

# Teacher- versus researcher-provided affirmation effects on students' task engagement and positive perceptions of teachers

Eric N. Smith<sup>1</sup>  | Christopher S. Rozek<sup>2</sup>  | Kody J. Manke<sup>3</sup> |  
Carol S. Dweck<sup>1</sup> | Gregory M. Walton<sup>1</sup>

<sup>1</sup> Department of Psychology, Stanford University, Stanford, California, USA

<sup>2</sup> Department of Education, Washington University in St. Louis, St. Louis, Missouri, USA

<sup>3</sup> Psychology Department, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

## Correspondence

Eric N. Smith, Population Research Center, University of Texas at Austin, Austin, TX, USA. 78712.

Email: [ensmith@utexas.edu](mailto:ensmith@utexas.edu)

\* Eric N. Smith and Christopher S. Rozek contributed equally to this work.

## Abstract

Values-affirmation interventions have the potential to improve students' experience and achievement in school. Researchers have proposed that these benefits are greatest when affirmation exercises are delivered by teachers (versus researchers). The current research provides an experimental test of whether describing affirmation activities as provided by teachers increases students' engagement with the activities and students' positive perceptions of their teachers. In a 2×2 field experiment, delivered to students during their first year of high school, students completed either an affirmation or matched control activity purportedly provided by either teachers or researchers. We found that describing affirmation activities as provided by teachers led students to perceive that teachers at their school were more interested in students' broader lives outside of school and provided marginally more care and support to students, as compared to the same affirmation exercise described as provided by researchers and control activities attributed to either source. In addition, teacher-provided affirmation activities prompted students to write more during the activities. The present study provides initial evidence that affirmation interventions can improve students' perceptions of their relationship with their teachers—a potent driver of student success—but only when

affirmation activities are seen as coming from and of interest to teachers.

#### KEYWORDS

Adolescents, Broad Regard, Education, Intervention Implementation, Teacher-Student Relationships, Values Affirmation

A range of social-psychological interventions delivered in schools have been found to positively impact students' psychological well-being, motivation, and success in the classroom. Many of these interventions target students' beliefs about who they are, who they are capable of becoming, and how schoolwork fits into their long-term goals (e.g., Hulleman & Harackiewicz, 2009; Oyserman et al., 2002; Paunesku et al., 2015; Walton & Wilson, 2018). However, students receiving these interventions may reasonably wonder why they are completing the intervention activities. They may ask themselves, "Who am I writing this for, and what is their purpose in having me do it?" Many implementations of these interventions are provided in school and introduced by teachers, in ways that may signal what teachers care about and how they view their students. Yet, it is unclear from past research how explicitly attributing intervention exercises to teachers versus others (e.g., researchers) may affect students' responses and experiences. As social-psychological interventions proliferate in educational settings, it is important to understand how these interventions benefit students and the extent to which they may do so by influencing relationships with their teachers.

One such intervention, referred to as *values affirmation*, is based on self-affirmation theory, which posits that people are motivated to protect their sense of themselves as multifaceted, adequate, and good. One's sense of self is supported by the many components that make up a person's self-view—for example, their social roles, personal characteristics, and important values. When a particular aspect of the self is threatened, the person may perceive a global threat to their self and engage in self-defensive processes (Sherman & Cohen, 2006). For example, students who fail an important examination may myopically focus on the threat and feel it reflects negatively on their overall sense of self (Beilock et al., 2017). Values affirmation interventions aim to ameliorate this self-threat by asking students to reflect on values important to them, typically unrelated to the area of threat. For students, nonacademic values might include being creative, religious values, or relationships with family and friends. Affirming these values is thought to broaden students' self-perspective and decrease their focus on feeling threatened and negative about themselves (Critcher & Dunning, 2015; Cohen & Sherman, 2014; Sherman & Cohen, 2006; see also Steele, 1988; Walton et al., 2012). By calling to mind nonthreatened personal values, students can more easily view threats in the broader context of their lives and return to thinking about the "big picture" rather than perseverating on and responding defensively to the threat (Schmeichel & Vohs, 2009).

This seemingly simple activity has shown great promise for improving students' academic achievement and psychosocial outcomes in school contexts when students feel threatened (e.g., Borman et al., 2018; Cohen et al., 2006; Cook et al., 2012; Harackiewicz et al., 2014). Affirmation interventions are theorized to work by mitigating recursive threat processes, including rumination, defensiveness, or distress in response to challenging academic situations, and thus can sustain academic investment (Sherman et al., 2020). A central component of this theory is that affirmation activities particularly benefit students under threat. For example, students who contend

with the stress of a transition to a new school environment (e.g., moving from middle school to high school) feel pressure to prove themselves and understand how they fit in a new environment (Rozek et al., 2019). Similarly, students under *social identity threat*—that is, students who may be treated or viewed differently based on a marginalized or stereotyped identity (Steele et al., 2002)—benefit most from affirmation exercises in school contexts, as found in a number of studies (e.g., Cohen et al., 2006; Miyake et al., 2010; Sherman et al., 2013). Other studies have found that all students can benefit from affirmation interventions when delivered prior to a particular stressor (Creswell et al., 2005; Manke et al., *in press*; Sherman et al., 2009), and that all students can have immediate psychological benefits from affirmation interventions (e.g., Critcher & Dunning, 2015; Crocker et al., 2008). By buffering students against defensive responses that lead to negative recursive cycles in the wake of such threat, affirmation interventions may promote lasting benefits by changing students' educational trajectories. For instance, affirmation can help racial-minoritized students stay in nonremedial high school tracks and then attend more selective colleges (Goyer et al., 2017).

However, even as many studies show benefits of values affirmation interventions delivered in schools, others have found underwhelming effects (e.g., Bancroft et al., 2017; de Jong et al., 2016; Dee, 2015; Hanselman et al., 2017; Harackiewicz et al., 2016). Indeed, the effect sizes found for values affirmation interventions range from virtually zero (Hayes et al., 2019) to substantially positive (Sherman et al., 2013). A recent meta-analysis (Wu et al., *in press*) found an average effect size on academic achievement for students who contend with social identity threat (e.g., those holding marginalized or underrepresented identities) of *Hedges' g* = 0.15 (approximately a *Cohen's d* effect size of an equal magnitude). Although this effect size on grade outcomes is valuable when scaled up across many schools (Kraft, 2020; Lazowski & Hulleman, 2016; see also Borman et al., 2019; Paunesku et al., 2015; Yeager et al., 2019), the heterogeneity in treatment effects has motivated researchers to further examine the conditions under which affirmation interventions are more and less likely to benefit students (Bradley et al., 2016; Hanselman et al., 2017; Sherman et al., 2020).

## THE ROLE OF TEACHERS IN AFFIRMATION EXERCISES

Teachers are typically active participants in providing affirmation activities to students, even if blind to students' condition assignment. We theorize that this role itself can send a powerful message to students—knowing that their teacher is asking about each student's values may shift students' sense of their relationship with their teacher. An informal values affirmation implementation guide highlights that affirmation researchers have long considered the role of the teacher, noting, "Importantly, students are led to believe that the intervention will be read by their teachers, as it is presented as a normal classroom activity, not a research project. This may be important if a driver of intervention effects is the perception that one's teacher cares about one's values" (Cohen et al., 2010, p. 2). In recent years, the recommendation that affirmation exercises should be provided as a classroom activity has proliferated in the published literature (e.g., Bradley et al., 2016; Sherman et al., 2020). However, this "best practice" has neither been tested experimentally nor examined through a clear theoretical framework for why this aspect of the procedure may be important.

Building on this prior reasoning, we theorized that teacher-provided values affirmation exercises may be most effective because they signal how teachers view their students. When students are asked to share parts of themselves that may be less visible in the classroom within the

affirmation exercises, teachers may appear interested in multiple dimensions of students' identities, values, and interests, which we refer to as *broad regard* (Smith, 2020). Recent research has found that students who perceive greater broad regard from instructors are more motivated in school, controlling for other student perceptions of their teachers (Rozek et al., 2020). Related identity-threat research has shown that people are more likely to experience performance-undermining threat when they feel that others view them through a narrow lens (Steele, 1997; Steele et al., 2002), even when that lens is seemingly positive (Cheryan & Bodenhausen, 2000). In contrast, feeling that a teacher sees them broadly may mitigate students' experience of threat, reducing the need to expend resources on suppressing negative thoughts and remaining vigilant for threat-relevant cues, thereby freeing people to perform better on challenging tasks (Schmader et al., 2008).

If values affirmation interventions bolster students' perceptions of teachers' broad regard for them, then these exercises have the potential to positively impact teacher–student relationships, which are among the strongest predictors of students' academic success, belonging, and well-being in school (Goodenow, 1993; Juvonen, 2006; Rosenfeld et al., 2000; Rozek & Gaither, 2020; Wentzel, 1997). Indeed, affirmation exercises can boost students' trust in teachers and other adults at school (Binning et al., 2019; see also Sherman & Cohen, 2006), as well as students' sense of belonging (Cook et al., 2012). Better teacher–student relationships can increase the odds that students take advantage of academically focused supports that are provided by teachers, further promoting students' academic growth (e.g., Phillippo & Stone, 2013; Wentzel et al., 2010; see also Lepper et al., 1993). Yet, the role of the teacher and the potential for affirmation exercises in strengthening teacher–student relationships remains understudied and unclear.

## AMPLIFYING BROAD REGARD SIGNALS DURING AFFIRMATION INTERVENTIONS

The signaling of broad regard from the teacher is not simply an incidental consequence of teacher-provided affirmation activities; it can be and has been emphasized in how affirmation activities are introduced. For example, the script used by teachers in an early affirmation intervention study (Cohen et al., 2006) read, “In class today, you’re going to be doing some writing for me. I am interested in learning more about you” (G. L. Cohen, personal communication, December 8, 2018<sup>1</sup>). Follow-up sessions, in which students reflect again on their values, have also been introduced in ways that signal this broad regard by implying that the teacher read what students wrote. In one study (Sherman et al., 2013, Study 1), a follow-up session began, “Last winter, you chose [value selected previously] as one of your most important things” (D. K. Sherman, personal communication, December 17, 2018). From a student’s perspective, this sentence could mean that not only would the teacher have needed to read their responses from prior sessions, the teacher would also have needed to remember what the student wrote to present this follow-up activity. Thus, the

<sup>1</sup> Later implementations (e.g., Sherman et al., 2013) removed the wording “for me” and “I am interested in learning more about you,” opting for a simpler introduction (e.g., “In class today, you’re going to be doing a short writing exercise”; D. K. Sherman, personal communication, December 17, 2018). This was likely done out of a concern that providing this explicit reason may prompt an extrinsic motivation to please the teacher, or may appear disingenuous if students later approached the teacher expecting that their responses had been read when in fact they had not been read (G.L. Cohen, personal communication, January 25, 2019). However, when provided by a teacher as a classroom writing exercise, even the simplified introduction may lead students to infer that their writing is for the teacher and will be read as any other classroom assignment would be.



implication of broad regard has been embedded, at times, in recommended practices and implementation techniques, but not fully articulated or consistently encouraged in the published literature.

Conversely, presenting affirmation activities as solely part of a research study may convey that teachers are not involved in the project and will not see students' responses, and thus may undermine students' engagement with the exercise and curtail any potential benefits to teacher–student relationships. Consistent with this possibility, a number of replication efforts have found non-significant affirmation effects when researchers were physically present during administration (e.g., de Jong et al., 2016, Study 2; Hayes et al., 2019, Study 1; Protzko & Aronson, 2016). We propose that *who delivers* the intervention activities may be less important than *who it is for* and *why it is being given*. Indeed, values affirmation interventions *can* be effective when outside researchers must deliver the activities (e.g., due to institutional regulations). In one study, affirmation exercises were provided by researchers but represented as supported by teachers and school administrators, which improved standardized math test performance for academically stereotyped students (Lokhande & Müller, 2019; see Sherman et al., 2020). Moreover, a recent meta-analysis found that students holding marginalized or underrepresented identities earned higher grades when provided values affirmation activities as part of a classroom activity, compared to affirmation activities presented as a research activity or when the framing was unspecified (Wu et al., *in press*). Yet, as noted, this factor has not yet been subject to experimental manipulation; nor has research examined how the ostensible source of affirmation activities could affect students' engagement with these activities and their perceptions of their relationships with teachers.

The lack of empirical data on the source of affirmation activities may arise in part from the fact that many procedures for implementing affirmation interventions ask instructors to avoid giving students *any* explicit reason for completing the activities (e.g., Cohen et al., 2006; Miyake et al., 2010). However, providing no clear reason for why students are doing a task may create attributional ambiguity for students and a challenging interaction for teachers to navigate. If students ask teachers to explain the reason for completing the activities, many teachers' default explanations are precisely those theorized to undermine intervention effectiveness. In particular, many teachers state that the writing activities are being done because they are part of a research study (Bradley et al., 2016; Hanselman et al., 2017). Hanselman and colleagues (2017) found that even when researchers asked teachers to avoid describing the activities as part of a research project, nearly 40% of teachers still reported having provided this reason to students, among other explanations that could undermine its effectiveness (Table 1). Although these data were collected from retrospective reports near the end of the school year and thus are prone to biased or inaccurate recall, they nonetheless suggest that many teachers may find it challenging to provide the activities to students without a clear rationale. Providing a framing that can clarify the purpose of affirmation activities without diminishing its effectiveness may reduce some of these implementation difficulties, help explain prior treatment heterogeneity, and potentially boost future intervention effectiveness.

## PRESENT RESEARCH

In the present research, we tested the impact of students' beliefs about *for whom* they were completing the activities—teachers or researchers—on students' engagement with the affirmation activity and their positive perceptions of their relationship with their teachers. We conducted a

**TABLE 1** Teacher-provided explanations for affirmation activities

Provided explanation	Percentage reporting each explanation
The affirmation activity was described as...	
... part of a research study.	38.5%
... good for you.	19.2%
... something you have to do.	7.7%
... a writing test.	1.9%

*Note:* This table summarizes data collected from teachers reported in the Hanselman et al. (2017) studies. Options were selected from a dropdown menu; teachers could select multiple explanations. Percentages reported are based on the 52 teachers (59.8% of the sample) who returned end-of-year surveys over a 2-year study of values affirmation interventions across an entire school district.

2×2 study, crossing an affirmation or matched control condition with the perceived source of the activities. That is, ninth grade students completed standard affirmation or control activities, purportedly created by and of interest to either teachers or outside researchers. Given the ambiguity that would be created in providing affirmation activities without a clear purpose, students across all conditions were informed that the creators of the activities (either teachers or researchers) hoped to learn more about the students and what they think.

We hypothesized that the level of students' engagement in the activities and their perceptions of their relationships with their teachers would be improved only when they believed that they were receiving the affirmation activities from teachers. We expected affirmation and control activities believed to be coming from researchers would not convey that teachers regard students broadly, given that only researchers would have access to students' writing. Similarly, we expected that control activities, even when delivered by teachers, would not facilitate attributions of broad regard because the control activities ask students to write about the values *least* important to them and why they might be important to *other* people (Cohen et al., 2006). Thus, the control activities would be unlikely to convey that the teacher (or researcher) was interested in getting to know about students' personally relevant values. For those reasons, we hypothesized that only affirmation activities provided by teachers would be effective in improving students' perceptions of their relationship with their teachers, particularly perceptions of teachers' broad regard, in addition to prompting greater student engagement in the activities.

Although many affirmation intervention studies have shown that benefits were moderated by student characteristics (i.e., those holding identities under threat within that setting; see Sherman et al., 2020; Wu et al., in press), we expected main effects of the affirmation activities in the current study for two primary reasons. First, the ninth grade students in our study were in the transition year of their high school, which in itself may be a particularly threatening experience for all students (Rozek et al., 2019), and thus values affirmation activities may be similarly beneficial for all students under this threat. Second, experimental studies have often shown main effects on many immediate engagement and psychological outcomes (e.g., Critcher & Dunning, 2015; Crocker et al., 2008), which was the focus in the current study. Relatedly, some field interventions have found that all students may engage with affirmation activities similarly (e.g., Shnabel et al., 2013; Tibbetts et al., 2016), even when only subgroups of students go on to additionally benefit with higher grades. Thus, our primary hypotheses test main effects for all students. Additional moderation analyses by social identity threat can be found in the Supplemental Online Materials.



## METHOD

### Participants

Students were recruited from a diverse school in the Southeastern United States through the Character Lab Research Network (<https://characterlab.org/>). As part of our participation in this network, we did not have direct control over the sample size achieved, but were informed to expect approximately 200–400 participants. We received data from 364 ninth grade students who completed the activities. We excluded two participants who inadvertently completed additional experimental materials unrelated to the current study and one participant who did not choose values but was able to continue due to a survey programming error. We included all other participants as our analytic sample ( $N = 361$ ). This sample size provided us approximately 80% power to find an effect size of  $d \geq 0.30$  for main effects and interaction effects in the  $2 \times 2$  model, assuming a near-zero effect of condition within research-delivered activities, and a significant effect of condition within teacher-delivered activities. It also provided approximately 80% power to find an effect size of  $d \geq 0.40$  for follow-up simple effects between individual conditions. The sample (55% female; 45% male) was racially diverse (White/Caucasian: 35%; Black/African American: 32%; Hispanic/Latinx students: 30%; multiracial: 1%; another racial/ethnic group: 2%), based on school records. The majority of participants qualified for free or reduced lunch (55%).

### Procedure

This study took place during the Spring term of ninth grade, approximately 7 weeks before the end of the school year. No researchers were present in the classrooms and, although teachers at the school facilitated the study by directing students to the online materials, the first page of the study website clarified the purpose and source of the materials. As in prior affirmation work, teachers facilitating the activities were asked to present the activities in a manner that did not specify why the students were completing them or for whom. However, because this experiment was facilitated by a research network with standard introductory scripts, teachers briefly described a general reason for the activities without disclosing their source (e.g., “Today, our class will complete some online activities as a part of a special project to help improve educational practices for all students.”).

Upon entering the study website, students were randomly assigned in a crossed 2 (Affirmation: treatment or control)  $\times$  2 (Source: teachers or researchers) design. Students first read that the activity was designed by and of interest to either teachers at their school or external researchers for the purpose of learning more about students. In the “researcher” conditions, students read that researchers had developed the materials (e.g., “Researchers from all around the country have teamed up for this project to learn more about what students think”). In the “teacher” conditions, students read that the exercises were developed by 9th and 10th grade teachers at their school (e.g., “We, the 9th and 10th grade teachers at [School], have teamed up for this project to learn more about you and what our students think”). Teachers were not provided student responses in any condition, precluding the possibility that results would be driven by changes in the teachers’ perceptions of their students (see Bowen et al., 2013; Gehlbach et al., 2016). In addition, students were informed that their responses would be anonymous, but still read without their name attached.

Students then completed either the affirmation activity or the control activity. In the affirmation conditions, students completed a typical values affirmation exercise. They identified values important to them among a list of 11 nonacademic values, and then wrote about why those values were important to them (see Bradley et al., 2016 for further details on procedure). In the control conditions, students completed a standard control writing exercise (e.g., Cohen et al., 2006). They identified and reflected on the values *least* important to them, and how these values might be important to other people. The list of values across all conditions was adapted slightly from prior affirmations because the collaborating school expressed concerns about asking students about certain topics. In particular, the value “Involvement in Government or Politics” was replaced with “Involvement in Business” and “Spiritual or Religious Values” was replaced with “Enjoying Nature or the Outdoors.”

At the end of the activities, participants were asked whether they would be willing to be texted to complete follow-up surveys about their school experiences. Those who agreed were sent a brief survey once per day after each school day for 2 weeks. However, due to very low participation rates (<10% of students completed the first two surveys) and issues linking these data with participants, we did not analyze these measures for research purposes.

## Measures

### Primary measures

Our primary measures addressed the extent to which students engaged in the activities, the degree to which students felt that they were regarded broadly by their teachers, as well as two measures that reflect an improvement in teacher–student relationships: perceptions of teacher care and support, and comfort sharing personal information with teachers.

As our measure of task engagement, we examined how many words each participant wrote during the affirmation or control exercises. Given that word count distributions are often skewed, we conducted supplemental nonparametric bootstrapped analyses and report bootstrapped  $p$ -values for this outcome ( $N_{\text{iterations}} = 10,000$ ). This measure does not assess the extent to which students may benefit from the activities. Rather, it reflects how much effort students put into the exercise—a likely precondition for an affirmation to be psychologically impactful and thus beneficial. Researchers have attempted to increase engagement in affirmation exercises through a variety of means. In one study, where affirmation interventions were required to be delivered by researchers, the activities were turned into a comic strip due to concerns of lower student engagement when delivered by outsiders (Lokhande & Müller, 2019; Sherman et al., 2020). To the extent the affirmation interventions may have a greater impact when students adequately engage in the activities (Borman et al., 2018), increases in words written could signify a greater potential for long-term benefits.

We assessed students’ perceptions of teacher broad regard—feeling teachers are interested in multiple dimensions of students’ identities, values, and interests—using three items: (“My teachers at [School] want to get to know their students,” “In general, my teachers at [School] care about students’ lives outside of class,” and “My teachers value each student as a whole person.” Students responded on a scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Cronbach’s alpha was .90.

We also collected two measures of student-reported perceptions of their relationships with their teachers. The first measure included two items ( $r = .78$ ) assessing students’ feelings of care and





support from their teachers (i.e., “I feel like students can count on teachers at [School]” and “I feel like teachers at [School] care about students”). Students responded on a scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). The second measure included six items assessing how comfortable students would feel disclosing information about a range of topics with their teachers, such as “A hobby or activity that is important to you” or “A concern you have about your future.” Students responded on a scale of 1 (*Not at all comfortable*) to 5 (*Extremely comfortable*). Cronbach’s alpha was .82.

## Additional measures

We assessed additional exploratory items with the goal of better understanding how affirmation exercises may longitudinally impact students’ feelings of competence and belonging in school at large. However, we expected affirmation effects on these variables only after the passage of time during which students could interact in their schools with the new perspective provided by the affirmation. Unfortunately, we were unable to follow up with these students the following year as initially anticipated, and thus do not discuss these measures further in the current paper. Details on all survey measures can be found in the Supplemental Online Materials.

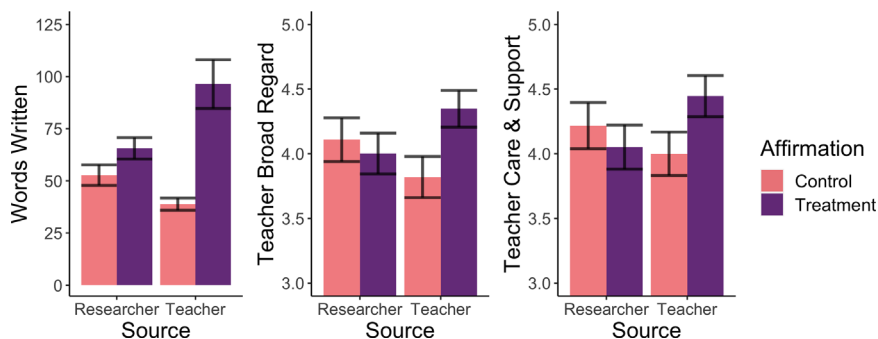
## RESULTS

Each dependent variable was regressed on centered orthogonal contrasts to test our hypotheses. Our primary hypothesis, tested in our primary model, was that teacher-provided affirmations (coded as +3/4) would prompt greater student engagement and improved perceptions of their teachers compared to the other three conditions (each coded as -1/4). We also conducted a secondary model with orthogonal contrasts to better understand how the component conditions affected outcomes. In the secondary model, the first contrast tested for a main effect of affirmation conditions (coded as +1/2), compared to matched control conditions (coded as -1/2). The second contrast tested for a main effect of having the exercises come from teachers (coded as +1/2) compared to researchers (coded as -1/2). The third contrast tested for an interaction between these two main effects. Where marginal or significant interactions were found, we also report simple effects of the affirmation condition compared to control conditions separately for teacher-delivered and researcher-delivered activities.

### Task engagement

As hypothesized, the primary model found that the teacher-provided affirmation activities elicited greater engagement than the other three conditions, as students wrote 84% more in this condition,  $\beta = 0.62$ ,  $t(357) = 5.40$ ,  $p < .001$ , 95% *CI* [0.40, 0.85],  $p_{boot} < .001$ .

Results from our secondary model showed that there was a significant main effect of affirmation versus control on the amount written,  $\beta = 0.50$ ,  $t(357) = 4.96$ ,  $p < .001$ , 95% *CI* [0.30, 0.70],  $p_{boot} < .001$ , a nonsignificant difference between teacher-delivery and researcher-delivery,  $\beta = 0.12$ ,  $t(357) = 1.19$ ,  $p = .24$ , 95% *CI* [-0.08, 0.32],  $p_{boot} = .20$ , and a significant two-way interaction,  $\beta = 0.32$ ,  $t(357) = 3.15$ ,  $p = .002$ , 95% *CI* [0.12, 0.52],  $p_{boot} < .001$ . Follow-up analyses indicated that when the



**FIGURE 1** Study results on the number of words written during the affirmation activities and participants' perceptions of broad regard and caring support from teachers at their school. Error bars represent  $\pm 1$  standard errors of the mean [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

activities were delivered by teachers, students wrote more in the affirmation condition compared to the control condition,  $\beta = 0.82$ ,  $t(357) = 5.73$ ,  $p < .001$ , 95% *CI* [0.54, 1.10],  $p_{boot} < .001$ . When the activities were delivered by researchers, students wrote similar amounts in the affirmation and control conditions,  $\beta = 0.18$ ,  $t(357) = 1.28$ ,  $p = .20$ , 95% *CI* [-0.10, 0.46],  $p_{boot} = .11$  (Figure 1).

## Perceived teacher broad regard

As hypothesized, we found in our primary model that students in the teacher-provided affirmation condition perceived greater broad regard from teachers at their school compared to students assigned to the other three conditions,  $\beta = 0.25$ ,  $t(355) = 2.05$ ,  $p = .041$ , 95% *CI* [0.01, 0.49].

We also found a two-way interaction,  $\beta = 0.21$ ,  $t(355) = 2.02$ ,  $p = .044$ , 95% *CI* [0.01, 0.42], with no significant main effect by affirmation condition,  $\beta = 0.14$ ,  $t(355) = 1.34$ ,  $p = .18$ , 95% *CI* [-0.07, 0.35], or source,  $\beta = 0.02$ ,  $t(355) = 0.18$ ,  $p = .86$ , 95% *CI* [-0.19, 0.23]. When the activities were delivered by teachers, students perceived greater teacher broad regard for them in the affirmation condition compared to the control condition,  $\beta = 0.35$ ,  $t(355) = 2.36$ ,  $p = .019$ , 95% *CI* [0.06, 0.65]. When the activities were delivered by researchers, students perceived similar levels of broad regard in the affirmation and control conditions,  $\beta = -0.07$ ,  $t(355) = -0.48$ ,  $p = .63$ , 95% *CI* [-0.36, 0.22].

## Perceived teacher relationship quality

### Care and support

In our primary model, we found that students in the teacher-provided affirmation condition perceived teachers at their school to be marginally more caring and supportive compared to students assigned to the other three conditions,  $\beta = 0.22$ ,  $t(353) = 1.83$ ,  $p = .068$ , 95% *CI* [-0.02, 0.46].

In our secondary model, there was again a consistent, albeit marginal, two-way interaction,  $\beta = 0.19$ ,  $t(353) = 1.80$ ,  $p = .072$ , 95% *CI* [-0.02, 0.40], with no significant main effects of affirmation condition,  $\beta = 0.09$ ,  $t(353) = 0.82$ ,  $p = .41$ , 95% *CI* [-0.12, 0.30], or source,  $\beta = 0.05$ ,  $t(353) = 0.52$ ,  $p = .60$ , 95% *CI* [-0.15, 0.26]. Simple effects analyses indicated that when delivered by teachers, students reported marginally greater teacher care and support in the affirmation condition compared

to the control condition,  $\beta = 0.28$ ,  $t(353) = 1.86$ ,  $p = .064$ , 95% *CI*  $[-0.02, 0.57]$ . When the activities were delivered by researchers, students reported similar amounts of teacher care and support in the affirmation and control conditions,  $\beta = -0.10$ ,  $t(353) = -0.69$ ,  $p = .49$ , 95% *CI*  $[-0.40, 0.19]$ .

## Comfort disclosing to teachers

In contrast to the three other outcomes, our primary model indicated that students in the teacher-provided affirmation condition did not report greater comfort disclosing personal information to teachers than students in the other conditions,  $\beta = -0.06$ ,  $t(355) = -0.47$ ,  $p = .64$ , 95% *CI*  $[-0.30, 0.18]$ .

In our secondary model, there was also no significant two-way interaction,  $\beta = 0.06$ ,  $t(355) = 0.61$ ,  $p = .54$ , 95% *CI*  $[-0.14, 0.27]$ , main effect of affirmation condition,  $\beta = 0.02$ ,  $t(355) = 0.16$ ,  $p = .87$ , 95% *CI*  $[-0.19, 0.22]$ , or main effect of source,  $\beta = -0.17$ ,  $t(355) = -1.59$ ,  $p = .11$ , 95% *CI*  $[-0.38, 0.04]$ .

## DISCUSSION

The current research provides an experimental test of whether describing affirmations as provided by teachers can improve students' engagement with the affirmation materials and perceptions of their relationship with their teachers. In our study, high school students completed values affirmation or control exercises in the Spring of ninth grade purportedly for either their teachers or external researchers. When students completed the exercise for researchers, the affirmation exercise produced no greater engagement and no improvements in perceptions of their relationships with their teachers than the control exercise. However, when the exercise was represented as coming from teachers in an effort to learn more about their students, students engaged more with the affirmation activity by writing more, and they perceived their teachers as more positive relationship partners as compared to students who completed the teacher-provided control activity. In other words, only when the affirmation exercise was attributed to students' teachers, and not when it was attributed to external researchers, did students engage more in the activity and draw more positive inferences about how their teachers regarded them. Given the power of recursive processes in teacher–student relationships, where initial positive perceptions and attributions can build to sustain better interactions and relationships over time (e.g., Goyer et al., 2019; Sherman et al., 2013; Rosenthal & Jacobson, 1968; see also Walton & Wilson, 2018), these results provide initial insight into how teacher-provided affirmation interventions may improve students' long-term outcomes.

Affirmation interventions have traditionally been understood primarily in terms of *intrapersonal* processes of threat mitigation. Yet, the current study demonstrates that affirmation activities, when introduced by a teacher, can shift students' perceptions of their relationships with teachers at their school. This opens the door to a network of *interpersonal* social-relational processes, which may contribute to academic gains (Cook et al., 2012). Indeed, as noted earlier, caring and supportive teacher–student relationships are one of the most significant predictors of students' engagement and success in school (Borman et al., 2019; Pyne, 2019; Quin, 2017). Moreover, among 10 factors proposed to influence school belonging, teacher support is one of the strongest predictors of feelings of belonging in school—more so than parent support, peer

support, and academic motivation (Allen et al., 2018; see also Furrer & Skinner, 2003; Goodenow, 1993; Pyne et al., 2018).

Although we found many teacher-provided affirmation benefits, we did not find a significant effect on students' anticipated comfort discussing a variety of topics with teachers. That is, immediately after completing the activity, students who received teacher-provided affirmation intervention did not feel more comfortable disclosing to teachers, even though they did view their teachers as being more interested in their lives as a whole and perceived their teachers as (marginally) more supportive of and caring toward students. However, these items reflect only a snapshot in time, before students have had a chance to interact with their teachers informed by a new lens for understanding teachers. Perhaps, over time, students' more positive perceptions of their teachers could lead to greater comfort disclosing. More research is needed to track how students' perceptions of and relationships with teachers develop over time following the completion of teacher-provided affirmations to answer this question more fully.

It is noteworthy that even though teachers introduced every condition in the present study and directed students to the study website, students' understanding of who had purportedly designed the activities and would read students' responses altered students' engagement in the activities. The present results suggest that the inferences students make when they believe they are responding to their teachers are impactful, above and beyond who hands out the activities or directs students to the activity website. In addition to informing theory, this insight has practical and fidelity implications. These findings would suggest that students' psychological experience of feeling instructors want to learn about their values and broader lives may be as important as the content of the materials and procedures for who delivers the activities, potentially allowing greater flexibility to adapt affirmation interventions to new contexts (see Easterbrook et al., in press; Sherman et al., 2020).

On the other hand, as delineated by past work, certain dimensions in the implementation of the affirmation activities may be particularly important to maintain (Binning & Browman, 2020; Easterbrook & Hadden, 2020; Easterbrook et al., in press). For example, although students' responses to the affirmation exercise were not in fact read by teachers in the current study (in any condition), we took great care to emphasize to students that their answers would be read anonymously. We suspected that if students believed that their responses would be read and were not anonymous, students could feel rejected if their teacher did not seem to remember their values or respond to this new information adequately. Conversely, if students expected that their responses would not be carefully read, students would have lower confidence that the teacher actually cared about their values.

One fruitful avenue for future research is to consider how else affirmation interventions may convey broad regard to students. For example, how might students' experience change if teachers *actually read* students' responses? Indeed, research has suggested that when teachers learn about students' values, affirmation interventions can promote greater improvements in students' grades as compared to when students complete the same affirmation activities but their responses are not read by teachers (Bowen et al., 2013). If teachers read students' responses, will they engage with students in ways that reinforce students' experience of broad regard in the classroom?

It may also be possible to structure ways for teachers to follow-up with students based on their responses. For example, a teacher could acknowledge a student's reported values and connect them with something they too care about. Perhaps doing so could both reinforce the broad regard in which the student is held and further strengthen specific student-teacher relationships (cf., Gehlbach et al., 2016). Yet, there are also risks to this strategy. First, if it is

not practical for teachers to read and adequately respond to each student, it is presumably best not to set up this expectation in students. Students could feel rejected if, for example, their teacher does not seem to remember the values they wrote about. Second, if students believe teachers will read identifiable responses, there may be greater risk that the experience may feel academically or personally evaluative in ways that could undermine the benefits of the affirmation experience. In this case, it may be particularly important to clearly convey teachers' nonevaluative purposes in reading students' individual responses (e.g., "to learn more about you, your values, and what is important to you"). Given these risks, it could thus be best for students to complete the exercise without the specific expectation that a teacher will read their individually identified responses, even if teachers later do and respond positively.

## CONCLUSION

These findings are a promising step in identifying the positive effects on student engagement and perceptions of relationships with their teachers when affirmation activities appear to be provided by and of interest to teachers. Further, meta-analytic evidence suggests that teacher-provided affirmation interventions may yield additional benefits on students' academic outcomes over time (Wu et al., in press). Although the self-report outcomes collected in the current study can be important in and of themselves (Moore et al., 2015), particularly when they address students' relationships with their teachers, we have not yet established whether they contribute to gains in students' academic achievement. Future research can directly address this gap by manipulating the representation of the source of affirmation activities and tracking the impact on students' grades in school over time.

In sum, these findings reinforce the importance of being deliberate in how affirmation activities are introduced to students. Framing the purpose and source of affirmations—considering a student's perceptions of *for whom* and *for what purpose* they are completing the activities—may improve treatment fidelity, inform our understanding of the beneficial processes instigated by affirmations, and potentially increase the likelihood of improved outcomes for students. We hope this article spurs researchers to keep in mind the role teachers can play in interventions and further explore how existing teacher–student relationships can be utilized to promote intervention effectiveness.

## ACKNOWLEDGMENTS

This research was supported by Character Lab, and facilitated through the Character Lab Research Network, a consortium of schools across the country working collaboratively with scientists to advance scientific insights that help kids thrive. This material is also based upon work supported by the National Science Foundation Graduate Research Fellowship under Grant DGE-1656518. We would also like to thank Geoff Cohen and David Sherman for providing materials from past studies.

## ORCID

Eric N. Smith  <https://orcid.org/0000-0001-5050-706X>

Christopher S. Rozek  <https://orcid.org/0000-0003-4389-8538>

## REFERENCES

- Allen, K., Kern, M.L., Vella-Brodrick, D., Hattie, J. & Waters, L. (2018) What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 30(1), 1–34. <https://doi.org/10.1007/s10648-016-9389-8>
- Bancroft, A., Bratter, J. & Rowley, K. (2017) Affirmation effects on math scores: The importance of high school track. *Social Science Research*, 64(1), 319–333. <https://doi.org/10.1016/j.ssresearch.2016.10.001>
- Beilock, S.L., Schaeffer, M.W. & Rozek, C.S. (2017) Understanding and addressing performance anxiety. In A.J. Elliot, C.S. Dweck & D.S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (2nd ed.). New York: Guilford Press, pp. 155–174.
- Binning, K.R. & Browman, A.S. (2020) Theoretical, ethical, and policy considerations for conducting social-psychological interventions to close educational achievement gaps. *Social Issues and Policy Review*, 14(1), 182–216. <https://doi.org/10.1111/sipr.12066>
- Borman, G.D., Rozek, C.S., Pyne, J. & Hanselman, P. (2019) Reappraising academic and social adversity improves middle-school students' academic achievement, behavior, and well-being. *Proceedings of the National Academy of Sciences of the United States of America*, 116(33), 16286–16291. <https://doi.org/10.1073/pnas.1820317116>
- Borman, G. D., Grigg, J., Rozek, C. S., Hanselman, P., & Dewey, N. A. (2018). Self-affirmation effects are produced by school context, student engagement with the intervention, and time: Lessons from a district-wide implementation. *Psychological Science*, 29(11), 1773–1784. <https://doi.org/10.1177/0956797618784016>.
- Bowen, N.K., Wegmann, K.M. & Webber, K.C. (2013) Enhancing a brief writing intervention to combat stereotype threat among middle-school students. *Journal of Educational Psychology*, 105(2), 427–435. <https://doi.org/10.1037/a0031177>
- Bradley, D.N., Crawford, E.P. & Dahill-Brown, S.E. (2016) Defining and assessing FoI in a large-scale randomized trial: Core components of values affirmation. *Studies in Educational Evaluation*, 49, 51–65. <https://doi.org/10.1016/j.stueduc.2016.04.002>
- Cheryan, S. & Bodenhausen, G.V. (2000) When positive stereotypes threaten intellectual performance: The psychological hazards of “model minority” status. *Psychological Science*, 11(5), 399–402. <https://doi.org/10.1111/1467-9280.00277>
- Cohen, G.L., Garcia, J., Apfel, N. & Master, A. (2006) Reducing the racial achievement gap: A social-psychological intervention. *Science*, 313(5791), 1307–1310. <https://doi.org/10.1126/science.1128317>
- Cohen, G.L., Purdie-Vaughns, V. & Garcia, J. (2010) Collected notes on affirmation procedure [Unpublished document].
- Cohen, G.L. & Sherman, D.K. (2014) The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology*, 65, 333–371. <https://doi.org/10.1146/annurev-psych-010213-115137>
- Cook, J.E., Purdie-Vaughns, V., Garcia, J. & Cohen, G.L. (2012) Chronic threat and contingent belonging: Protective benefits of values affirmation on identity development. *Journal of Personality and Social Psychology*, 102(3), 479–496. <https://doi.org/10.1037/a0026312>
- Creswell, J.D., Welch, W.T., Taylor, S.E., Sherman, D.K., Gruenewald, T.L. & Mann, T. (2005) Affirmation of personal values buffers neuroendocrine and psychological stress responses. *Psychological Science*, 16(11), 846–851. <https://doi.org/10.1111/j.1467-9280.2005.01624.x>
- Critcher, C.R. & Dunning, D. (2015) Self-affirmations provide a broader perspective on self-threat. *Personality and Social Psychology Bulletin*, 41(1), 3–18. <https://doi.org/10.1177/0146167214554956>
- Crocker, J., Niiya, Y. & Mischkowski, D. (2008) Why does writing about important values reduce defensiveness? Self-affirmation and the role of positive other-directed feelings. *Psychological Science*, 19(7), 740–747. <https://doi.org/10.1111/j.1467-9280.2008.02150.x>
- de Jong, E.M., Jellesma, F.C., Koomen, H.M. & de Jong, P.F. (2016) A values-affirmation intervention does not benefit negatively stereotyped immigrant students in the Netherlands. *Frontiers in Psychology*, 7(691). <https://doi.org/10.3389/fpsyg.2016.00691>
- Dee, T.S. (2015) Social identity and achievement gaps: Evidence from an affirmation intervention. *Journal of Research on Educational Effectiveness*, 8(2), 149–168. <https://doi.org/10.1080/19345747.2014.906009>
- Easterbrook, M.J. & Hadden, I.R. (2020) Tackling educational inequalities with social psychology: Identities, contexts, and interventions. *Social Issues and Policy Review*, <https://doi.org/10.1111/sipr.12070>
- Easterbrook, M.J., Harris, P.R. & Sherman, D.K. (in press) Self-affirmation in education. *Journal of Social Issues*.

- Furrer, C. & Skinner, E. (2003) Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology*, 95(1), 148–162. <https://doi.org/10.1037/0022-0663.95.1.148>
- Gehlbach, H., Brinkworth, M.E., King, A.M., Hsu, L.M., McIntyre, J. & Rogers, T. (2016) Creating birds of similar feathers: Leveraging similarity to improve teacher–student relationships and academic achievement. *Journal of Educational Psychology*, 108(3), 342–352. <https://doi.org/10.1037/edu0000042>
- Goodenow, C. (1993) Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence*, 13(1), 21–43. <https://doi.org/10.1177/0272431693013001002>
- Goyer, J.P., Cohen, G.L., Cook, J.E., Master, A., Apfel, N., Lee, W., et al. (2019) Targeted identity-safety interventions cause lasting reductions in discipline citations among negatively stereotyped boys. *Journal of Personality and Social Psychology*, 117(2), 229–259. <https://doi.org/10.1037/pspa0000152>
- Goyer, J.P., Garcia, J., Purdie-Vaughns, V., Binning, K.R., Cook, J.E., Reeves, S.L., et al. (2017) Self-affirmation facilitates minority middle schoolers' progress along college trajectories. *Proceedings of the National Academy of Sciences of the United States of America*, 114(29), 7594–7599. <https://doi.org/10.1073/pnas.1617923114>
- Hanselman, P., Rozek, C.S., Grigg, J. & Borman, G.D. (2017) New evidence on self-affirmation effects and theorized sources of heterogeneity from large-scale replications. *Journal of Educational Psychology*, 109(3), 405–424. <https://doi.org/10.1037/edu0000141>
- Harackiewicz, J.M., Canning, E.A., Tibbetts, Y., Giffen, C.J., Blair, S.S., Rouse, D.I., et al. (2014) Closing the social class achievement gap for first-generation students in undergraduate biology. *Journal of Educational Psychology*, 106(2), 375–389. <https://doi.org/10.1037/a0034679>
- Harackiewicz, J.M., Canning, E.A., Tibbetts, Y., Priniski, S.J. & Hyde, J.S. (2016) Closing achievement gaps with a utility-value intervention: Disentangling race and social class. *Journal of Personality and Social Psychology*, 111(5), 745–765. <https://doi.org/10.1037/pspp0000075>
- Hayes, L., Zinner, L., Wise, J. & Carton, J. (2019) Effects of a self-affirmation intervention on grades in middle school and first-year college students. *Journal of Articles in Support of the Null Hypothesis*, 16(1), 57–79.
- Hulleman, C.S. & Harackiewicz, J.M. (2009) Promoting interest and performance in high school science classes. *Science*, 326(5958), 1410–1412. <https://doi.org/10.1126/science.1177067>
- Juvonen, J. (2006) Sense of belonging, social bonds, and school functioning. In P.A. Alexander & P.H. Winne (Eds.), *Handbook of educational psychology*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers, pp. 655–674.
- Kraft, M.A. (2020) Interpreting effect sizes of education interventions. *Educational Researcher*, 49(4), 241–253. <https://doi.org/10.3102/0013189/20912798>
- Lazowski, R.A. & Hulleman, C.S. (2016) Motivation interventions in education: A meta-analytic review. *Review of Educational Research*, 86(2), 602–640. <https://doi.org/10.3102/0034654315617832>
- Lepper, M.R., Woolverton, M., Mumme, D.L. & Gurtner, J.-L. (1993) Motivational techniques of expert human tutors: Lessons for the design of computer-based tutors. In S.P. Lajoie & S.J. Derry (Eds.), *Technology in education. Computers as cognitive tools*. Hillsdale, NJ: Lawrence Erlbaum, pp. 75–105.
- Lokhande, M. & Müller, T. (2019) Double jeopardy–Double remedy? The effectiveness of self-affirmation for improving doubly disadvantaged students' mathematical performance. *Journal of School Psychology*, 75(1), 58–73. <https://doi.org/10.1016/j.jsp.2019.07.006>
- Manke, K.J., Brady, S.T., Baker, M.D., & Cohen, G.L. (in press) Affirmation on the go: Mobile affirmation improves student well-being. *Journal of Social Issues*.
- Miyake, A., Kost-Smith, L.E., Finkelstein, N.D., Pollock, S.J., Cohen, G.L. & Ito, T.A. (2010) Reducing the gender achievement gap in college science: A classroom study of values affirmation. *Science*, 330(6008), 1234–1237. <https://doi.org/10.1126/science.1195996>
- Moore, K.A., Lippman, L.H. & Ryberg, R. (2015) Improving outcome measures other than achievement. *AERA Open*, 1(2), 1–15. <https://doi.org/10.1177/2332858415579676>
- Oyserman, D., Terry, K. & Bybee, D. (2002) A possible selves intervention to enhance school involvement. *Journal of Adolescence*, 25(3), 313–326. <https://doi.org/10.1006/jado.2002.0474>
- Paunesku, D., Walton, G.M., Romero, C., Smith, E.N., Yeager, D.S. & Dweck, C.S. (2015) Mind-set interventions are a scalable treatment for academic underachievement. *Psychological Science*, 26(6), 784–793. <https://doi.org/10.1177/0956797615571017>
- Phillippo, K.L. & Stone, S. (2013) Teacher role breadth and its relationship to student-reported teacher support. *High School Journal*, 96(4), 358–379. <https://doi.org/10.1353/hsj.2013.0016>

- Protzko, J. & Aronson, J. (2016) Context moderates affirmation effects on the ethnic achievement gap. *Social Psychological and Personality Science*, 7(6), 500–507. <https://doi.org/10.1177/1948550616646426>
- Pyne, J. (2019) Suspended attitudes: Exclusion and emotional disengagement from school. *Sociology of Education*, 92(1), 59–82. <https://doi.org/10.1177/0038040718816684>
- Pyne, J., Rozek, C.S. & Borman, G.D. (2018) Assessing malleable social-psychological academic attitudes in early adolescence. *Journal of School Psychology*, 71, 57–71. <https://doi.org/10.1016/j.jsp.2018.10.004>
- Quin, D. (2017) Longitudinal and contextual associations between teacher–student relationships and student engagement: A systematic review. *Review of Educational Research*, 87(2), 345–387. <https://doi.org/10.3102/0034654316669434>
- Rosenfeld, L.B., Richman, J.M. & Bowen, G.L. (2000) Social support networks and school outcomes: The centrality of the teacher. *Child and Adolescent Social Work Journal*, 17(3), 205–226. <https://psycnet.apa.org/doi/10.1023/A:1007535930286>
- Rosenthal, R. & Jacobson, L. (1968) Pygmalion in the classroom. *Urban Review*, 3(1), 16–20. <https://doi.org/10.1007/BF02322211>
- Rozek, C.S. & Gaither, S.E. (2020) Not quite White or Black: Biracial students' perceptions of threat and belonging across school contexts. *Journal of Early Adolescence*, <https://doi.org/10.1177/0272431620950476>
- Rozek, C.S., Ramirez, G., Fine, R.D. & Beilock, S.L. (2019) Reducing socioeconomic disparities in the STEM pipeline through student emotion regulation. *Proceedings of the National Academy of Sciences of the United States of America*, 116(5), 1553–1558. <https://doi.org/10.1073/pnas.1808589116>
- Rozek, C.S., Smith, E.N. & Doom, J.R. (2020) Teacher's broad care for students' non-academic lives can help provide social support and maintain students' motivation and well-being during the COVID-19 pandemic. Manuscript in preparation.
- Schmader, T., Johns, M. & Forbes, C. (2008) An integrated process model of stereotype threat effects on performance. *Psychological Review*, 115(2), 336–356. <https://doi.org/10.1037/0033-295X.115.2.336>
- Schmeichel, B.J. & Vohs, K. (2009) Self-affirmation and self-control: Affirming core values counteracts ego depletion. *Journal of Personality and Social Psychology*, 96(4), 770–782. <https://doi.org/10.1037/a0014635>
- Sherman, D.K., Bunyan, D.P., Creswell, J.D. & Jaremka, L.M. (2009) Psychological vulnerability and stress: The effects of self-affirmation on sympathetic nervous system responses to naturalistic stressors. *Health Psychology*, 28(5), 554–562. <https://doi.org/10.1037/a0014663>
- Sherman, D.K. & Cohen, G.L. (2006) The psychology of self-defense: Self-affirmation theory. In M.P. Zanna (Ed.), *Advances in experimental social psychology*. Vol. 38. New York: Elsevier Academic Press, pp. 183–242.
- Sherman, D.K., Hartson, K.A., Binning, K.R., Purdie-Vaughns, V., Garcia, J., Taborsky-Barba, S., et al. (2013) Deflecting the trajectory and changing the narrative: How self-affirmation affects academic performance and motivation under identity threat. *Journal of Personality and Social Psychology*, 104(4), 591–618. <https://doi.org/10.1037/a0031495>
- Sherman, D.K., Lokhande, M., Müller, T. & Cohen, G.L. (2020) Self-affirmation interventions. In G.M. Walton & A. Crum (Eds.), *Handbook of wise interventions: How social-psychological insights can help solve problems*, (63–99). Guilford Press.
- Shnabel, N., Purdie-Vaughns, V., Cook, J.E., Garcia, J. & Cohen, G.L. (2013) Demystifying values-affirmation interventions: Writing about social belonging is a key to buffering against identity threat. *Personality and Social Psychology Bulletin*, 39(5), 663–676. <https://doi.org/10.1177/0146167213480816>
- Smith, E.N. (2020) Expansive care theory: Broad regard and inspiring expectations promote investment and identity safety in school (Unpublished doctoral dissertation). Stanford University.
- Steele, C.M. (1988) The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology*, 21(2), 261–302. [https://doi.org/10.1016/S0065-2601\(08\)60229-4](https://doi.org/10.1016/S0065-2601(08)60229-4)
- Steele, C.M. (1997) A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52(6), 613–629. <https://psycnet.apa.org/doi/10.1037/0003-066X.52.6.613>
- Steele, C.M., Spencer, S.J. & Aronson, J. (2002) Contending with group image: The psychology of stereotype and social identity threat. *Advances in Experimental Social Psychology*, 34, 379–440.
- Tibbetts, Y., Harackiewicz, J.M., Canning, E.A., Boston, J.S., Priniski, S.J. & Hyde, J.S. (2016) Affirming independence: Exploring mechanisms underlying a values affirmation intervention for first-generation students. *Journal of Personality and Social Psychology*, 110(5), 635–659. <https://doi.org/10.1037/pspa0000049>



- Walton, G.M., Paunesku, D. & Dweck, C.S. (2012) Expandable selves. In M.R. Leary & J.P. Tangney (Eds.), *Handbook of self and identity*. New York: Guilford Press, pp. 141–154.
- Walton, G.M. & Wilson, T.D. (2018) Wise interventions: Psychological remedies for social and personal problems. *Psychological Review*, 125(5), 617–655. <https://doi.org/10.1037/rev0000115>
- Wentzel, K.R. (1997) Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology*, 89(3), 411–419. <https://doi.org/10.1037/0022-0663.89.3.411>
- Wentzel, K.R., Battle, A., Russell, S.L. & Looney, L.B. (2010) Social supports from teachers and peers as predictors of academic and social motivation. *Contemporary Educational Psychology*, 35(3), 193–202. <https://doi.org/10.1016/j.cedpsych.2010.03.002>
- Wu, Z., Spreckelsen, T.F. & Cohen, G.L. (in press) A meta-analysis of the effect of values affirmation on academic achievement. *Journal of Social Issues*.
- Yeager, D.S., Hanselman, P., Walton, G.M., Murray, J.S., Crosnoe, R., Muller, C., et al. (2019) A national experiment reveals where a growth mindset improves achievement. *Nature*, 573(7774), 364–369. <https://doi.org/10.1038/s41586-019-1466-y>

## AUTHOR BIOGRAPHIES

Eric N. Smith is a postdoctoral fellow in the Population Research Center at the University of Texas at Austin. His research examines students' perceptions of teachers and the role of teachers in social-psychological interventions. One primary line of research examines how instructors can show care about students' lives beyond the classroom to promote academic success within the classroom.

Christopher S. Rozek is an assistant professor in the Department of Education at Washington University in St. Louis. Using laboratory and field experimental studies, along with longitudinal designs, his research addresses how students' social relationships, sense of belonging, and emotions affect their motivation, success, and well-being in school.

Kody J. Manke is an assistant teaching professor of psychology and the Director of Research on Diversity, Equity, and Inclusion for Dietrich College at Carnegie Mellon University. His research focuses on social identity, especially in the context of stereotypes and education, related to issues of social justice and inequality. Using lab and field studies, he examines how people's construal of social situations (and of themselves within those situations) affects both immediate and long-term outcomes, and in conducting social psychological interventions in real-world contexts to improve outcomes like achievement, belonging, and wellbeing.

Carol S. Dweck is the Lewis and Virginia Eaton Professor of Psychology at Stanford University. Her research has focused on mindsets and motivation, demonstrating how people's beliefs shape their goals and judgments, as well as their performance and achievement. Her theoretical work has addressed theories of motivation, personality, and development.

Gregory M. Walton is the Michael Forman University Fellow in Undergraduate Education and an associate professor of psychology at Stanford University. His research examines psychological processes that contribute to major social problem, especially processes that undermine belonging and contribute to inequality in education, and psychologically "wise" interventions that can address these processes and help people flourish.



## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

**How to cite this article:** Smith EN, Rozek CS, Manke KJ, Dweck CS, Walton GM. Teacher- versus researcher-provided affirmation effects on students' task engagement and positive perceptions of teachers. *Journal of Social Issues*. 2021;1-18.  
<https://doi.org/10.1111/josi.12417>