Values Affirmation Intervention to Promote Enhanced Goal Setting among Students

Omid Fotuhi
Learning Research and Development Center, University of Pittsburgh
omidf@pitt.edu

Kori L. Krueger
Carnegie Mellon University
kkrueger@andrew.cmu.edu

Michelle D. Sims
Arizona Western College
Michelle.Sims@azwestern.edu

Julia L. Howe
Arizona Western College
julia.howe@azwestern.edu

Dawn M. Ponce
Arizona Western College
dawn.ponce@azwestern.edu

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Abstract

Students often experience psychological barriers that negatively impact their academic performance. For example, students may experience motivated disengagement and limited access to manageable and actionable strategies when needed. Past research has shown that scientifically informed interventions can mitigate such barriers and improve success outcomes. In the current project, we explored the utility of a values affirmation in mitigating an additional psychological barrier that students may experience—feelings of anxiety and threat that limit students' ability to use their cognitive and environmental resources to reach their maximum potential. We crafted a thoughtful intervention by combining a values affirmation and goal-setting activity and assessed students goal-related beliefs and behaviors, as well as success outcomes. Though we did not find strong evidence that the values affirmation positively affected students' goal beliefs and behaviors, we did find evidence that students greatly benefitted from the goal-setting activity and that students from under-represented groups in particularly benefitted most. We also found evidence that the goal-setting activity did activate threat and feelings of stress and anxiety, at least from some students. Implications and suggestions for future work exploring threat activation from goal-setting and the utility of interventions in mitigating threat are discussed.

Keywords: *Intervention; Values affirmation; Goal-setting; Academic Performance*

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Invisible psychological barriers can impact student performance and persistence in meaningful ways [1]. For instance, access to college for many first-generation or low-income students is often disproportionately stunted because of (1) motivated disengagement that prevents students from acting in their own self-interests, and (2) limited access to manageable and actionable strategies in the moments when those strategies are needed most. Fortunately, past research has demonstrated that students' outcomes can be improved by weakening these barriers through scientifically informed interventions [2], [3]. Small, cost-effective interventions drawn from the fields of social psychology—when well-timed and precisely targeted—can have large and sustainable benefits. Informed by social psychology, we seek to develop a high impact intervention to promote more effective goal-setting strategies, while leveraging the reach that an online activity allows as a cost-effective and scalable mechanism for intervention delivery.

Project Goals

In this study, we theorized that traditional goal-setting programs may benefit from including wise psychological strategies to reduce the defensive avoidance that might be, in part, leading some students to disengage from effective goal-setting practices. In addition, the key to the effectiveness of the affirmation intervention rests in giving it in a situation where people need it, to the specific individuals needing it most, and at a time when they could benefit most [4]. In this study, we included the intervention into the classroom experience, where students are most likely to make proximal and relevant goals needed for their success in their academics. By leveraging these critical strategies from social psychology, this intervention has the potential to augment the impact of our proposed goal-setting intervention by allowing greater customization and a more impactful delivery process [5].

Goal Setting

Decades of empirical research support the utility of setting specific and challenging goals to help improve motivation, focus, and performance [6], [7]. Explicitly setting goals can markedly improve performance on a wide range of tasks. People with clear goals appear better able to direct attention and effort toward goal-relevant activities and away from goal-irrelevant activities, thereby demonstrating a greater capacity for self-regulation. They also demonstrate greater enthusiasm, positive affect, well-being, self-efficacy, and commitment to task perseverance [4–7]. Consequently, practicing effective goal-setting encourages students to set further goals and cultivates higher expectations of success [10].

However, despite the widespread acceptance of the potential benefits of goal-setting, most people are still largely underutilizing goal-setting strategies as an effective tool to increase productivity. Important psychological barriers and informational gaps are largely responsible for this underutilization. Many people are either uninformed or misinformed about how to set effective goals. For example, pilot data suggest that people have many unanswered questions about goal-setting, such as "How challenging should a goal be?"; "How far into the future should I set my sights on?"; "How specific should the goal be?" (Fotuhi, 2018).

The research on goal-setting points to three common errors people make when setting goals: (1) setting goals that are too vague (e.g., "I want to be rich"); (2) setting goals that are either too ambitious or not challenging enough; and (3) focusing exclusively on the desired outcomes of their goals. These errors run counter to research suggesting that effective goals should be (1) specific, (2) realistically challenging, and (3) clearly include the required actions, strategies, and timelines to ensure effective and continuous progress toward one's desired outcomes. These critical principles of effective goal-setting have recently been tested among a

population of post-secondary students. However, we hypothesize that experiences of psychological threat might also undermine people's ability to engage in effective goal-setting, though this has not yet been empirically tested.

Research on social identity and performance has revealed that experiences of threat or stress restrict people's ability to use their cognitive and environmental resources to perform and grow. For example, people who worry that they may be seen in the light of a negative stereotype—a phenomenon known as "stereotype threat"—experience stress and uncertainty about their social belonging that can undermine their performance [10–13]. These experiences of psychological threat act as invisible barriers that prevent students from acting in their own best interests. If you're worried that you aren't smart enough or that your group doesn't belong in college, then you are also less likely to commit to your learning aspirations, you become more hesitant to reach out to your professor during office hours with questions, and you might have a harder time bouncing back from a challenge or setback (e.g., a bad grade). All of these invisible outcomes of perceived psychological threat would inhibit someone's ability to perform and grow.

In the context of goal-setting, the experience of psychological threat might create an aversion to committing to serious contemplation and implementation of meaningful and effective goals [14–17]. Because the act of thinking about goals necessarily requires a process of contrasting one's current self-perception with that of a desired ideal self [19]—a contrast that might highlight an unreachable gap—a person might be psychologically motivated to protect against the threat to their sense of self-integrity by disengaging from thinking about their goals. This is likely accentuated if past experiences with goal-setting have been unsuccessful [6], [17], [18], [20]. Consequently, traditional approaches of encouraging goal-setting among students

might have fallen short because of the limiting influence of protective psychological defenses that are activated when the contrast between a current and a desired outcome is perceived to be too large to overcome. Thus, for any particular intervention to have a meaningful impact, it is also important to diminish the deleterious effects of psychological threat among students. The current project uses a values-affirmation intervention to reduce this psychological threat.

Values Affirmation Intervention

Values-affirmation interventions have been found to reduce restraining forces that inhibit performance [21]. Typically consisting of a short self-reflection task that instructs participants to reflect on core values, value-affirmations have been shown to have meaningful and long-lasting benefits in a variety of domains, including stress reduction [22], [23], academic achievement [21], [24], and health outcomes such as lowering body mass index and smoking cessation [25]. When applied in educational contexts, values-affirmations have been shown to repeatedly reduce the achievement gaps among minority students [2], [23].

More recently, research conducted by our group has confirmed the existence of psychological threat when thinking about important goals, and the beneficial effects of applying a values-affirmation to reduce that threat. In a series of correlational studies, self-reported feelings of anxiety relating to setting goals were significantly correlated with important psychological constructs, such as having a fixed mindset, low self-efficacy, centrality of the goal to one's identity, and negative past experiences with goal-setting (all ps < .05). Importantly, in a follow-up experiment in which we randomly assigned participants to a values-affirmation or control activity, we found that the affirmed participants experienced significantly lower threat activation (measured by a word-stem completion task) and a greater likelihood of setting goals for themselves.

Study Design and Hypotheses

In the current project, we sought to expand on these results to create a thoughtful intervention that was informed by theory and empirically-guided, but that involved extensive customization and to further explore whether a values affirmation might amplify the effects of the goal-setting activity. The specific combination of interventions was developed through a rigorous tailoring process, which included surveys and focus groups with students in similar mathematics courses to help understand what themes resonated most with them. Through a carefully structured study-design process, we were able identify the challenges and concerns that most students reported struggling with in. This was a critical step in the intervention design, because it played a critical role in helping us move away from a pre-determined theorized domain of intervention, which would have focused on students' belonging uncertainty[1]. However, in speaking with students, it was clear that students already had a secure sense of belonging with their peers, faculty, and the administration. Instead, what we heard was that students reported feeling concerned about not being able to set effective goals and struggling to stay committed to their goals. This specific tailoring process is becoming an increasingly critical component of designing wise psychological interventions [28]. The contents of this research project were developed under a grant from the Department of Education[2].

Thus, we sought to directly assess the impact of the values affirmation as a potentially enhancing component to the goal-setting activity and measured students' goal-related beliefs and intentions, as well as academic success outcomes. Specifically, we tested whether a values affirmation would reduce the threat response elicited by the goal setting activity and goal-related

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[1] This insight was partially responsible for a larger investigation across a multi-institution research on belonging uncertainty, which demonstrated that concerns about belonging uncertainty may vary by institution type [27].
[2] These contents do not necessarily represent the policy of the Department of Education and it should not be an assumed endorsement by the Federal Government.

questions and consequently improve students' goal-setting and success outcomes. Certain

students in particularly may experience greater threat in response to the goal-related questions

and as such, a second goal of the study was to determine if the values affirmation would be

particularly beneficial for students from under-represented groups (e.g., female students;

minority group students; first-generation students).

Method

Participants

We recruited students enrolled in either Arizona Western University or Santa Fe College.

For this study, we focused on STEM courses and identified courses to deliver the intervention in.

Students were recruited to complete the survey by their course instructors. We collected data

from 820 students (146 Arizona Western University; 674 Santa Fe College). See Table 1 for

demographic data of the sample.

Table 1

Demographic Data of Participants

Gender	275 Male
	445 Female
	9 Other
Ethnicity	322 Caucasian
	124 African American
	222 Hispanic
	28 Asian or Pacific Islander
	7 Indian subcontinent
	8 American Indian or Alaskan native
	61 Multi-racial
	32 other
Age	M = 20.98, SD = 5.80,
	Range: 15 years old – 62 years old
Relationship Status	433 Single,
	247 In a relationship but not married
	45 married

Highest Level of Education	605 high school diploma or lower
	111 tech school, community college, or some university
	6 university degree
	3 graduate or professional degree
Employment	365 employed
	362 not employed

Procedure

The study employed a between-participants design with two conditions (values affirmation condition, control condition). Participants read a consent script, completed background and individual differences measures, and were randomly assigned to one of two conditions (N = 373 Values Affirmation Condition; N = 369 Control Condition). As previously referenced, values-affirmations have been shown to reduce stressors, and in particular threats to identity, that may prohibit students from acting in their own best interests, and consequently successfully performing to their potential in class [12], [26].

Participants in both conditions were shown a list of values (e.g., artistic ability or aesthetic appreciation; politics; music; spiritual or religious values). In the *values affirmation condition*, participants were asked to pick the value that they think is *most* important to them. Participants were told to "think about times when this value was or would be very important to you." They were asked to describe why the value they chose was important to them and to list the top two reasons why the value is important to them. In the *control condition*, participants were asked to pick the value that they think is *least* important to them. Participants were told to "think about times when this value was or would be very important to someone else (like an acquaintance)." They were asked to describe why the value that they chose is important to someone else and to list the top two reasons why someone else would pick that value as their most important value.

Next, all participants completed questions about the importance of their values and then completed a goal-setting activity. Participants were told that they would be spending some time thinking about their beliefs about goals and that goals "can include things that we think about, plan for, carry out, and sometimes [though not always] complete or succeed at." Participants were asked to list five personal goals relevant to their lives that will be relevant during the next year or so (e.g., to lost 15 pounds, get a certain grade in a particular class, make more money, decide on a personal philosophy, express your emotions better with friends). After listing five goals, participants selected the goal (from their list of five) that was the most important to them and the goal that was least important to them. Finally, all participants completed dependent variables which included questions about their beliefs about goals, the usefulness of the survey and goal-setting activity, and an open-ended question about why thinking about their goals was useful or not, and reported on their demographics. Participants were also asked whether they would like to spend an additional few minutes writing out some goals for themselves and were given space to do so if they selected yes.

Measures

Dependent measures are described in the order in which they were administered.

Centrality of Goals

Participants completed one item to assess the centrality of their goals (i.e., "Please choose the picture that best describes how close your goals are to your sense of self. That is, when you think of the person that you are, how central are these goals to the person that you see yourself as?). Participants were shown seven images representing 1 (*low centrality*) to 7 (*high centrality*).

Goal Beliefs

Participants completed several questions to assess their beliefs about goals (1 = *completely disagree*; 5 = *completely agree*). This included "You would be more willing to set clear goals once your current situation improves," "You would be more willing to set clear goals if you weren't worried about failing," "You would be more willing to set clear goals if you weren't worried about failing," "It is important to have goals in order to be successful," "NOW is the best time to set goals," "NOW is the best time to take action on your goals," "Most people have set goals for themselves." They also reported the percentage of people that they think have clearly set goals for themselves (i.e., "What percentage of people do you think have clearly set goals for themselves?").

Goal Behaviors

Participants completed several questions to assess how useful the goal-setting activity was and their likelihood of setting goals. This included "How much do you feel that having spent some time thinking about your goals today was useful?" (1 = *not at all useful*; 5 = *extremely useful*), "How much more likely do you think you are to actually set goals for yourself now that you have taken part in this survey?" (1 = *not all more likely*; 5 = *extremely more likely*), "To what extent would you be willing to spend an additional few minutes to formulate some goals for yourself today at the end of this survey?" (1 = *not at all*; 5 = *extremely*), and "In thinking about your experience so far, do you feel that having spent some time thinking about your goals today was useful?" (1 = *Yes*; 2 = *No*).

GPA

We also received information about students' success outcomes in the form of GPA reported from their respective university. We analyzed GPA separately for each college due to differences in GPA type and limitations in the data.

Specifically, we received students' final grades for the course in which the survey was administered from Arizona Western University, as well as that current semester and subsequent semester cumulative GPAs. However, many students received a "W" for the course in which the survey was administer, which made the sample size quite small for analysis. We received cumulative semester GPA for the current semester from Santa Fe College. However, there were many students who had received a zero for their GPA. We removed those who, based on enrollment data, looked to have dropped out during the term and received zeros due to this. This included 142 students. We also dropped GPA data from an additional 68 students as we could not parse out students who had truly received a 0.00 GPA for the semester from those who were taking classes Pass/Fail. The results do not differ if data from these students is included or not.

Results

Condition Analyses

We first ran independent t-tests comparing participants in the values affirmation condition and the control condition to determine whether the values affirmation would result in more positive beliefs about goals, improved goal-setting, and higher GPAs than the control activity. Unexpectedly, we did not any significant differences between the values affirmation and control conditions. See Table 2 for mean comparisons of conditions.

Table 2

Mean Comparisons of the Values Affirmation and Control Conditions

	Values Affirmation Intervention	Control Condition	Inferential Statistics
Centrality of goals	M = 4.40,	M = 2.18,	t(740) = -.13,

	SD = 2.11	SD = 2.18	p = .899

Goal Beliefs

Willing to Set Clear Goals If	M = 4.02,	M = 3.96,	t(741) = -.83,
Situation Improves	SD = 1.01	SD = 1.12	p = .409
Willing to Set Clear Goals if	M = 3.70,	M = 3.79,	t(740) = .97,
Weren't Worried	SD = 1.28	SD = 1.26	p = .333
Scientific Data about Effectiveness	M = 2.62,	M = 2.61,	t(740) = -.17,
of Settings Goals is Exaggerated	SD = 1.02	SD = 1.06	p = .862
Important to Have Goals in Order	M = 4.29,	M = 4.32,	t(737) = .50,
to Be Successful	SD = .85	SD = .85	p = .617
NOW is the Best Time to Set Goals	M = 4.41,	M = 4.37,	t(738) = -.71,
	SD = .83	SD = .89	p = .475
Now is Best Time to Take Action	M = 4.44,	M = 4.46,	t(738) = .39,
on Goals	SD = .84	SD = .81	p = .698
Most People Have Set Goals	M = 3.83,	M = 3.87,	t(737) = .44,
	SD = .99	SD = 1.02	p = .662
Percentage of People That Have	M = 54.24,	M = 56.15,	t(733) = 1.20,
Clearly Set Goals	SD = 21.62	SD = 21.26	p = .232
Spending Time Thinking About	M = 3.64,	M = 3.66,	t(736) = .36,
Goals was Useful	SD = 1.01	SD = 1.03	p = .720
Likelihood of Setting Goals	M = 3.39,	M = 3.37,	t(736) = -.18,
	SD = 1.15	SD = 1.16	p = .855

Willingness to Spend Additional Time Formulating Goals	M = 3.19, SD = 1.22	M = 3.21, SD = 1.21	t(736) = .31, p = .757
Was Spending Time Thinking About Goals Useful	Yes; N = 337 No; N = 35	Yes; N = 326 No; N = 38	
AWU Course GPA	M = 2.11; SD = .150	M = 2.21; SD = 1.38	F(1, 105) = .18, p = .671
AWU Current Semester Cumulative GPA	M = 2.19; SD = 1.23	M = 2.32; SD = 1.25	F(1, 128) = .44, p = .509
AWU Subsequent Semester Cumulative GPA	M = 2.38; SD = 1.33	M = 2.33; SD = 1.30	F(1, 79) = .03, p = .873
SFC GPA	M = 2.92, SD = .88	M = 2.79, SD = .95	t(488) = -1.59, p = .112

Moderation Analyses

Next, we conducted 2×2 ANOVAs with condition and either gender or ethnicity as predictors. This allowed us to test our prediction as to whether the values affirmation condition would be particularly beneficial for students from under-represented groups (i.e., female students; students from ethnic minority groups) by mitigating any feelings of threat or anxiety elicited by the goal-setting activity.

Gender

We first explored whether gender would moderate the effects of condition on our dependent variables (N = 66 Male, Control condition; N = 69 Male, Values Affirmation; N = 215 Female, Control condition; N = 230 Female, Values Affirmation).

Unexpectedly, we did not find any support for our hypothesis. However, we did find a main effect of gender such that female students (M = 4.05, SD = 1.04) reported being more willing to set clear goals once their current situation improves compared to male students (M = 3.84, SD = 1.06), F(1, 575) = 4.01, p = .046. We also found a significant interaction on the belief that NOW is the best time to set goals, F(1, 575) = 3.86, p = .050. Analyses of simple effects revealed a marginal simple effect such that females in the control condition (M = 4.45, SD = .81) reported that NOW is the best time to set goals moreso that males in the control condition (M = 4.23, SD = .94, p = .060), but they did not differ from females (M = 4.36, SD = .88) or males (M = 4.46, SD = .78) in the values affirmation condition. We found a similar significant interaction on the beliefs that NOW is best time to take action on your goals, F(1, 575) = 7.78, p = .005. Analyses of simple effects revealed that females in the control condition (M = 4.57, SD = .72) reported that NOW is the best time to take action on your goals moreso than males in the control condition (M = 4.32, SD = .88, p = .027) and females in the values affirmation condition (M = 4.36, SD = .88, p = .006). Though these significant effects do not show support for our hypotheses, they do suggest that female students may have uniquely benefitted from the goal-setting activity, independent of condition, compared to male students. We did not find any evidence of moderation on other dependent variables (see Table 3 for mean comparisons).

Table 3

Mean Comparisons of the Condition × Gender Interaction

	Values Affirmation Intervention	Control Condition	Inferential Statistics of Interaction

Centrality of goals	Females, M = 4.33, SD = 2.18	Females, M = 4.46, SD = 2.21	F(1, 576) = .24, p = .622
	Males, M = 4.14, SD = 1.97	Males, M = 4.06, SD = 2.16	

Goal Beliefs

Willing to Set Clear Goals If Situation Improves	Females, M = 4.08, SD = .96	Females, M = 4.02, SD = 1.12	F(1, 575) = .35, p = .552
	Males, M = 3.81, SD = 1.05	Males, M = 3.88, SD = 1.07	
Willing to Set Clear Goals if Weren't Worried	Females, M = 3.77, SD = 1.21	Females, M = 3.89, SD = 1.24	F(1, 575) = .01, p = .923
	Males, M = 3.61, SD = 1.46	Males, M = 3.71, SD = 1.26	
Scientific Data about Effectiveness of Settings Goals is Exaggerated	Females, M = 2.64, SD = .92	Females, M = 2.58, SD = 1.02	F(1, 575) = 2.33, p = .128
	Males, M = 2.57, SD = 1.14	Males, M = 2.80, SD = 1.10	
Important to Have Goals in Order to Be Successful	Females, M = 4.29, SD = .87	Females, M = 4.40, SD = .85	F(1, 574) = .14, p = .711
	Males, M = 4.28, SD = .92	Males, M = 4.32, SD = .75	
NOW is the Best Time to Set Goals	Females, M = 4.36, SD = .88	Females, M =4.45, SD = .81	F(1, 575) = 3.86, p = .050*

	Males, M = 4.46, SD = .78	Males, M = 4.23, SD = .94	
Now is Best Time to Take Action on Goals	Females, M = 4.36, SD = .88	Females, M = 4.57, SD = .72	F(1, 575) = 7.78, p = .005*
	Males, M = 4.55, SD = .72	Males, M = 4.32, SD = .88	
Most People Have Set Goals	Females, M = 3.91, SD = .93	Females, M = 4.01, SD = .94	F(1, 574) < .01, p = .967
	Males, M = 3.62, SD = 1.07	Males, M = 3.73, SD = 1.06	
Percentage of People That Have Clearly Set Goals	Females, M = 56.48, SD = 21.21	Females, M = 56.14, SD = 20.10	F(1, 573) = 2.75, p = .098
	Males, M = 50.14, SD = 22.01	Males, M = 56.80, SD = 25.33	
Spending Time Thinking About Goals was Useful	Females, M = 3.61, SD = 1.04	Females, M = 3.74, SD = 1.03	F(1, 576) = 3.62, p = .058
	Males, M = 3.75, SD = .95	Males, M = 3.50, SD = 1.17	
Likelihood of Setting Goals	Females, M = 3.44, SD = 1.13	Females, M = 3.47, SD = 1.14	F(1, 576) = .13, p = .716
	Males, M = 3.30, SD = 1.17	Males, M = 3.26, SD = 1.19	

Willingness to Spend Additional Time Formulating Goals	Females, M = 3.28, SD = 1.22	Females, M = 3.31, SD = 1.16	$F(1, 576) = .12$, p = .734
	Males, M = 3.06, SD = 1.21	Males, M = 3.17, SD = 1.26	
Was Spending Time Thinking About Goals Useful	Females, M = 1.09, SD = .29	Females, M = 1.11, SD = .31	$F(1, 576) = .67$, p = .414
	Males, M = 1.06, SD = .24	Males, M = 1.12, SD = .33	
SFC GPA	Females, M = 2.85, SD = .90	Females, M = 2.81, SD = .96	$F(1, 418) = 1.53$, p = .217
	Males, M = 3.00, SD = .90	Males, M = 2.72, SD = .97	

Ethnicity

We next explored whether ethnicity would moderate the effects of condition on our dependent variables in order to test whether the values affirmation condition was particularly beneficial for under-represented minority students (N = 153 Majority, Control condition; N = 169 Majority, Values Affirmation; N = 234 Minority, Control condition; N = 248 Minority, Values Affirmation). To do this, we compared students in the ethnic majority (Caucasian students) to students in the ethnic minority (students who identified as either African American/Black, Hispanic, Asian or Pacific Islander, Indian Subcontinent, African, American Indian/Alaskan Native, Multi-racial, or Other Ethnicity).

Unexpectedly, we did not find any evidence of significant moderation. However, we did find several main effects of ethnicity. We found some evidence of minority group students reported more negative goal-related beliefs compared to majority group students. Specifically, minority group students (M = 4.24, SD = 2.25) reported lower goal centrality than majority group students (M = 4.68, SD = 1.91), $F(1, 733) = 7.28$, $p = .007$, reported marginally greater willingness to set clear goals once their current situation improves (M = 4.05, SD = 1.07) than majority group students (M = 3.90, SD = 1.04), $F(1, 733) = 3.31$, $p = .069$, and reported stronger beliefs that the scientific data about the effectiveness of setting goals is exaggerated (M = 2.68, SD = 1.06) than majority group students (M = 2.50, SD = .99), $F(1, 732) = 4.87$, $p = .028$. This suggests that the goal-setting activity may have elicited feelings of threat or triggered negative thoughts about goals and goal-setting for minority group students. However, we also found one instance of evidence of positive beliefs about goals from minority group students. For example, minority group students (M = 3.93, SD = 3.72) reported stronger beliefs that most people have set goals for themselves than majority group students (M = 3.72, SD = .98), $F(1, 731) = 7.69$, $p = .006$.

Additionally, minority group students seemed to uniquely benefit from the goal-setting activity (regardless of condition). Specifically, minority group students (M = 3.75, SD = .99) reported that spending time thinking about their goals was useful to a greater extent than majority group students (M = 3.49, SD = 1.03), $F(1, 730) = 11.31$, $p < .001$, reported being more likely to actually set goals for themselves after having taken part in the survey (M = 3.53, SD = 1.14) than majority group students (M = 3.14, SD = 1.13), $F(1, 730) = 20.49$, $p < .001$, and were more willing to spend an additional few minutes to formulate some goals after the end of the survey (M = 3.30, SD = 1.18) than majority group students (M = 3.02, SD = 1.25), $F(1, 730) =$

9.19, p = .003. We also found that minority group students (M = 2.55, SD = .96) received lower

GPAs than majority group students (M = 3.03, SD = .84), F(1, 441) = 29.81, p < .001. We did

not find any other mean differences (see Table 4 for mean comparisons).

Table 3

Mean Comparisons of the Condition × Ethnicity Interaction

	Values Affirmation Intervention	Control Condition	Inferential Statistics of Interaction
Centrality of goals	Minority Group, M = 4.19, SD = 2.24	Minority Group, M = 4.28, SD = 2.28	F(1, 733) = .48, p = .488
	Majority Group, M = 4.74, SD = 1.85	Majority Group, M = 4.61, SD = 1.98	
Goal Beliefs			
Willing to Set Clear Goals If Situation Improves	Minority Group, M = 4.10, SD = 1.04	Minority Group, M = 4.00, SD = 1.11	F(1, 733) = .78, p = .378
	Majority Group, M = 3.88, SD = .97	Majority Group, M = 3.92, SD = 1.11	
Willing to Set Clear Goals if Weren't Worried	Minority Group, M = 3.73, SD = 1.30	Minority Group, M = 3.86, SD = 1.24	F(1, 732) = .06, p = .800
	Majority Group, M = 3.63, SD = 1.25	Majority Group, M = 3.71, SD = 1.28	

Scientific Data about Effectiveness of Settings Goals is Exaggerated	Minority Group, M = 2.68, SD = 1.09	Minority Group, M = 2.68, SD = 1.03	F(1, 732) = .12, p = .724
	Majority Group, M = 2.53, SD = .89	Majority Group, M = 2.48, SD = 1.08	
Important to Have Goals in Order to Be Successful	Minority Group, M = 4.29, SD = .87	Minority Group, M = 4.32, SD = .83	F(1, 730) = .15, p = .704
	Majority Group, M = 4.28, SD = .81	Majority Group, M = 4.36, SD = .84	
NOW is the Best Time to Set Goals	Minority Group, M = 4.38, SD = .86	Minority Group, M = 4.37, SD = .86	F(1, 732) = .39, p = .531
	Majority Group, M = 4.46, SD = .78	Majority Group, M = 4.37, SD = .89	
Now is Best Time to Take Action on Goals	Minority Group, M = 4.47, SD = .86	Minority Group, M = 4.49, SD = .77	F(1, 732) = .05, p = .817
	Majority Group, M = 4.39, SD = .82	Majority Group, M = 4.44, SD = .82	
Most People Have Set Goals	Minority Group, M = 3.95, SD = 1.00	Minority Group, M = 3.91, SD = 1.02	F(1, 731) = 2.17, p = .141
	Majority Group, M = 3.63, SD = .95	Majority Group, M = 3.81, SD = 1.01	
Percentage of People That Have Clearly Set Goals	Minority Group, M = 53.68, SD = 21.81	Minority Group, M = 56.68, SD = 21.53	F(1, 728) = .88, p = .348

	Majority Group, M = 55.35, SD = 21.38	Majority Group, M = 55.25, SD = 20.95	
Spending Time Thinking About Goals was Useful	Minority Group, M = 3.72, SD = .98	Minority Group, M = 3.78, SD = 1.00	F(1, 730) = .24, p = .627
	Majority Group, M = 3.50, SD = 1.04	Majority Group, M = 3.49, SD = 1.02	
Likelihood of Setting Goals	Minority Group, M = 3.52, SD = 1.13	Minority Group, M = 3.54, SD = 1.14	F(1, 730) = .21, p = .649
	Majority Group, M = 3.17, SD = 1.14	Majority Group, M = 3.10, SD = 1.13	
Willingness to Spend Additional Time Formulating Goals	Minority Group, M = 3.30, SD = 1.20	Minority Group, M = 3.31, SD = 1.16	F(1, 730) = .14, p = .714
	Majority Group, M = 2.99, SD = 1.24	Majority Group, M = 3.06, SD = 1.26	
Was Spending Time Thinking About Goals Useful	Minority Group, M = 1.08, SD = .27	Minority Group, M = 1.10, SD = .30	F(1, 729) = .49, p = .483
	Majority Group, M = 1.12, SD = .32	Majority Group, M = 1.10, SD = .31	
SFC GPA	Minority Group, M = 2.65, SD = .92	Minority Group, M = 2.44, SD = 1.00	F(1, 441) = 1.04, p = .309
	Majority Group, M = 3.04, SD = .84	Majority Group, M = 3.01, SD = .85	

Qualitative Summary

In addition to the quantitative analyses described above, we were able to access students' experiences in the survey through qualitative ways as well. Students were asked whether they felt that having spent time thinking about their goals was useful. The vast majority of students, regardless of condition, reported that the goal-setting activity was useful (N = 663 Yes; N = 73 No). Students were also asked why the goal-setting activity was useful or not in an open-ended question.

Common themes among the responses about why the goal-setting activity was useful included that writing about their goals 1) helped students think more deeply about their goals, increase clarity, and focus, 2) reminded them of the importance of their goals and whether they were on-track to meet them, 3) motivated them to try and meet their goals, and 4) improved execution of their goals or plans for the future.

For example, students wrote "Thinking about my goals today helped me realize that I can totally become very successful if I just put my mind to it and just do it," "It was useful for me to go over my own personal goals that I set for myself to complete. Just reviewing those goals again gives you a reminder as to why we need to do something in order to reach that certain goal. Without reviewing and setting new goals out one might forget and feel lost as to why they were doing something," "It helped me rethink about my goals and think of solutions to meet them," "It was useful because I was able to write my goals more clear and precise than I would normally do," "Goal of today give me a clear view, how far I am from my goal" and "This survey made me actually think about the things that I want to accomplish within the year or so. Which is something that has kind of just been in the back of my mind, or something I have forgotten about with how hectic my life has been, recently."

Common themes among the responses about why the goal-setting activity was not useful, though few students indicated that it was not useful, included that the exercise was a waste of time, caused them stress, or that they already think about their goals on their own time. For example, students wrote "This survey is short and to the point. It doesn't cause me to think deeply into any goals I have," "I just don't feel like it really made me think about goals or care more," " I think it was nice but it also causes stress," "Personally when I'm asked about my goals I just get a headache and it just feels rushed or under pressure to have an answer rather than doing the thinking on my own time in my own space," "I usually think about my goals constantly, so this survey was just like a normal thought process," and "I already had these things in mind and am working towards them, so I didn't really need to think about it."

Subset Analyses

A subset of our sample (N = 146), the students from Arizona Western University, also completed additional dependent variables in their intervention survey and they completed a post-intervention follow-up survey several months later. The post-intervention follow-up survey had a 48% retention rate (N = 72).

Intervention Survey

This subset of students completed additional measures in their survey including numerous additional individual difference measures (e.g., growth mindset beliefs, GRIT, academic procrastination) before the manipulation and additional dependent variables such as items assessing their goal behaviors (e.g., satisfaction with goal-setting practices) and an assessment of threat activation after the manipulation through a word-completion task (i.e., self-identity threat, mortality threat, and general threat). We tested our main hypothesis on this subset of our sample on the additional dependent variables that were available. We did not test our

hypotheses regarding whether students from under-represented groups would particularly benefit from the values affirmation intervention due to the small sample size.

Unexpectedly, we did not find any condition differences on the additional dependent variables in this sample (see Table 5 for mean comparisons). Thus, students in the values affirmation condition did not differ from students in the control condition in their reported goal behaviors or in threat activation from the goal-setting activity.

However, there was a violation of random assignment such that students who were eventually assigned to the control condition reported a lower metamindset—the idea that beliefs can change across a lifetime—($M = 3.62$, $SD = .07$) than those who were eventually assigned to the value affirmation condition ($M = 3.79$, $SD = .05$; $t[148] = 1.98$, $p = .049$). Due to this, we controlled for metamindset in our analyses, however, the failure of random assignment makes it difficult to interpret the lack of differences between conditions on our dependent variables.

Table 5

Mean Comparisons of Subset of Sample on Additional Variables

Variable	Control Condition	Value Affirmation Condition	Inferential Statistics
Metamindset (6 items; α = .65; "My beliefs can change significantly across my lifetime"; 1 [Strongly Disagree] – 6 [Strongly agree])	M = 3.62; SD = .60	M = 3.79; SD = .44	t(148) = -1.98, p = .049*
Growth mindset (4 items; α = .79; "You can grow your basic intelligence a lot in your lifetime; 1 = [strongly disagree] – 6 [strongly agree])	M = 4.57; SD = .88	M = 4.77; SD = .96	F(1, 147) = .75, p = .387
Future Time Perspective (FTP) (10 items; a = .83; "Many opportunities await me in the future"; 1 [very untrue] – 7 [very true])	M = 5.37; SD = 1.06	M = 5.29; SD = 1.06	F(1, 147) = ,74, p = .392
GRIT (9 items; a = .72; "Setbacks don't discourage me"; 1 = [not like me at all] – 5 [very much like me])	M = 3.33; SD = .59	M = 3.31; SD = .57	F(1, 147) = .06, p = .806

Failure Mindset (4 items; a = .60; "I would feel I didn't try hard enough"; 1 = [strongly disagree] – 6 [strongly agree])	M = 4.33; SD = .89	M = 4.50; SD = .83	$F(1, 147) = 1.55, p = .215$
Academic Procrastination Scale (5 items; a = .87; "I put off projects until the last minute"; 1 = [extremely uncharacteristic] – 5 [extremely characteristic])	M = 2.87; SD = 1.00	M = 3.06; SD = 1.04	$F(1, 147) = 1.59, p = .209$
Self-efficacy (10 items; a = .85; "I can solve most problems if I invest the necessary effort"; 1 = [not at all true] – 4 [exactly true])	M = 4.77; SD = .75	M = 4.85; SD = .52	$F(1, 147) = .10, p = .748$
Identification with Academics (1 item; "It is important to me to do well at AWC"; 1 = [not at all important] – 7 [extremely important])	M = 6.29; SD = 1.16	M = 6.44; SD = .84	$F(1, 147) = .71, p = .400$
Goal Behaviors (7 items; a = .70; "You are satisfied with your own goal-setting practices"; 1 = [strongly disagree] – 7 [strongly agree])	M = 5.21; SD = .91	M = 5.26; SD = .62	$F(1, 147) = .01, p = .940$
Centrality of Goals (1 item; "That is, when you think of the person that you are, how central are these goals to the person that you see yourself as?")	M = 3.92; SD = 2.27	M = 3.60; SD = 2.07	$F(1, 146) = 1.20, p = .274$
Goal Beliefs (7 items; a = .61; "You would be more willing to set clear goals once your current situation improves; 1 = [completely disagree] – 5 [completely agree])	M = 3.95; SD = .57	M = 4.02; SD = .47	$F(1, 147) = .20, p = .654$
Percentage of People who Clearly Set Goals ("What percentage of people do you think have clearly set goals for themselves?")	M = 52.34; SD = 23.19	M = 53.51; SD = 23.29	$F(1, 146) = .05, p = .823$
How much do you feel that having spent some time thinking about your goals was helpful today? (1 [not at all useful' – 5 [extremely useful])	M = 3.59; SD = 1.22	M = 3.48; SD = .94	$F(1, 147) = .57, p = .451$
How much more likely do you think you are to actually set goals for yourself now that you have taken part in this survey? (1 [not at all more likely] – 5 [extremely more likely]	M = 3.44; SD = 1.28	M = 3.33; SD = 1.10	$F(1, 147) = .53, p = .467$
Willing to spend an additional few minutes to formulate some goals for yourself today at the end of this survey? (1 [not at all] – 5 [extremely]	M = 3.28; SD = 1.21	M = 3.21; SD = 1.12	$F(1, 147) = .47, p = .495$
Self-identity Threat Activation	M = 1.22; SD = 1.08	M = 1.40; SD = 1.22	$F(1, 145) = .88, p = .349$

Mortality Salience Threat Activation	M = .25; SD = .52	M = .32; SD = .55	F(1, 145) = 1.01, p = .317
General Threat Activation	M = 1.14; SD = .79	M = 1.23; SD = .83	F(1,145) = .25, p = .617
More likely to set goals (1 [not at all more likely] – 5 [extremely likely])	M = 3.12; SD = 1.22	M = 3.32; SD = 1.14	F(1, 146) = .85, p = .359
Willing to spend additional time setting goals (1 [not at all] – 5 [extremely])	M = 2.96; SD = 1.22	M = 2.83; SD = 1.27	F(1, 146) = .72, p = .399

Post-Intervention Follow-Up Survey

Students in this subset of our sample also completed a post-intervention follow-up survey at the end of the term. The survey included questions about students' demographics, personality, and individual differences (e.g., failure mindset, academic procrastination, self-efficacy). The survey included items also included in the baseline survey, as well as additional items about the self. Students then answered questions about their goal behaviors and beliefs and whether the study was helpful to them.

Quantitative summary

We found a few surprising effects of condition on some dependent variables that are contrary to our predictions. Students in the control condition reported that they are the kind of person who consistently sets goals for themselves ($M = 3.46$; $SD = .80$) moreso than students in the value affirmation condition ($M = 2.95$; $SD = 1.14$; $F[1,72] = 7.83$, $p = .007$) and that they think they should be the kind of person who consistently sets goals ($M = 3.97$; $SD = .76$) moreso than students in the value affirmation condition ($M = 3.63$; $SD = 1.08$; $F[1,72] = 4.97$, $p = .029$). We also found that students in the control condition reported greater identification with academics ($M = 6.51$; $SD = .87$) than students in the value affirmation condition ($M = 6.11$; $SD = 1.09$; $F[1,72] = 5.42$, $p = .023$). Finally, we found that students in the value affirmation condition exhibited greater change in their academic identification ($M = -.42$; $SD = .83$) than students in

the control condition such that they became less identified with academics (*M* = .03; *SD* = .83; *F*[1,72] = 7.01, *p* = .010). However, it is difficult to interpret these results as the failure of random assignment may be partly responsible for these differences and the sample size is quite small.

We did not find any other condition differences on our dependent variables. See Table 6 for mean comparisons.

Table 6

Mean Comparisons for the Follow-Up Survey

Variable	Control Condition	Value Affirmation Condition	Inferential Statistics
MetaMindset (6 items; a = .74; 1 [Strongly Disagree] – 6 [Strongly agree])	M = 4.47; SD = .85	M = 4.56; SD = .72	F(1, 72) = .50, p = .500
Growth Mindset (4 items; a = .75; 1 = [strongly disagree] – 6 [strongly agree])	M = 4.39; SD = .93	M = 4.54; SD = .92	F(1,72) = .26, p = .614
Future Time Perspective (10 items; a = .82; 1 [very untrue] – 7 [very true])	M = 5.46; SD = .90	M = 5.23; SD = 1.07	F(1, 72) = 2.52, p = .116
Self-Discrepancy: Ideal ("To what extent do you wish you were the kind of person who consistently set goals for yourself"; 1 [not at all] – 5 [extremely])	M = 3.73; SD = 1.02	M = 3.50; SD = 1.08	F(1, 72) = 1.49, p = .226
Self-Discrepancy: Actual ("To what extent do you think you are currently the kind of person who consistently sets goals for yourself?"; 1 [not at all] – 5 [extremely])	M = 3.46; SD = .80	M = 2.95; SD = 1.14	F(1, 72) = .7.83, p = .007*
Self-Discrepancy: Ought ("To what extent do you think you should be the kind of person who consistently set goals for yourself?"; 1 [not at all] – 5 [extremely])	M = 3.97; SD = .76	M = 3.63; SD = 1.08	F(1, 72) = 4.97, p = .029*
GRIT (9 items; a = .72; 1 = [not like me at all] – 5 [very much like me])	M = 3.43; SD = .50	M = 3.34; SD = .65	F(1, 72) = .59, p = .444

Failure Mindset (4 items; a = .66; 1 = [strongly disagree] – 6 [strongly agree])	M = 4.19; SD = .96	M = 4.32; SD = .93	F(1, 72) = .06, p = .802
Academic Procrastination Scale (5 items; a = .87; 1 = [extremely uncharacteristic] – 5 [extremely characteristic])	M = 3.08; SD = .96	M = 3.08; SD = 1.02	F(1, 72) = .02, p = .902
Self-efficacy (10 items; a = .84; 1 = [not at all true] – 4 [exactly true])	M = 3.07; SD = .44	M = 3.15; SD = .47	F(1, 72) = .001, p = .973
Identification with Academics (1 item)	M = 6.51; SD = .87	M = 6.11; SD = 1.09	F(1, 72) = 5.42, p = .023*
Goal Behaviors (7 items; a = .68; 1 = [strongly disagree] – 7 [strongly agree])	M = 5.37; SD = .75	M = 5.23; SD = .70	F(1, 72) = 2.35, p = .130
Centrality of Goals	M = 4.35; SD = 2.09	M = 4.11; SD = 2.18	F(1, 72) = .93, p = .338
Goal Beliefs (7 items; a = .51; 1 = [completely disagree] – 5 [completely agree])	M = 3.93; SD = .50	M = 3.99; SD = .45	F(1, 72) = .001, p = .973
Percentage of People who Set Goals	M = 54.53; SD = 18.21	M = 55.76; SD = 20.55	F(1, 71) = .04, p = .843
Time Spent on Goals was Useful (1 [not at all useful' – 5 [extremely useful])	M = 3.62; SD = 1.16	M = 3.39; SD = 1.20	F(1, 72) = 2.59, p = .112
Satisfied with Goal Progress	M = 3.46; SD = 1.28	M = 3.21; SD = .94	F(1, 72) = 3.80, p = .055
More Likely To Set Goals	M = 3.49; SD = 1.30	M = 3.42; SD = 1.00	F(1, 72) = 1.06, p = .306
Willing to Spend Additional Time Thinking about Goals	M = 2.70; SD = 1.53	M = 2.63; SD = 1.34	F(1, 72) = .40, p = .532
Change in MetaMindset	M = .90; SD = .88	M = .70; SD = .47	F(1, 72) = .46, p = .500
Change in Growth Mindset	M = -.32; SD = 1.04	M = -.29; SD = .94	F(1, 72) = .21, p = .648
Change in Future Time Perspective	M = -.05; SD = .78	M = .03; SD = .90	F(1, 72) = .10, p = .751
Change in Grit	M = -.06; SD = .36	M = -.08; SD = .38	F(1, 72) = .10, p = .757
Change in Failure Mindset	M = -.21; SD = .82	M = -.30; SD = 1.23	F(1, 72) = .88, p = .351
Change in Academic Procrastination Scale	M = .39; SD = .73	M = .12; SD = .82	F(1, 72) = 2.13, p = .149
Change in Self-Efficacy	M = -1.70; SD = .62	M = -1.64; SD = .47	F(1, 72) = .21, p = .645

Change in Academic Identification	M = .03; SD = .83	M = -.42; SD = .83	$F(1, 72) = 7.01, p = .010*$
Change in Goal Behaviors	M = .01; SD = .93	M = -.09; SD = .65	$F(1, 72) = .45, p = .503$
Change in Centrality of Goals	M = .30; SD = 1.91	M = .08; SD = 2.01	$F(1, 72) = .36, p = .549$
Change in Percentage of People Setting Goals	M = -.22; SD = 19.96	M = -1.87; SD = 20.69	$F(1, 71) = .02, p = .880$
Change in Thinking about Goals is Useful	M = -.14; SD = 1.21	M = -.21; SD = 1.12	$F(1, 72) = .52, p = .475$

Qualitative Summary

We also included additional questions for qualitative analysis in the follow-up survey. Students answered the open-ended question "What, if any, obstacles got in the way of you being able to fully execute on the goals that you had set for yourself?" Common themes included struggling with time management, dealing with money issues or employment/work, personal issues, and family problems. However, only a small subset of students answered this question.

Students also answered the question "What seemed to help you make progress on the goals that you set for yourself?" Common themes included staying focused and motivated, relying on social support, having a positive attitude, and going to tutoring/improving skills. For example, students wrote "Believing in myself and having the support from my family has helped me stay focused in school and keeping up with my grades while also working," "Staying focused, list the things that would help me to remind that I have a goal to accomplish," and "See the positive things and the benefits it will come if continue working and studying at the same time."

Additionally, students wrote about whether thinking about their goals was or was not useful to them. Common themes were similar to the baseline survey and included help focusing, planning for the future, and a reminder of their goals or assessments of goal progress. For example, students wrote "It puts things in perspective and is a good reminder," "Thinking about

my goals today was very useful because I was able to think about my future goals and how I want to accomplish them," and "It is useful because it helps giving me a clear idea as what i want for my future." However, fewer students answered this question than in the baseline survey and many responses were vague or ambiguous about whether thinking about their goals was helpful or not.

Summary

A major goal of the current project was to understand students' experiences and use those insights to better inform future initiative investments. To do this, we utilized a thoughtful intervention that was informed by theory and empirically-guided but that had extensive customization for the current project. We collected data from students at two universities during which we had students reflect on their values and goals, complete a goal-setting writing exercise, and report on their beliefs about goals and goal-setting behaviors. Specifically, we sought to test whether a values affirmation would amplify the positive benefits elicited by the goal-setting activity by reducing the threat response elicited by the goal-setting activity and goal-related questions and improve students' goal-setting and success outcomes. Additionally, we explored whether the values affirmation would be particularly beneficial for students from under-represented groups, who may likely experience greater threat in response to the goal-related questions and task.

Unfortunately, we did not find strong evidence in support of these research questions. That is, we did not find robust differences between students in the values affirmation condition versus students in the control condition in their beliefs about goals, goal-setting behavior, or success outcomes.

However, we did reveal key insights into students' experiences that can better inform future interventions. Specifically, the goal-setting activity was very well-received by and resonated positively with students. Students set positive, constructive goals, which is positively related to goal achievement [6], [7]. The majority of students also indicated that the goal-setting activity was useful to them for a number of reasons and we identified common themes by which the goal-setting activity was useful for students. Goal-setting is an important predictor of goal achievement and success [6], [7], [10], and thus, it is important to note the positive impact that the goal-setting activity had on all students.

These insights may be fruitful for informing future interventions and delving deeper in the analysis of the goal-setting activity may be useful. For example, analyzing the quality of the goals that students set may be informative. Future analyses may also examine whether the values affirmation intervention affects the quality or time reference of the goals that students wrote about in the study. Additionally, future studies may empirically test whether the goal-setting activity was more useful for URM students.

Additionally, we recommend a replication of the current study. One major research question of the project was whether the values affirmation could reduce the threat response elicited by the goal-setting activity and goal-related questions, particularly for students from under-represented minority students. Though we did not find direct condition differences, we did find some evidence that under-represented minority students experienced threat from the activity. For example, minority group students and female students reported more negative goal beliefs on some measures than majority and male students, respectively. Additionally, a common theme in the qualitative analysis of why the goal-setting activity was not useful for students was that causes stress and anxiety. This suggests that the goal-setting activity may have activated a threat

response, at least from some students. Interventions and activities that negate this threat response or enhance more positive goal beliefs are important for increasing goal-setting behaviors and success outcomes. Thus, future work should further explore the activation of the threat response, the utility of different interventions in reducing it, and which groups of students most benefit from such an intervention.

Moreover, the goal-setting activity itself showed evidence of increasing positive goal-setting behavior, particularly for under-represented minority students. For example, minority group students reported that the goal-setting activity was more useful and that they were more likely to and willing to set goals for themselves after having taken part in the survey compared to majority group students. At the very least, the values affirmation did not interfere with the goal-setting activity so future studies may choose to include or not include the manipulation and still reap the benefits of the goal-setting activity.

Finally, we recommend a replication of the current intervention to further explore the effect of the values affirmation and goal-setting activity on student success outcomes. We were able to obtain GPA data from our student samples, however, each sample had major limitations regarding sample size and our ability to interpret the data (e.g., due to "W" grades and zeros). Future work should expand this investigation to robustly explore the effect of the values affirmation and goal-setting activity on student success outcomes in the current semester and subsequent semesters.

Conclusion

Students commonly experience invisible psychological barriers that negatively impact their performance [1] (e.g., motivated disengagement, limited access to manageable and actionable strategies). A robust literature has shown that such barriers can be mitigated by

scientifically informed interventions [2], [3]. In the current project, we built on past research showing the utility of values affirmations [21] and goal-setting [6], [7], [10], to create a thoughtful intervention designed to maximize students' goal-setting behavior and beliefs and success outcomes by mitigating any threat activation that might occur from the goal-setting activity. Though we did not find strong support for the benefits of the values affirmation (compared to the control condition) beyond that of the goal-setting exercise, we did find some support for the idea that the goal-setting activity may elicit feelings of anxiety and threat, particularly for students from under-represented groups. Additionally, we found strong evidence that students benefitted from the goal-setting activity and that the goal-setting activity was particularly beneficial for URM students.

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