>	Students are exposed to information that intellectual abilities grow when an individual exerts effort toward new or challenging problems. This information may include summaries of research on brain plasticity, the benefits of working hard to solve difficult problems, or testimonials from other students who overcame academic challenges through exerting effort, using effective strategies for learning, or asking for help.
<b>Application of growth mindset concepts</b>	Students are prompted to describe how they would apply growth mindset concepts to support their own or another student's persistence in the face of academic challenges. For example, students might explain how they will use these concepts to prepare for their next exam or write a letter encouraging future first-year students that they can improve their academic abilities.

### What Do *Growth Mindset* Interventions Cost?

This preliminary list of costs is not designed to be exhaustive; rather, it provides educators an overview of the major resources needed to implement *Growth Mindset*

interventions. The program costs described in Table 3 are based on the information available as of November 2020.

**Table 3. Cost ingredients for *Growth Mindset* interventions**

Cost ingredients	Description	Source of funding
<b>Personnel</b>	College personnel oversee the preparation and delivery of materials to students.	College
<b>Facilities</b>	<i>Growth Mindset</i> interventions can be administered in an existing classroom, laboratory, or other campus facility, or delivered online via computer in a location of each student's choosing.	College
<b>Equipment and materials</b>	Postsecondary institutions can access existing intervention materials for free online at sites such as <a href="https://www.perts.net/orientation/cg">https://www.perts.net/orientation/cg</a> and <a href="https://www.mindsetkit.org">https://www.mindsetkit.org</a> . Alternatively, college personnel can adapt intervention materials described or provided in the studies reviewed here. Other costs may include the information technology infrastructure and software needed to deliver the intervention online.	College

#### For More Information:

About *Growth Mindset* interventions

Web:

Project for Education Research that Scales (PERTS), *Growth Mindset* for College Students: <https://www.perts.net/orientation/cg>

*Growth Mindset* toolkit and resources: <https://www.mindsetkit.org/>

Research on *Growth Mindset* interventions: <https://mindsetscholarsnetwork.org/learning-mindsets/growth-mindset/>

### In What Context Was *Growth Mindset* Studied?

The following section provides information on the setting of the six studies of *Growth Mindset* interventions that meet WWC standards, and a description of the participants in the research.

This information can help educators understand the context in which the studies of *Growth Mindset* interventions were conducted, and determine whether the program might be suitable for their setting.

## WHERE THE STUDY WAS CONDUCTED



6 studies, 9,140 students in 6 postsecondary institutions in California, Indiana, Maryland, Michigan, Oregon, and Texas

### Race



### Ethnicity



Gender: 55% Female  
45% Male

First Generation: 21%

PELL Grant Eligible: 26%

Grades

PK

K

1

2

3

4

5

6

7

8

9

10

11

12

PS

Postsecondary



## LEARN MORE



Read more about *Growth Mindset* interventions and the studies that are summarized here in the [Intervention Report](#).

## Endnotes

<sup>1</sup>McFarland, J., Hussar, B., Zhang, J., Wang, X., Wang, K., Hein, S., Diliberti, M., Forrest Cataldi, E., Bullock Mann, F., and Barmer, A. (2019). *The Condition of Education 2019* (NCES 2019-144). U.S. Department of Education. Washington, DC: National Center for Education Statistics. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019144>.

<sup>2</sup>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.

<sup>3</sup>The WWC provided a description of this category of interventions to researchers familiar with *Growth Mindset* and *Social Belonging* interventions in July 2021 and the WWC incorporated feedback from these researchers. Further verification of the accuracy of the descriptive information for this type of intervention is beyond the scope of this review.

<sup>4</sup>The literature search reflects documents publicly available as of November 2020. Reviews of the studies in this report used the standards from the WWC Procedures and Standards Handbook (version 4.0) and the Supporting Postsecondary Success review protocol (version 4.0). The evidence presented in this report is based on available research. Findings and conclusions could change as new research becomes available.

<sup>5</sup>Yeager et al. (2016) reports findings from a related study of the effects of a *Growth Mindset* intervention on college enrollment of high school seniors (Experiment 1). The study was not eligible for review under the Supporting Postsecondary Students review protocol, because students in the study were enrolled in high school when the intervention was delivered. An individual study review of Experiment 1 is forthcoming under the WWC's Study Review Protocol, version 1.0.