

# Social Belonging Interventions

Intervention Report | Supporting Postsecondary Success  
Topic Area

WHAT WORKS  
CLEARINGHOUSE™

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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> *Social Belonging* interventions for college students aim to reduce the impacts of negative stereotypes that may burden students in underrepresented groups and affect their persistence in college. Examples of such groups are racial or ethnic minority groups, women in engineering, and first-generation college students. There are different variations of *Social Belonging* interventions but they all have in common a goal of influencing students' sense that they could be successful within a college setting.<sup>2</sup>

This What Works Clearinghouse (WWC) report, part of the WWC's Supporting Postsecondary Success topic area, explores the effects of *Social Belonging* interventions on postsecondary students' academic achievement, progressing in college, and college enrollment. The WWC identified 14 studies of *Social Belonging* interventions. Seven of these studies meet WWC standards. The evidence presented in this report is from studies of the impact of *Social Belonging* on postsecondary students in less advantaged or underrepresented groups—including Asian, White, Black, Hispanic, first-generation, and female students—in both public and private postsecondary settings.

## What Happens When Students Participate in *Social Belonging* Interventions?<sup>3</sup>

The evidence indicates that implementing *Social Belonging* interventions:

- has inconsistent effects on academic achievement
- has inconsistent effects on progressing in college
- may result in little to no change in college enrollment

Findings on *Social Belonging* interventions from seven 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 *Social Belonging* interventions from studies that meet WWC standards**

Outcome domain	Effectiveness rating	Study findings	Evidence meeting WWC standards (version 4.0)	
		Improvement index (percentile points)	Number of studies	Number of students
Academic achievement	Mixed effects	+6	6	3,640
Progressing in college	Mixed effects	+6	3	2,484
College enrollment	No discernible effects	-1	2	1,893

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 +6 means that the expected percentile rank of the average comparison group student would increase by 6 points if the student received a *Social Belonging* intervention. The improvement index values are generated by averaging findings from the outcome analyses that meet WWC standards within each of the respective domains, as reported by Broda et al. (2018), LaCosse et al. (2020), Murphy et al. (2020), Walton & Cohen (2011), Weaver et al. (2020), and Yeager et al. (2016), Experiments 2 and 3. A positive improvement index does not necessarily mean the estimated effect is statistically significant. Academic achievement outcomes reported in these studies include semester grade point average (GPA); Science, Technology, Engineering, and Mathematics (STEM) GPA; first-term GPA; cumulative GPA sophomore to senior year; course grade in calculus; and exam averages in calculus courses. Progressing in college outcomes reported in these studies include college credits completed in the first term, college persistence for one year, and earning 12+ credits in the first term. College enrollment outcomes reported in these studies include full-time college enrollment and attempting 12+ credits in the first term. The effects of *Social Belonging* interventions are not known for other outcomes within the Supporting Postsecondary Success topic area, including college attendance, postsecondary degree attainment, credential attainment, employment, and earnings.

## 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 Social Belonging Interventions Implemented?

The following section provides details of how postsecondary institutions implemented *Social Belonging* interventions. This information can help educators identify the requirements for implementing a *Social Belonging* intervention and determine whether implementing this type of intervention would be feasible in their institutions. Information on *Social Belonging* interventions presented in this section comes from the studies that meet WWC standards (Broda et al., 2018; LaCosse et al., 2020; Murphy et al., 2020; Walton & Cohen, 2011; Weaver et al., 2020; and Yeager et al., 2016, Experiments 2 and 3) and from correspondence with researchers in the field.

- **Goal:** *Social Belonging* interventions aim to improve academic achievement and college persistence by helping students view doubts about whether they belong in college as normal and temporary reactions to the challenges of adjusting to college.
- **Target population:** *Social Belonging* interventions implemented in postsecondary settings often target students from historically underrepresented groups (such as those who are Black, Hispanic, or first-generation to college) who may have greater concerns about whether they belong in college.
- **Method of delivery:** *Social Belonging* interventions in postsecondary settings are typically delivered to students

**Comparison group:** In the seven studies that contribute to this intervention report, students in the comparison group also participated in similar activities in which they reviewed other students' experiences with challenges and reflected about their own potential success afterwards. However, the challenges were focused on areas related to success in college that did not involve social belonging.

- individually through online modules and may also be delivered in groups or in a classroom setting.
- **Frequency and duration of service:** *Social Belonging* interventions in postsecondary settings typically occur once, prior to or soon after the start of a student's first year of college enrollment, and typically last less than an hour.
- **Intervention components:** *Social Belonging* interventions for postsecondary students typically include an exposure component, in which students are exposed to descriptions of other students' experiences with concerns about social belonging, and a reflection component, in which students reflect on their own futures. Refer to Table 2 for additional details.

**Table 2. Components of *Social Belonging* interventions**

Key component	Description
<b>Exposure to other student experiences with social belonging</b>	Students are exposed to stories or testimonials about other students who initially felt like they did not belong in college and experienced challenges making friends, fitting in, or achieving academic success. The stories emphasize that these experiences are normal, and that with sustained social and academic engagement, these challenges can be overcome.
<b>Student reflection</b>	Students are prompted to reflect on and describe their own experiences with belonging concerns improving over time. Students are encouraged to share advice and stories with future students who have concerns about fitting in to help others improve their transition to college.

### What Do *Social Belonging* 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 *Social Belonging*

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

**Table 3. Cost ingredients for *Social Belonging* 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>Social Belonging</i> interventions can be administered in an existing classroom, laboratory, or other campus facility, or delivered online 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/">PERTS (Project for Education Research that Scales)</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 *Social Belonging* interventions

Web:

College Transition Collaborative: <https://collegetransitioncollaborative.org/social-belonging/>

Project for Education Research that Scales (PERTS), *Social Belonging* for College Students: <https://www.perts.net/orientation/cb>

Research on *Social Belonging* interventions: <https://mindsetscholarsnetwork.org/learning-mindsets/belonging/>

### Research Summary

The WWC identified 14 studies that investigated the effectiveness of *Social Belonging* interventions (Figure 1):

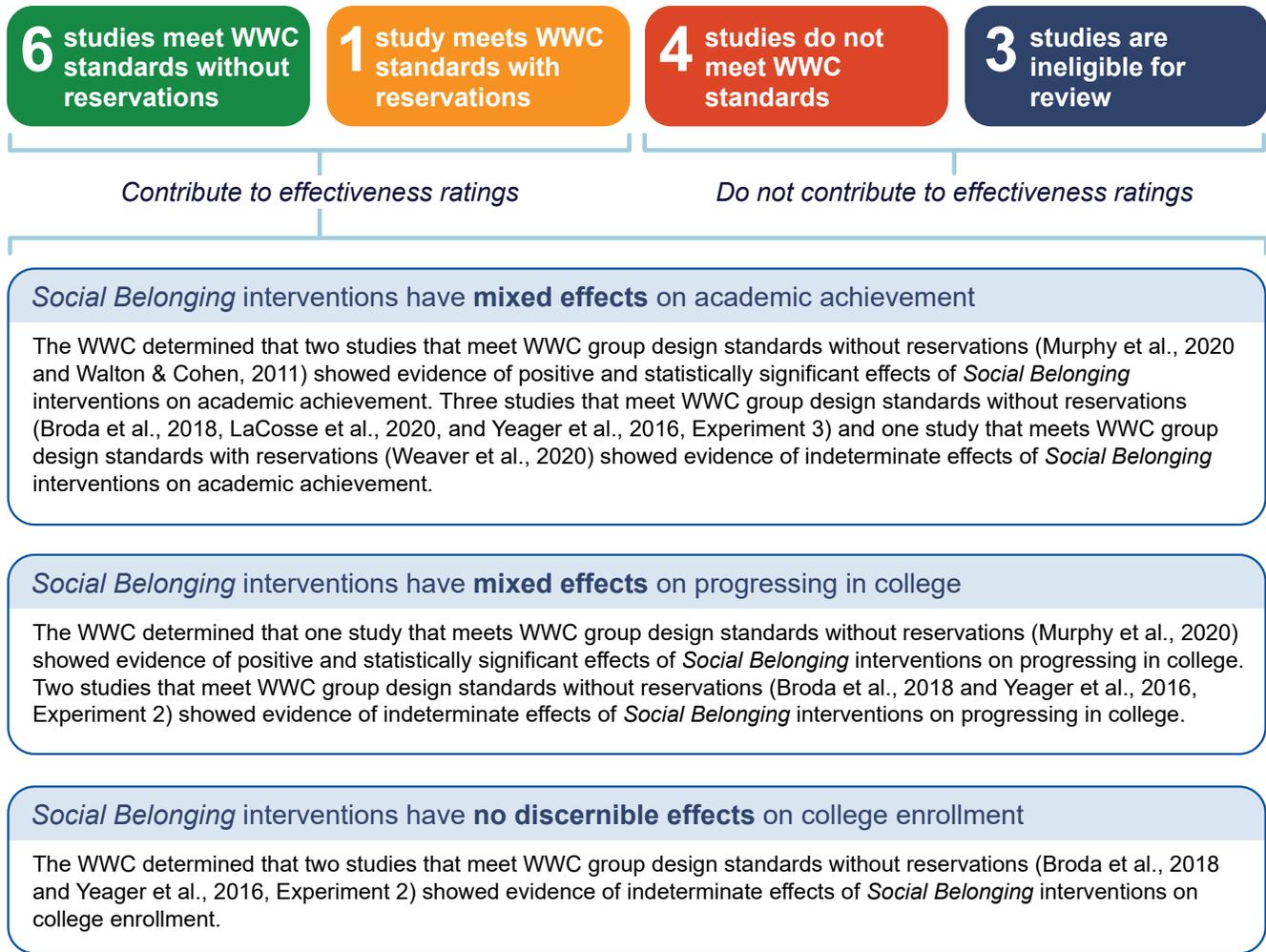
- Six studies meet WWC group design standards without reservations
- One study meets WWC group standards with reservations
- Four studies do not meet WWC group design standards
- Three studies are ineligible for review

The WWC reviews findings on the intervention's effects on eligible outcome domains from studies that meet standards, either with or without reservations. Based on this review, the WWC generates an effectiveness rating, which summarizes how the intervention impacts, or changes, a particular outcome domain. The WWC reports additional supplemental findings, such as those the study authors reported for non-minority samples, on the WWC website (<https://whatworks.ed.gov>).

These supplemental findings and findings from studies that either do not meet WWC standards or are ineligible for review do not contribute to the effectiveness ratings.

The seven studies of *Social Belonging* interventions that meet WWC group design standards reported findings on academic achievement, progressing in college, and college enrollment. No other findings in the studies meet WWC group design standards within any outcome domain included in the Supporting Postsecondary Success topic area.<sup>4</sup> Citations for the 14 studies reviewed for this report are listed in the References section, which begins on page 15. Citations for the three studies that are ineligible for review and the reasons the WWC determined they were ineligible are also listed in the References section.

**Figure 1. Effectiveness ratings for *Social Belonging* interventions**



**Main Findings**

Table 4 shows the findings from the seven *Social Belonging* intervention studies that meet WWC standards. The table includes WWC calculations of the mean difference, effect size, and performance of the intervention group relative to the comparison group. Based on findings from the six studies that meet WWC standards, the effectiveness rating for academic achievement is *mixed effects*, indicating evidence of inconsistent effects. These findings are based on 3,640 students. Based on findings from the three studies

that meet WWC standards, the effectiveness rating for progressing in college is *mixed effects*, indicating evidence of inconsistent effects. These findings are based on 2,484 students. Based on findings from the two studies that meet WWC standards, the effectiveness rating for college enrollment is *no discernible effects*, indicating no affirmative evidence of effects. These findings are based on 1,893 students.

**Table 4. Findings by outcome domain from studies of *Social Belonging* interventions that meet WWC standards**

Measure (study)	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Semester GPA	Hispanic or Latino students, fall term	190	2.92 (0.99)	2.73 (0.94)	0.19	0.20	+8	0.18
Semester GPA	Black students, fall term	317	2.65 (0.96)	2.56 (0.86)	0.09	0.10	+4	0.38

Measure (study)	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Outcome average for academic achievement (Broda et al., 2018) <sup>a</sup>						0.15	+6	Not statistically significant
STEM GPA	ESL students	2,283	3.24 (2.81)	3.13 (2.13)	0.11	0.04	+2	0.32
Outcome average for academic achievement (LaCosse et al., 2020) <sup>b</sup>						0.04	+2	Not statistically significant
Fall semester GPA	Disadvantaged students	521	2.77 (0.78)	2.54 (0.88)	0.23	0.23	+9	0.01
Outcome average for academic achievement (Murphy et al., 2020) <sup>c</sup>						0.23	+9	Statistically significant
Cumulative GPA (sophomore – senior year)	Black students	37	3.60 (0.42)	3.34 (0.38)	0.26	0.63	+24	0.01
Outcome average for academic achievement (Walton & Cohen, 2011) <sup>d</sup>						0.63	+24	Statistically significant
Exam Average (Intro Calculus)	Intro Calculus Sample	87	71.00 (11.00)	74.00 (12.00)	-3.00	-0.26	-10	0.24
Outcome average for academic achievement (Weaver et al., 2020) <sup>e</sup>						-0.26	-10	Not statistically significant
First year GPA	Disadvantaged students	205	3.39 (0.42)	3.33 (0.44)	0.06	0.15	+6	0.20
Outcome average for academic achievement (Yeager et al., 2016), Experiment 3 <sup>f</sup>						0.15	+6	Not statistically significant
Outcome average for academic achievement across all studies						0.16	+6	Not statistically significant
College credits completed	Hispanic or Latino students, fall term	190	12.36 (3.33)	12.44 (3.29)	-0.08	-0.02	-1	0.87
College credits completed	Black students, fall term	317	11.76 (3.08)	12.06 (2.83)	-0.30	-0.10	-4	0.37
Outcome average for progressing in college (Broda et al., 2018) <sup>a</sup>						-0.06	-2	Not statistically significant
Continuous enrollment (%)	Disadvantaged students	591	86	76	10.00	0.40	+16	< 0.01
Outcome average for progressing in college (Murphy et al., 2020) <sup>b</sup>						0.40	+16	Statistically significant
Earned 12+ credits (%)	Disadvantaged students	1,386	85	82	3.00	0.13	+5	0.14
Outcome average for progressing in college (Yeager et al., 2016), Experiment 2 <sup>g</sup>						0.13	+5	Not statistically significant
Outcome average for progressing in college across all studies						0.16	+6	Not statistically significant
College enrollment, full time (%)	Hispanic or Latino students, fall term	190	94	97	-3.00	-0.44	-17	0.33

Measure (study)	Study sample	Sample size	Mean (standard deviation)		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
College enrollment, full time (%)	Black students, fall term	317	94	94	0.00	0.00	0	1.00
Outcome average for college enrollment (Broda et al., 2018) <sup>a</sup>						-0.22	-9	Not statistically significant
Attempted 12+ credits (%)	Disadvantaged students	1,386	88	85	3.00	0.16	+6	0.11
Outcome average for college enrollment (Yeager et al., 2016), Experiment 2 <sup>g</sup>						0.16	+6	Not statistically significant
Outcome average for college enrollment across all studies						-0.03	-1	Not statistically significant

Notes: For mean difference and effect size values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on outcomes, representing the average change expected for all individuals who are given the intervention (measured in standard deviations of the outcome measure). An indicator of the effect of the intervention, 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 +10 means that the expected percentile rank of the average comparison group student would increase by 10 points if the student received *Social Belonging* interventions. A positive improvement index does not necessarily mean the estimated effect is statistically significant. Some statistics may not sum as expected due to rounding.

<sup>a</sup> Broda et al. (2018) required a correction for multiple comparisons in the academic achievement, progressing in college, and college enrollment domains, but this correction did not affect whether any of the contrasts were found to be statistically significant. The sample sizes presented here were provided in response to an author query. The p-values presented here were calculated by the WWC. The study is characterized as having an indeterminate effect on academic achievement, progressing in college, and college enrollment because the mean effects are not statistically significant.

<sup>b</sup> For the LaCrosse et al. (2020) study, the sample sizes by condition, adjusted group means, and standard deviations presented here were provided in response to an author query. This study is characterized as having an indeterminate effect on academic achievement because the mean effect is not statistically significant.

<sup>c</sup> For the Murphy et al. (2020) study, the sample sizes and adjusted group means and standard deviations presented here were provided in response to an author query. This study is characterized as having a statistically significant positive effect on academic achievement and progressing in college because the mean effects are positive and statistically significant.

<sup>d</sup> Walton & Cohen (2011) required a difference-in-differences adjustment. The sample sizes and adjusted group means and standard deviations presented here were provided in response to an author query. This study is characterized as having a statistically significant positive effect on academic achievement because the mean effect is positive and statistically significant.

<sup>e</sup> For Weaver et al. (2020), the exam average outcome was based on 15 weekly exams taken throughout the semester with the final exam score substituted for the lowest exam score. This was consistent with the course grading procedures for the class. The adjusted intervention group means, unadjusted standard deviations, and baseline data presented here were provided in response to an author query. The p-value presented here was calculated by the WWC. The study is characterized as having an indeterminate effect on academic achievement because the mean effect reported is not statistically significant.

<sup>f</sup> For the Yeager et al. (2016), Experiment 3 study, the sample sizes presented here were provided in response to an author query. This study is characterized as having an indeterminate effect on academic achievement because the mean effect is not statistically significant.

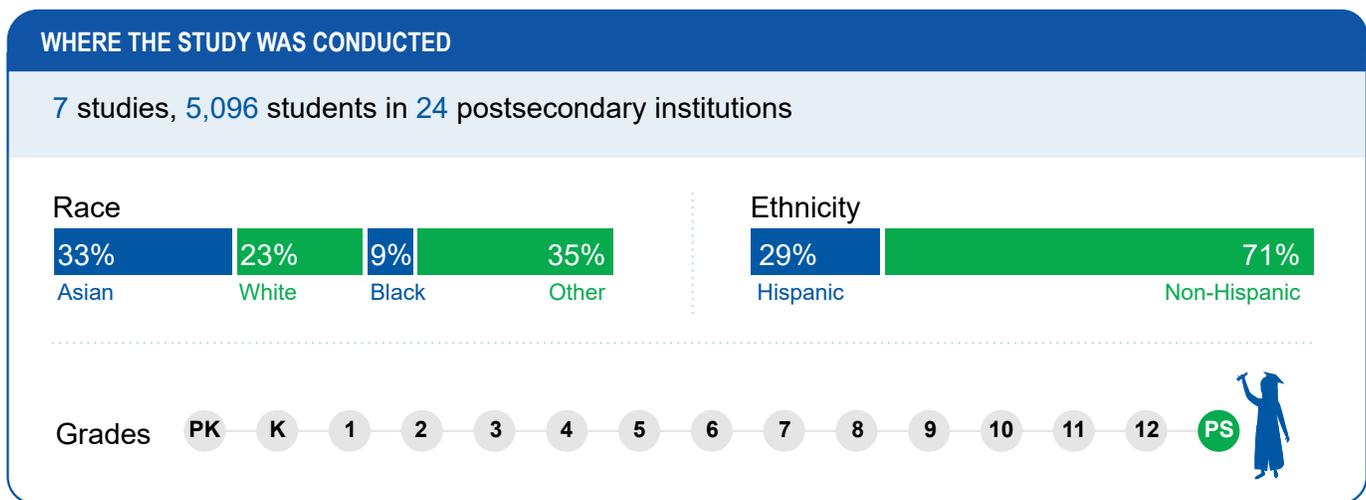
<sup>g</sup> For the Yeager et al. (2016), Experiment 2 study, the sample sizes at assignment and in the analytic sample and the unadjusted group means presented here were provided in response to an author query. This study is characterized as having indeterminate effects on progressing in college and college enrollment because the mean effects are not statistically significant.

For more information, please refer to the WWC Procedures Handbook, version 4.0, page 22.

## In What Context Was *Social Belonging* Studied?

The following section provides information on the setting of the seven studies of *Social Belonging* interventions that meet WWC standards, and a description of the participants in the research from six of the seven studies.<sup>5</sup>

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



## Details of Each Study that Meets WWC Standards

This section presents details for the studies of *Social Belonging* interventions that meet WWC standards. These details include the full study reference, findings description, findings summary, and description of study characteristics. A summary of domain findings for each study is presented below, followed by a description of the study characteristics. These study-level details include contextual information about the study setting, methods, sample, intervention group, comparison group, outcomes, and implementation details. For additional information, readers should refer to the original studies.

### Research details for Broda et al. (2018)

Broda, M., Yun, J., Schneider, B., Yeager, D. S., Walton, G. M., & Diemer, M. (2018). Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions. *Journal of Research on Educational Effectiveness*, 11(3), 317-338. <https://eric.ed.gov/?id=EJ1181580>

Findings from Broda et al. (2018) show evidence of indeterminate effects of a *Social Belonging* intervention in the academic achievement, progressing in college, and college enrollment domains (Table 5). Each finding is based on an outcome analysis that includes 507 students.

**Table 5. Summary of findings from Broda et al. (2018)**

Outcome domain	Sample size	Meets WWC Group Design Standards Without Reservations		
		Average effect size	Improvement index	Statistically significant
Academic achievement	507 students	0.15	+6	No
Progressing in college	507 students	-0.06	-2	No
College enrollment	507 students	-0.22	-9	No

**Table 6. Description of study characteristics for Broda et al. (2018)**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition. For more information on how the WWC assigns study ratings, please see the <a href="#">WWC Procedures and Standards Handbooks (version 4.0)</a> and <a href="#">WWC Standards Briefs</a> , available on the WWC website.
<b>Setting</b>	The study took place at a public university in Michigan. Several weeks before arriving on campus for a two-day orientation program, incoming first-year students received a survey link from the university and completed the survey either prior to, or after arriving, on campus for orientation.
<b>Methods</b>	<p>After blocking students on race and ethnicity, study authors randomly assigned incoming first-year students who responded to a survey invitation into one of three groups: 2,189 students to a <i>Growth Mindset</i> intervention group, 2,210 students to a <i>Social Belonging</i> intervention group, and 2,269 students to a comparison group.<sup>6</sup> This review focuses on Black and Hispanic students, since the <i>Social Belonging</i> intervention was expected to be most effective for these students. Among these subgroups, 160 Black students and 95 Hispanic students were randomly assigned to the <i>Social Belonging</i> intervention, and 165 Black students and 97 Hispanic students were randomly assigned to the comparison group. At the end of the fall term, there were 156 Black students and 93 Hispanic students in the intervention group, and 161 Black students and 97 Hispanic students in the comparison group.</p> <p>The sample loss after random assignment (attrition) was within the acceptable threshold for the review. For Black students, the overall attrition rate was 2%, and the differential attrition rate was 0 percentage points. For Hispanic students, the overall attrition rate was 1%, and the differential attrition rate was 2 percentage points.</p>
<b>Study sample</b>	<p>Among students included in the overall analysis sample, 54% were female, 78% were White, 7% were Black, and race was not specified for 15% of the sample. Four percent were Hispanic. Approximately 24% were first-generation college students and 26% were eligible for a Pell grant.</p> <p>Among the students in the main analytic samples for this review, 63% were Black and 37% were Hispanic.</p>
<b>Intervention group</b>	After reviewing a series of stories about students of the same gender and race/ethnicity dealing with several challenges of starting college, including leaving home, fitting in, and trying to find their own identity, students in the intervention group were asked to respond to a series of questions reflecting on their own expectations for starting college. On average, students spent 15 to 20 minutes on the intervention activities.

<b>Comparison group</b>	Students in the comparison group read stories about adapting to the physical aspects of college life, including the weather in Michigan, navigating around the university campus, adjusting to a new class schedule, and finding places to eat. Next, students wrote short essay responses to questions about how the stories they had read related to the start of their own college-going experience. On average, students spent 10 to 15 minutes on the comparison group activities.
<b>Outcomes and measurement</b>	<p>Study authors reported findings on three outcome measures that are eligible for review under the Supporting Postsecondary Success topic area. These outcomes are from the fall semester in the 2014-2015 academic year. One eligible outcome, semester GPA, was in the academic achievement domain. One eligible outcome, college credits completed, was in the progressing in college domain. One eligible outcome, full-time college enrollment, was in the college enrollment domain. Each was presented separately for Hispanic or Latino students and Black students.</p> <p>The study also reported supplemental findings for cumulative GPA and college credits completed after one year. All outcomes were presented for Hispanic or Latino students, Black students, White students, and the full sample, excluding international students. Summaries of these findings are available on the WWC website (<a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a>). The supplemental findings do not factor into the intervention's rating of effectiveness.</p> <p>The study also reported findings for college credits attempted for the fall and spring semesters, but these are ineligible under the Supporting Postsecondary Success topic area. Findings that compared outcomes for the <i>Growth Mindset</i> intervention group to the comparison group were not relevant to this report but are included in a separate WWC intervention report on <i>Growth Mindset</i> interventions for postsecondary students.</p>
<b>Additional implementation details</b>	The university administration supported a pilot test of the <i>Growth Mindset</i> and <i>Social Belonging</i> interventions in January 2014 prior to the larger study with all 2014-2015 incoming first year students.

### Research details for LaCosse et al. (2020)

LaCosse, J., Canning, E.A., Bowman, N, Murphy, M.C., Logel, C. (2020). A social-belonging intervention improves STEM outcomes for students who speak English as a second language. *Science Advances*, 6(40), 1-10.  
<https://doi.org/10.1126/sciadv.abb6543>

Findings from LaCosse et al. (2020) show evidence of an indeterminate effect of a *Social Belonging* intervention on academic achievement (Table 7). These findings are based on an outcomes analysis that includes 2,283 students.

**Table 7. Summary of findings from LaCosse et al. (2020)**

		Meets WWC Group Design Standards Without Reservations		
		Study findings		
Outcome domain	Sample size	Average effect size	Improvement index	Statistically significant
Academic achievement	2,283 students	0.04	+2	No

**Table 8. Description of study characteristics for LaCosse et al. (2020)**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition.
<b>Setting</b>	The study was conducted with incoming first-year undergraduates from 19 four-year colleges and universities across the United States, representing public and private institutions and multiple Carnegie classifications and selectivity levels.
<b>Methods</b>	<p>The study relied on existing data from a large-scale randomized controlled trial conducted by the College Transition Collaborative (CTC) in which students interested in STEM were randomly assigned to receive a <i>Social Belonging</i> intervention or a comparison intervention. The total sample size is 12,411 students, including 2,640 English as a Second Language (ESL) students and 9,771 non-ESL students. This review focuses on the subgroup of students who are ESL speakers since the intervention was expected to be most beneficial for these students. Among ESL students, 1,729 students were assigned to the intervention group and 911 students were assigned to the comparison group.</p> <p>The sample loss after random assignment (attrition) was within the acceptable threshold for the review. For ESL students, for the main outcome of STEM GPA in the first term, the overall attrition rate was 14%, and the differential attrition rate was less than 1 percentage point.</p>

<b>Study sample</b>	All students in the analytic sample indicated an interest in STEM. The analytic sample among ESL students is 51% female. Half of the students (50%) were Asian, 8% were White, 3% were Middle Eastern, 2% were Black, 2% were multiracial, less than 1% were Native American, and 1% were classified as Other. Thirty-four percent of the students were Hispanic.
<b>Intervention group</b>	Students in the intervention group read stories, written by upper-level students, that were about the transition to college. They were also asked to write an essay describing in their own words what they had read and to answer a short questionnaire about their demographics. There were two versions of the intervention. In the standard version, the stories focused on the transition to college and accompanying challenges related to feelings of belonging. In the customized treatment, the challenges were specific to the students' own institutions.
<b>Comparison group</b>	Students in the comparison group received similar stories to read and were also expected to write about what they had read, but neither the stories nor the writing prompt they were given focused on challenges connected with feelings of belonging experienced during the transition to college.
<b>Outcomes and measurement</b>	The outcome was in the academic achievement domain: STEM grade point average (GPA) at the end of the first term. Analyses were also conducted separately for ESL and non-ESL students, but these were not factored into the intervention's ratings of effectiveness.  The study also reported a supplemental finding for STEM GPA after one term and for the proportion of STEM credits that were completed after one term and after one year. A summary of these findings is available on the WWC website ( <a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a> ). The supplemental findings do not factor into the intervention's rating of effectiveness.
<b>Additional implementation details</b>	Additional information is not available about the implementation of the <i>Social Belonging</i> intervention.

### Research details for Murphy et al. (2020)

Murphy, M., Gopalan, M., Carter, E., Emerson, K., Bottoms, B., & Walton, G. (2020). A customized belonging intervention improves retention of socially disadvantaged students at a broad-access university. *Science Advances*, 6(29), 1-7. <https://doi.org/10.1126/sciadv.aba4677>

Findings from Murphy et al. (2020) show evidence of statistically significant positive effects of a *Social Belonging* intervention on academic achievement and progressing in college (Table 9). These findings are based on outcome analyses that include 521 students and 591 students, respectively.

**Table 9. Summary of findings from Murphy et al. (2020)**

		Meets WWC Group Design Standards Without Reservations		
		Study findings		
Outcome domain	Sample size	Average effect size	Improvement index	Statistically significant
Academic achievement	521 students	0.23	+9	Yes
Progressing in college	591 students	0.40	+16	Yes

**Table 10. Description of study characteristics for Murphy et al. (2020)**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition.
<b>Setting</b>	The study was conducted at a large, broad-access, racially and economically diverse, Hispanic-Serving Institution in the Midwest (with over 85% of students commuting to campus).

<b>Methods</b>	<p>The study used individual random assignment with blocking (within classes) to ensure equality of students with certain characteristics in each group. The 1,063 first-time college students who participated in the study were randomly assigned to the <i>Social Belonging</i> intervention (n=521) or comparison condition (n=542). Study authors identified 606 of these students as African American, Latino, Native, and first-generation college students (regardless of their racial-ethnic background). These 606 socially disadvantaged students were evenly distributed across the intervention (303 students) and comparison groups (303 students). The analytic sample for the socially disadvantaged students that were the focus of the study varied from 521 to 591 students due to missing data on the three study outcomes.</p> <p>The sample loss after random assignment (attrition) was within the acceptable threshold for the review. For the enrollment outcomes, the overall attrition rate was 2%, and the differential attrition rate was 0 percentage points. For the GPA outcome, the overall attrition rate was 13%, and the differential attrition rate was 4 percentage points.</p>
<b>Study sample</b>	<p>Among all students randomly assigned, 28% were White, 27% were Asian, 7% were Black, 7% were mixed race, and 2% were Native American. Twenty-three percent of students randomly assigned were Hispanic. The breakdown for socially disadvantaged students was not available.</p>
<b>Intervention group</b>	<p>The intervention was implemented in mandatory first-year writing courses in the students' first year of college in the spring semester, during a one-hour long class meeting. Students in the intervention group read nine stories from racially diverse upper-year students that described the academic and social challenges to their sense of belonging on campus as well as various strategies they employed that helped them come to feel they belonged at the university over time. The materials represented belonging on campus as a process that develops over time. Students were then asked to describe how their experiences in college to date mirrored the upper-year students' stories and to write a letter to a future student at their university who might doubt their belonging during the transition to college.</p>
<b>Comparison group</b>	<p>Students in the comparison group performed similar activities. The content matched the intervention condition in length, number of student stories, and even in describing a process of college adjustment that develops over time. However, these students received stories that focused on study skills in college, rather than social belonging.</p>
<b>Outcomes and measurement</b>	<p>Study authors reported findings on two outcome measures that are eligible for review under the Supporting Postsecondary Success topic area. One eligible outcome, continuous enrollment for 1 year, is in the progressing in college domain, and the second eligible outcome, Fall semester GPA, is in the academic achievement domain.</p> <p>The study also reported a supplemental finding for continuous enrollment for 2 years. A summary of these findings is available on the WWC website (<a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a>). The supplemental findings do not factor into the intervention's rating of effectiveness.</p>
<b>Additional implementation details</b>	<p>There was no support for implementation. The researchers designed the intervention and delivered this one-semester experimental procedure.</p>

### Research details for Walton & Cohen (2011)

Walton, G. M. & Cohen, G.L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447-1451. <https://doi.org/10.1126/science.1198364>

Findings from Walton & Cohen (2011) show evidence of a statistically significant positive effect of a *Social Belonging*

intervention on academic achievement (Table 11). This finding is based on an outcome analysis that includes 37 students. The findings and research details summarized for this study come from two related citations, including the primary study listed above. See the References section, which begins on page 15, for a list of all related publications.

**Table 11. Summary of findings from Walton & Cohen (2011)**

Meets WWC Group Design Standards Without Reservations				
Outcome domain	Sample size	Study findings		
		Average effect size	Improvement index	Statistically significant
Academic achievement	37 students	0.63	+24	Yes

**Table 12. Description of study characteristics for Walton & Cohen (2011)**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition.
<b>Setting</b>	The study took place at a selective university in the United States.
<b>Methods</b>	The study was a student-level RCT. A total of 92 students were randomly assigned to receive either the intervention (24 Black, 18 White) or to the comparison group (25 Black, 25 White). The study included two cohorts of students attending one university. Cohort 1 was formed from a convenience sample of students who agreed to participate in the study. Cohort 2 was formed from a random selection of students. The focus of this review is on the Black students since the intervention was expected to be most beneficial for Black students, who may perceive more social isolation in predominantly White colleges. The sample loss after random assignment (attrition) was within the acceptable threshold for the review. For Black students, the overall attrition rate was 24%, and the differential attrition rate was 1 percentage point.
<b>Study sample</b>	Study participants were students in the spring term of their freshman year. The total analytic sample included 31 students in the intervention group and 39 students in the comparison group. Among the Black students, 18 were in the intervention group and 19 were in the comparison group.
<b>Intervention group</b>	The goal of the intervention was to decrease students' psychological perceptions of social threat on campus by framing social adversity as common and transient. Students in the intervention group read narratives that purportedly described the social experiences of upper-level students in their first year at the university who worried about whether they belonged in college. The narratives encouraged students to attribute adversity to common and transient aspects of transitioning to college rather than something unique to themselves or their ethnic group. The researchers used several steps to encourage the students to internalize the message including having the students write an essay about their own experiences and give a video testimonial for future students. The intervention was delivered in approximately one hour.
<b>Comparison group</b>	Students in the comparison group performed similar activities. However, these students received narratives that were unrelated to social belonging. The activities for these students also took about one hour.
<b>Outcomes and measurement</b>	Study authors reported findings on one outcome measure that is eligible for review under the Supporting Postsecondary Success topic area. The outcome was in the academic achievement domain: cumulative GPA from sophomore – senior year. The study also reported supplemental findings for White students and for all White and Black students combined. Summaries of these findings are available on the WWC website ( <a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a> ). The supplemental findings do not factor into the intervention's rating of effectiveness. The study also reported on survey results related to student health and well-being and on the proportion of students within the top or bottom 25% of the class, but these outcomes were not eligible for review under the Supporting Postsecondary Success topic area.
<b>Additional implementation details</b>	Additional information is not available about the implementation of the <i>Social Belonging</i> intervention.

**Research details for Yeager et al. (2016), Experiment 2**

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., 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 [Experiment 2]. *Proceedings of the National Academy of Sciences of the United*

*States of America*, 113(24), E3341-E3348.  
<https://doi.org/10.1073/pnas.1524360113>

Findings from Yeager et al. (2016), Experiment 2 show evidence of indeterminate effects of a *Social Belonging* intervention on progressing in college and college enrollment (Table 13). These findings are based on outcome analyses that include 1,386 students.

**Table 13. Summary of findings from Yeager et al. (2016), Experiment 2**

Meets WWC Group Design Standards Without Reservations				
Outcome domain	Sample size	Study findings		
		Average effect size	Improvement index	Statistically significant
Progressing in college	1,386	0.13	+5	No
College enrollment	1,386	0.16	+6	No

**Table 14. Description of study characteristics for Yeager et al. (2016), Experiment 2**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition.
<b>Setting</b>	The intervention was completed individually by students online between May and July 2012 prior to their freshman year. All students were freshmen at a four-year public university.
<b>Methods</b>	The study (Experiment 2) is a randomized controlled trial with low attrition. Students were randomly assigned to the <i>Social Belonging</i> intervention group, a <i>Growth Mindset</i> intervention group, a group that combined elements of both interventions, or a comparison group. This review focuses on the <i>Social Belonging</i> intervention only for socially disadvantaged students since the intervention was expected to be most beneficial for these students. Among these students, 634 students were assigned to the <i>Social Belonging</i> intervention group and 752 students were assigned to the comparison group. There was no sample loss after random assignment (attrition).
<b>Study sample</b>	Among the total sample assigned to the four groups in Experiment 2, 46% were White, 18% were Asian, 5% were Black, and race was not specified for 31% of the sample. Twenty-four percent of students were Hispanic. Approximately 83% of students were continuing-generation students and 17% were first-generation students. The socially disadvantaged students that were the subject of this review included Black, Hispanic, Native American, Pacific Islander, and first-generation students. The breakdown by group was not available for this sample.
<b>Intervention group</b>	The <i>Social Belonging</i> intervention was designed to overcome the myth that only disadvantaged students experience difficulty and question their belonging in college. The intervention shared stories showing that everyone worries early on, and that all students can overcome these challenges over time. The intervention was conducted online in each student's home the summer before their freshman year in college. Students reviewed survey results from older students that indicated that initially most college students worry about whether they belong, and this is true regardless of race, gender, or other background characteristics—and that these worries decrease over time when students develop social relationships with other students in their school. After reviewing the survey results, students reviewed stories from upper-year students describing these same ideas. After reading these stories, students were asked to write two brief essays about: (1) why students often initially feel uncertain about whether they belong in college based on their own experiences, and (2) how these concerns about belonging are likely to decrease over time as students adjust to college life. Students were told that their essays might be shared with other future students. The entire intervention was expected to take approximately 30 minutes to complete.
<b>Comparison group</b>	Students in the comparison group participated in a similar reading and writing exercise, but the materials focused on students' adjustment to the physical rather than social environment in college, such as the weather and the campus.
<b>Outcomes and measurement</b>	Study authors reported findings on two outcome measures that are eligible for review under the Supporting Postsecondary Success topic area. One eligible outcome, earned 12+ credits in the first semester, was in the progressing in college domain, and the second eligible outcome, attempted 12+ credits in the first semester, was in the college enrollment domain.  The study also reported supplemental findings on both outcomes overall and for socially advantaged students in the first semester and in each of the first two semesters. A summary of these findings is available on the WWC website ( <a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a> ). The supplemental findings do not factor into the intervention's rating of effectiveness.  Study authors also reported findings on social and academic integration. These are not eligible for review under the Supporting Postsecondary Success topic area.
<b>Additional implementation details</b>	The university included the intervention materials in a set of online pre-orientation tasks required of all incoming first year students (such as reviewing how to register for courses, the university honor code, and health care resources on campus). One week prior to attending an on-campus orientation, the university emailed a link to this list of online tasks to all incoming first year students. The intervention materials appeared immediately after students read about the university's required vaccinations and were described as information about the "university mindset."

**Research details for Yeager et al. (2016), Experiment 3**

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., 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 [Experiment 3]. *Proceedings of the National Academy of Sciences of the United States of America*, 113(24), E3341-E3348. <https://doi.org/10.1073/pnas.1524360113>

*States of America*, 113(24), E3341-E3348. <https://doi.org/10.1073/pnas.1524360113>

Findings from Yeager et al. (2016), Experiment 3 show evidence of an indeterminate effect of a *Social Belonging* intervention on academic achievement (Table 15). This finding is based on an outcome analysis that includes 205 students.

**Table 15. Summary of findings from Yeager et al. (2016), Experiment 3**

		Meets WWC Group Design Standards Without Reservations		
		Study findings		
Outcome domain	Sample size	Average effect size	Improvement index	Statistically significant
Academic achievement	205 students	0.15	+6	No

**Table 16. Description of study characteristics for Yeager et al. (2016), Experiment 3**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards Without Reservations.</b> This is a randomized controlled trial (RCT) with low attrition.
<b>Setting</b>	The intervention was completed individually by students online in summer 2012 prior to their freshman year. All students were freshmen at a highly selective, private university.
<b>Methods</b>	The study (Experiment 3) is a randomized controlled trial with low attrition. Students were randomly assigned to the <i>Social Belonging</i> intervention group, two other lay theory intervention groups, or a comparison group during the summer prior to their freshman year. This review focuses on the <i>Social Belonging</i> intervention for socially disadvantaged students since the intervention was expected to be most beneficial for these students. Among these students, 104 students were assigned to the <i>Social Belonging</i> intervention group and 105 students were assigned to the comparison group.  The sample loss after random assignment (attrition) was within the acceptable threshold for the review. Overall attrition was 2% for disadvantaged students, and there was no differential attrition.
<b>Study sample</b>	Among the total sample assigned to the four groups in Experiment 3, 52% were White, 25% were Asian, 7% were Black, and 5% were Pacific Islander, American Indian, or Alaskan Native. Eleven percent were Hispanic. This sample included 87% of students who were continuing-generation students and 13% of students who were first-generation students. The socially disadvantaged students that were the subject of this review included Black, Hispanic, Native American, Pacific Islander, and first-generation students. The breakdown by group was not available for this sample.
<b>Intervention group</b>	The <i>Social Belonging</i> intervention was designed to overcome the myth that only disadvantaged students experience difficulty and question their belonging in college. The intervention shared stories showing that everyone worries early on, and that all students can overcome these challenges over time. The intervention was conducted online in each student's home the summer before their freshman year in college. Students reviewed survey results from older students that indicated that initially most college students worry about whether they belong, and this is true regardless of race, gender, or other background characteristics—and that these worries decrease over time when students develop social relationships with other students in their school. After reviewing the survey results, students reviewed stories from upper-year students describing these same ideas. After reading these stories, students were asked to write two brief essays about: (1) why students often initially feel uncertain about whether they belong in college based on their own experiences, and (2) how these concerns about belonging are likely to decrease over time as students adjust to college life. Students were told that their essays might be shared with other future students. The entire intervention was expected to take approximately 30 minutes to complete.
<b>Comparison group</b>	Students in the comparison group participated in a similar reading and writing exercise, but the materials focused on students' adjustment to the physical rather than social environment in college, such as the weather and the campus.

<b>Outcomes and measurement</b>	<p>Study authors reported findings on one outcome measure that is eligible for review under the Supporting Postsecondary Success topic area: first-year grade point average (GPA). This outcome was in the academic achievement domain. Since the intervention targets socially disadvantaged students, first-year GPA for socially disadvantaged students is treated as the main finding.</p> <p>The study also reported supplemental findings on first-year GPA overall and for socially advantaged students. A summary of these findings is available on the WWC website (<a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a>). The supplemental findings do not factor into the intervention's rating of effectiveness.</p> <p>Study authors also reported findings on class rank and on social and academic integration. These are not eligible for review under the Supporting Postsecondary Success topic area.</p>
<b>Additional implementation details</b>	<p>The university included the intervention materials in a set of online pre-orientation tasks required of all incoming first year students (such as reviewing how to register for courses, the university honor code, and health care resources on campus). One week prior to attending an on-campus orientation, the university emailed a link to this list of online tasks to all incoming first year students. The intervention materials appeared immediately after students read about the university's required vaccinations and were described as information about the "university mindset."</p>

### Research details for Weaver et al. (2020)

Weaver, J., DeCaro, M., & Ralston, P. (2020). Limited support for use of a social-belonging intervention with first-year engineering students. *Journal for STEM Education Research*, 1-26. <https://doi.org/10.1007/s41979-020-00041-z>

Findings from Weaver et al. (2020) show evidence of an indeterminate effect of a *Social Belonging* intervention on academic achievement (Table 17). This finding is based on an outcome analysis that includes 218 students.

**Table 17. Summary of findings from Weaver et al. (2020)**

		Meets WWC Group Design Standards With Reservations		
		Study findings		
Outcome domain	Sample size	Average effect size	Improvement index	Statistically significant
Academic achievement	87 students	-0.26	-10	No

**Table 18. Description of study characteristics for Weaver et al. (2020)**

<b>WWC evidence rating</b>	<b>Meets WWC Group Design Standards With Reservations.</b> This is a compromised randomized controlled trial (RCT) with analytic intervention and comparison groups that satisfy the baseline equivalence requirement.
<b>Setting</b>	The study took place at a large, urban, public university in the Midwest.
<b>Methods</b>	<p>Students were randomly assigned to an intervention or comparison group, but participants were excluded from the study if they did not complete the intervention. Thus, this is a compromised RCT. The review includes two studies, each with the same design but separate samples. The first study included full-time, first-year college students with an engineering major who took Engineering Analysis I, a calculus course for first-year engineering students. The second study included first-year engineering students who were less academically prepared and were placed in Introductory Calculus for Engineers, a remedial course needed before enrolling in Engineering Analysis I. These students were considered to be at greater risk of dropping out of the engineering major. This review focuses on the second study, since the intervention was expected to be most beneficial for the students in the remedial Introductory Calculus course.</p> <p>The second study included 87 students in Introductory Calculus: 42 students were assigned to the intervention group and 45 students were assigned to the comparison group. Baseline equivalence of the intervention and comparison groups was established for several outcomes based on overall or aggregated samples.</p>
<b>Study sample</b>	The second study (Introductory Calculus) included a total of 34% underrepresented students, including 20% female, 10% Black, Hispanic, or Native American students, and 11% first-generation students. Because students could be in multiple categories, these components do not add to the total percent of underrepresented students.
<b>Intervention group</b>	The intervention group received survey findings about juniors and seniors whose concerns about belonging with other groups decreased over time on campus. They also were shown a slide show with pictures and quotes from these students involved in various activities around the engineering campus. After reviewing the findings and slides, students were asked to write a personal letter to a future student about belonging. The intervention took place during week 2 of their first semester in college. The intervention was completed online, outside of class, and was expected to take 45-60 minutes.

<b>Comparison group</b>	The comparison group participated in a parallel activity, but the survey results and slides were focused on study skills, rather than belonging. All other conditions were the same.
<b>Outcomes and measurement</b>	<p>Study authors reported findings on two outcome measures that are eligible for review under the Supporting Postsecondary Success topic area. Both outcomes were in the academic achievement domain: cumulative GPA after one year and exam average. The exam average outcome was based on 15 weekly exams taken throughout the semester in students' relevant calculus course with the final exam score substituted for the lowest exam score. This was consistent with the course grading procedures for the class. Cumulative GPA did not meet WWC group design standards because the intervention and comparison groups were not equivalent at baseline.</p> <p>Outcomes from the first study for the overall sample, underrepresented minorities, and majority groups are listed as supplemental findings on the WWC website (<a href="https://whatworks.ed.gov">https://whatworks.ed.gov</a>). These supplemental findings do not factor into the intervention's rating of effectiveness.</p> <p>Study authors also reported on one eligible outcome in the progressing in college domain: retention to the next academic year (fall-to-fall retention). This finding does not meet WWC group design standards because the intervention and comparison groups were not equivalent at baseline.</p> <p>Study authors also reported on perceptions of belonging, but this outcome was not eligible for review under the Supporting Postsecondary Success topic area.</p>
<b>Additional implementation details</b>	Additional information is not available about the implementation of the <i>Social Belonging</i> intervention.

## References

### Studies that meet WWC group design standards

- Broda, M., Yun, J., Schneider, B., Yeager, D. S., Walton, G. M., & Diemer, M. (2018). Reducing inequality in academic success for incoming college students: A randomized trial of growth mindset and belonging interventions. *Journal of Research on Educational Effectiveness*, 11(3), 317-338. <https://eric.ed.gov/?id=EJ1181580>
- LaCosse, J., Canning, E.A., Bowman, N, Murphy, M.C., Logel, C. (2020). A social-belonging intervention improves STEM outcomes for students who speak English as a second language. *Science Advances*, 6(40), 1-10. <https://doi.org/10.1126/sciadv.abb6543>
- Murphy, M., Gopalan, M., Carter, E., Emerson, K., Bottoms, B., & Walton, G. (2020). A customized belonging intervention improves retention of socially disadvantaged students at a broad-access university. *Science Advances*. 6(29), 1-7. <https://doi.org/10.1126/sciadv.aba4677>
- Walton, G. M. & Cohen, G.L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447-1451. <https://doi.org/10.1126/science.1198364>
- Additional source:**  
Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82-96. <https://doi.org/10.1037/0022-3514.92.1.82>
- Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., 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 [Experiment 2]. *Proceedings of the National Academy of Sciences of the United States of America*, 113(24), E3341-E3348. <https://doi.org/10.1073/pnas.1524360113>

Yeager, D. S., Walton, G. M., Brady, S. T., Akcinar, E. N., Paunesku, D., Keane, L., Kamentz, D., Ritter, G., 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 [Experiment 3]. *Proceedings of the National Academy of Sciences of the United States of America*, 113(24), E3341-E3348. <https://doi.org/10.1073/pnas.1524360113>

### Study that meets WWC group design standards with reservations

Weaver, J., DeCaro, M., & Ralston, P. (2020). Limited support for use of a social-belonging intervention with first-year engineering students. *Journal for STEM Education Research*, 1-26. <https://doi.org/10.1007/s41979-020-00041-z>

### Studies that do not meet WWC group design standards

Binning, K. R., Kaufmann, N., McGreevy, E. M., Fotuhi, O., Chen, S., Marshman, E., Kalender, Z. Y., Limeri, L., Betancur, L., & Singh, C. (2020). Changing social contexts to foster equity in college science courses: An ecological-belonging intervention. *Psychological Science*, 31(9), 1059-1070. <https://doi.org/10.1177/0956797620929984> The study does not meet WWC group design standards because the analysis does not provide a credible measure of the effectiveness of the intervention.

Friesen, L. (2019). The effects of a social belonging intervention on first year college student success. *Marpeck Undergraduate Research Journal*, 1, 6-19. The study does not meet WWC group design standards because it is a randomized controlled trial in which attrition rates cannot be assessed, and the subsequent analytic intervention and comparison groups are not shown to be equivalent prior to the intervention.

Silver Wolf (Adelv unegv Waya), D.A.P., Perkins, J., Butler-Barnes, S.T., & Walker, T.A., Jr. (2017). Social belonging and college retention: Results from a quasi-experimental pilot study. *Journal of College Student Development*, 58(5), 777-782. <https://eric.ed.gov/?id=EJ1150864> The study does not meet WWC group design standards because the measures of effectiveness cannot be attributed solely to the intervention.

Walton, G. M., Logel, C., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2015). Two brief interventions to mitigate a “chilly climate” transform women’s experience, relationships, and achievement in engineering. *Journal of Educational Psychology*, 107(2), 468-485. <https://eric.ed.gov/?id=EJ1061905> The study does not meet WWC group design standards because it is a randomized controlled trial with high attrition, and the analytic intervention and comparison groups do not satisfy the baseline equivalence requirement.

### Studies that are ineligible for review using the Supporting Postsecondary Success Protocol

Brady, S., Cohen, G., Jarvis, S., & Walton, G. (2020). A brief social-belonging intervention in college improves adult outcomes for black Americans. *Science Advances*, 6(18), 1-12. <https://doi.org/10.1126/sciadv.aay3689> The study is ineligible for review because it does not address at least one outcome in a domain specified by the review protocol.

Mercado, F. (2017). An intervention that promotes a sense of belonging, grit, mindset, and hope in minority first-generation students. [Doctoral dissertation, California State University, Fresno]. <https://scholarworks.calstate.edu/downloads/Op096792t> The study is ineligible for review because it does not use an eligible design.

Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities’ focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178-1197. <https://doi.org/10.1037/a0027143> The study is ineligible for review because it does not address at least one outcome in a domain specified by the review protocol.

### 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 Barner, 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>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>3</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>4</sup>The effects of *Social Belonging* interventions are not known for other outcome domains within the Supporting Postsecondary Success topic area, including college attendance, postsecondary degree attainment, credential attainment, employment, and earnings.

<sup>5</sup>Race/ethnicity characteristics are reported for the following six studies: Broda et al. (2018), LaCosse et al. (2020), Murphy et al. (2020), Walton & Cohen (2011), and Yeager et al. (2016), Experiments 2 and 3. Race/ethnicity characteristics were not available for the samples that were the focus of this review for the Weaver et al. (2020). Data for Weaver et al. (2020) were only presented in aggregate for underrepresented groups. Sample 1 from this study included 3% Black, Hispanic, and Native American students, and Sample 2 included 10% Black, Hispanic, and Native American students.

<sup>6</sup>The study authors blocked 7,686 incoming first-year students who responded to the survey invitation by race, ethnicity (White, Black, Asian, multiracial, or Hispanic) and status as an international student, but after random assignment, excluded Asian, multiracial, and international students from analyses. Following WWC standards, v. 4.0 (pp. 8; 11-13), these exclusions are not counted as attrition because they were based on characteristics that existed prior to the introduction of the intervention and applied consistently across the intervention and comparison groups.

### Recommended Citation

What Works Clearinghouse, Institute of Education Sciences, U.S. Department of Education. (2022, January). *Social Belonging Interventions*. <https://whatworks.ed.gov>