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Publication Date

2020

Peer reviewed|Thesis/dissertation

Social Evaluative Threat in Urban Schools: Who Benefits from a Value Affirmation?

By

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A dissertation submitted in partial satisfaction of the

requirements for the degree of

Joint Doctor of Philosophy
with San Francisco State University

in

Special Education

in the

Graduate Division

of the

University of California, Berkeley

Committee in Charge

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Professor David Kirp

Spring 2020

Abstract

Social Evaluative Threat in Urban Schools: Who Benefits from a Value Affirmation?

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A value affirmation writing task is a psychological threat-reduction nudge identified by past research to reduce the racial achievement gap within schools (Cohen et al., 2006, 2009). However, racial and economic segregation contribute to the nationwide achievement gap (Orfield et al., 2012; Reardon, 2013). Few studies have specifically examined value affirmation effects for Black, Latinx, and students with disabilities within urban schools where students of color are the numeric majority. The present study employs a value affirmation intervention in four urban schools, and uses 808 students' self-report surveys to investigate the contribution of psychosocial variables (e.g., belonging, institutional trust, social evaluative threat) towards student outcomes (e.g., student grades and attendance). Spearman and Pearson correlation coefficients were calculated and indicated social evaluative threat in the fall had a small but statistically significant negative relationship with Semester 2 grades ($-.12, p < .05$). A hierarchical regression demonstrated the value affirmation intervention did not significantly improve end-of-term grades for Black or Latinx students, nor did social evaluative threat effects moderate intervention effectiveness. However, students with disabilities who completed the value affirmation intervention showed an improvement in grades compared to their special education peers who did not complete the exercise ($m = 4.11, p < 0.00$). Using a quantile regression, attendance for Black, Latinx, and students with disabilities who completed the value affirmation did not significantly differ from students who did not complete the intervention. Finally, the value affirmation intervention did not appear to positively impact students trust or belonging compared to students who did not engage in the intervention. The findings are not consistent with peer-reviewed value affirmation studies (Cohen et al., 2006, 2009), and suggest school context and methodological execution play a critical role when examining social-psychological variables, social evaluative threat effects, and value affirmation nudge interventions. The present study highlights the challenge of scaling threat-reduction interventions in urban schools.

Keywords: value affirmation, belonging, trust, social evaluative threat, social-psychological nudges, disability

Acknowledgements

In memory of Dr. Keith Larson, my late grandfather who continues to inspire my career in special education.

I'd like to first thank Dr. Frank C. Worrell who epitomizes a "warm demander" as an advisor. Your work ethic and dedication to the education and psychology fields continues to amaze me. It has been a privilege to be your advisee and I have also loved singing in the choir.

Thank you, Dr. Philip M. Prinz for your unwavering personal and professional mentorship. You have consistently offered me a unique scholarly perspective by asking questions to push my thinking. Our conversations are always intellectually stimulating—as your passion for special education is infectious and sense of humor brings joy to the work!

Professor David Kirp, you have modeled endless curiosity and demanded a high level of scholarship, empathy, and perspective taking. You've reminded me to enjoy the intellectual journey. Thank you.

This dissertation would not have been possible without a very large village of support. A special thanks to Shane Durkan, Katie Pettersen, Greyson Blue, Kevin Hoffman, Stevie Jeung, Alexander Blum, my colleagues at KIPP Bay Area Public Schools, the members of my cohort, the Nathan Family, my former students and colleagues in Los Angeles, and my other professors and classmates at UC Berkeley and San Francisco State.

Mom and Dad, every day I am so thankful for the privileges and gifts you have given me throughout my childhood and today. Your unconditional support has made completing this program possible. Megan, your commitment to justice and teaching is a bright light in my life. Your perspective continues to keep me grounded.

Finally, to my wife, Priya. You've been a ballast of emotional support during the stormy seas, and a constant companion. Thank you for listening to my incoherent intellectual ideas and not being afraid to provide feedback. You are an incredible teacher, but a better partner. Per your request, a final thank you to our pets Murphy, Toby, and Sparky for their companionship as well.

Threat and School Context: Who Benefits from a Value Affirmation Intervention

Across the United States, there are inequalities of resources among students, families, and school communities (Kozol, 1991). Racial and economic segregation (i.e., concentrated poverty) continue to contribute to the different educational opportunities provided by schools (Orfield, Kucsera, & Siegel-Hawley, 2012; Reardon, 2013; Sirin, 2005). As a result, there is a school-based opportunity and achievement gap between White students and students of color (Musu-Gillette et al., 2017; Reardon, Valentino, Shores, & Greenberg, 2013; Snyder, de Brey, & Dillow, 2019). On average, White and Asian students outperform Black, Hispanic, and American Indian/Alaska Native students on a range of standardized tests in math and reading (Musu-Gillette et al., 2017). Additionally, students with disabilities within the special education system are often labeled the “gap within the gap,” and perform lower than students without disabilities. Finally, students’ identity factors intersect and compound within complex environments and transcend single-variable explanations for gaps in achievement (e.g., a Black male with a disability living in poverty; Crenshaw, 1989).

There have been countless policy reforms to equalize the educational playing field and support students from marginalized groups such as the No Child Left Behind Act of 2001, Race to the Top (U.S. Department of Education, 2009), and the Every Student Succeeds Act of 2015. Previously, many changes were institutional (e.g., revised educational standards or accountability policies) or through improved human capital (e.g., teacher pedagogy through coaching or a more rigorous credentialing process). Simultaneously, many government-backed social welfare programs have attempted to ameliorate the many deleterious effects of poverty that negatively shape educational outcomes. Several examples include children’s educational public television programming (e.g., Sesame Street), Advanced Placement high school classes, and larger student loans and work-study programs for college students (Ceci & Papierno, 2005). Unfortunately, many intervention efforts to close the achievement gap unintentionally result in “Matthew Effects” (i.e., the rich get richer, Ceci & Papierno, 2005) benefitting students from higher achieving or higher socioeconomic groups. Ceci and Papierno argued that middle- and upper-class students have better access, leverage, and benefit more from educational interventions. In other words, many educational improvement efforts are not equitable in that they do not target the lowest achieving and highest need students to close the achievement gap. Educational reform has also taken tremendous political, economic, and social will within our current society. Despite a range of efforts, the achievement gap has persisted across a variety of academic and transition-based outcomes (Darling-Hammond, 2014).

A lesser known strategy to improve the well-being and educational outcomes of marginalized students in school is the *social-psychological* approach (Yeager & Walton, 2011). Social psychology examines “students’ thoughts, feelings, and beliefs in and about school” (Yeager & Walton, 2011, p. 268), as well as students’ personal narratives of their lives and the interpretation of positive and adverse school-based events (Wilson, 2011; Yeager et al., 2014). Several social-psychologists have used nudges, or intentionally cultivated brief motivational experiences or moments, to shift students’ social environments and internal motivational processes (Heath & Heath, 2017; Wilson, 2011; Yeager & Walton, 2011).

The term, nudge, was popularized by behavioral economists, Thaler and Sunstein (2008), and can be defined as an intentional addition to, or arrangement of, an environment to alter people’s behavior in a predictable way. To qualify as a nudge, the intervention must be cheap, easy to use, and avoidable: they are not mandates. Similar to nudges in the behavioral

economics field, psychological nudges are brief experiences that influence an individual's motivational systems and promote changes in adaptive behavior, ultimately bolstering their effectiveness within a social environment (Cohen, Garcia, & Goyer, 2017). Wilson (2011) conceptualized psychological nudges as techniques that help individuals edit and rewrite the stories of their lives in positive and prosocial ways.

Within education, nudges can shape students' adaptive behavior and academic outcomes (Castleman & Page, 2016; Cohen & Sherman, 2014). In contrast with traditional educational improvement efforts (e.g., teacher training, changes to curriculum), many of the nudge interventions have yielded equitable effects: students who are lowest performing appear to benefit most, whereas high-performing students are unaffected (Schwartz, Cheng, Salehi, & Wieman, 2016; Yeager & Walton, 2011). Social-psychological nudges are not silver bullets for educational improvement or pursuing equitable outcomes for marginalized students; however, they are an important low-cost supplementary element to positively shape human motivation and behavior (Yeager & Walton, 2011).

In this dissertation, I begin with a review of the theoretical assumptions of social-psychological, nudge interventions and provide the methodological considerations and theoretical framework established to guide effective implementation: timely, targeted, tailored, and context dependent nudging. Next, I focus on a specific nudge, a value affirmation (i.e., a writing activity nudge) and provide a brief overview of the theoretical and empirical literature that explains the effectiveness in past research with Black and Latinx. Later, I provide evidence that value affirmations may be a supportive strategy for students in special education. Finally, I introduce the study investigating the impact of social-psychological threat for Latinx and Black students, as well as students in special education. In the study, I examine the effects of a value affirmation intervention for each student subgroup within low-income schools where students of color are the demographic majority.

Social-Psychological Nudge Interventions: Motivational Catalysts with Recursive Effects

One of the key assumptions buttressing psychological nudge theory is the *recursive* nature of psychological processes (Cohen & Sherman, 2014; Walton, 2014; Wilson, 2011; Yeager & Walton, 2011). Psychological nudges target self-reinforcing psychological processes to benefit individuals over time and in generalized contexts (Walton, 2014). Rather than teach a skill or specific task, social-psychological interventions target thoughts and beliefs. The interventions aim to shift an individual's internal story about adverse or challenging situations and spur motivation to act in prosocial or adaptive ways over time (Walton, 2014; Yeager & Walton, 2011). Similar to compound interest influencing a bank account, recursive effects may not be immediately seen in the short-term; but over time may yield noticeable differences in student achievement, performance, and well-being.

Social-psychological nudges have been used to target a variety of recursive motivational experiences. One example includes a one-time growth mindset intervention, where students were trained to think of their brain as a muscle, and reattribute failure in math class as a way to growing their intelligence (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2008). Productive struggle during the learning process is reattributed to becoming smarter, rather than giving up quickly after a single failure (Dweck, 2008). Although the short-term magnitude of growth mindset effects may be small ($d = .08$; Sisk, Burgoyne, Sun, Butler, & Macnamara, 2018), a growth mindset may be a more adaptive trait over time, and has been shown to improve academic practice time and accuracy (Yeager et al., 2013).

Another social-psychological intervention is *wise feedback* (Cohen, Steele, & Ross, 1999), a strategy situating traditionally discouraging critical feedback on a student's essay by pairing it with a note from the teacher grounding the feedback in the belief the teacher has high expectations for the student. In a middle school English classroom, Black students who received wise feedback had a greater turn-in rate (64% compared to 27%) and higher scores on their revised essays ($d = 0.59$; Yeager et al., 2014). In another study, a 20-minute online course for teachers emphasizing empathy for students resulted in participating teachers cutting their suspension rate in half the following semester (Okonofua, Paunesku, & Walton, 2016). Many of the social-psychological nudge interventions are described as having a light touch because they often take a few minutes to complete, are inexpensive, and easily scalable (Yeager et al., 2014). However, each of them target self-reinforcing motivational processes that have broader behavioral effects over time (Yeager & Walton, 2011).

Due to the short duration of the intervention and impressive results from nudge interventions, the social-psychological field has generated a large amount of attention among academics and practitioners (Cohen & Garcia, 2014; Yeager, Paunesku, Walton, & Dweck, 2013; Yeager & Walton, 2011). The reactions are often split: skepticism that the results are fabricated, or desires to scale the intervention nationwide. Yeager and Walton (2011) advocated for neither. They pointed out that

social-psychological interventions hold significant promise for promoting broad and lasting change in education, but they are not silver bullets. They are powerful tools rooted in theory, but they are context dependent and reliant on the nature of the educational environment (Yeager & Walton, 2011, p. 268).

The methodological considerations for each tool weigh heavily on the intervention effectiveness. Nudge interventions are carefully placed elements within an environment, positioned to encourage a trajectory-changing experience.

The Devil is in the Details: Targeted, Tailored, Timely, and Context-Dependent Nudging

The successful examples showcased by published research are predicated on the invisible pre-work and efforts of researchers (Bryan, Walton, & Dweck, 2016). Prior to the implementation of a nudge, psychologists should acquire a deep and intimate knowledge of the experimental context and daily experiences of those targeted by the interventions (Yeager et al., 2016). In order to effectively scale social-psychological nudges, researchers and practitioners alike should closely examine the factors when interventions are successful, produce null outcomes, or even iatrogenic effects (Brady et al., 2016; Yeager & Walton, 2011). Cohen et al. (2017) argued social-psychological nudges are effective because they are targeted, tailored, and timely. In addition, researchers within the field have consistently stated that social-psychological nudges (and broader experiences) are context dependent (Bryan et al., 2016; Pettigrew, 2018; Walton, 2014; Yeager & Walton, 2011).

Targeted: The appropriate people and motivational processes. Social psychological nudges target motivational processes that exist for certain individuals within a given context. For example, threat-reduction nudges – often called *wise interventions* – target “specific underlying psychological processes that contribute to social problems or prevent people from flourishing... researchers identify an aspect of people's psychology that harms their outcomes and aim to change this process” (Walton, 2014, p. 73). This subset of tailored social-psychological interventions target negative thought processes of stigmatized individuals (Walton,

2014). As a result, non-stigmatized individuals or those without negative thought processes may not benefit from these targeted nudges (Schwartz et al., 2016; Walton, 2014).

Tailored: The right support. A one-size-fits-all approach does not appear to be an effective avenue for scaling social-psychological interventions; nudges should be tailored to target specific psychological processes experienced by individuals within a social context (Yeager & Walton, 2011). For example, African American undergraduates' initial academic performance is often directly tethered to feelings of belonging to the broader college institution (Cook, Purdie-Vaughns, Garcia, & Cohen, 2012). One failed midterm may result in feelings that they lack the ability to be a member of the academic community, rather than attributing the setback as a lack of study preparation. Thus, the nudge developed may not be more reminders to study, but one that is tailored to address belonging uncertainty (Walton & Cohen, 2011). Examples include a brief saying-is-believing essay prompt, where first-year African American students write about how academic challenges are typical for all first-year students, rather than a unique phenomenon linked to their race or ethnicity (Walton & Cohen, 2011). Indeed, although past examples of these tailored interventions have showed improved achievement and persistence for African American students, they may not be effective for other students or other motivational processes (Cohen et al., 2017).

Timely: Stressful periods and critical junctures. Past research has opted to intervene during stressful periods and critical junctures during students' academic careers. For example, the first few weeks of school are often considered stressful and highly evaluative as students are adjusting to new social and academic spaces (Cook et al., 2012). Stress-reduction interventions help temper the negative effects of stressful periods. Additionally, the transition to a new school (e.g., high school or college) is considered a critical period of time predicting later success such as graduation. By intervening at the appropriate time, researchers and school staff can use nudges to minimize the risk of transitioning to a new school context.

Context-dependent tools: Change predicated on environmental conditions. Social-psychological nudges are often seen as a snowball effect, but they are contingent on appropriate conditions in the environment (Cohen et al., 2017). For example, a snowball cannot gather inertia if it lacks the preexisting conditions, such as additional snow on the ground to collect while rolling and a downward sloping hill free of obstacles. Similarly, students cannot be nudged to learn or achieve if learning opportunities do not exist within the classroom. Contextual differences may include but are not limited to school demographics, a significant numeric majority of White students, geographic location, or academic standing of dominant groups (Cohen et al., 2017; Murphy & Walton, 2013; Yeager & Walton, 2011). Students' psychological systems as well as their broader contextual or social systems must be an initial consideration in order to effectively nudge students towards positive adaptive outcomes (Cohen & Sherman, 2014).

Social Psychological Experience of Marginalized Youth: Social Evaluative Threat

Many students encounter positive and motivating factors (e.g., supportive teacher, high-expectations school); however, some students experience negative social-psychological threat effects during school (e.g., bullying, critical feedback linked to identity; Steele, 2011; Steele, Spencer, & Aronson, 2002). One such threat-based variable is stereotype threat, or the concrete and real time worry or concern of confirming a negative stereotype with performance during a specific situation (Cohen, Steele, & Ross, 1999). For example, a female student may underperform on a math test because she is concerned that a poor grade will confirm a negative

stereotype about women's mathematics ability. Students experiencing stereotype threat effects have shown an increased physiological stress response, and the elevated stress response decreases their working memory efficiency and overall task performance (Schmader, Johns, & Forbes, 2008). In other words, students' mental bandwidth is burdened with the concern of confirming a salient negative stereotype about their performance, instead of focusing solely on the task at hand. A meta-analysis of stereotype threat effects on achievement found scores were impacted by one fifth of a standard deviation ($d = .20$; Nguyen & Ryan, 2008).

However, capturing stereotype threat effects in meaningful ways within real-world contexts has been challenging (Worrell, 2014). Students' social-psychological experiences in schools are ongoing and transcend specific task performance. Also, mitigating underperformance during specific performance tasks (e.g., SAT/ACT) is a discrete factor in a students' experiences in school, and may differ depending on the individuals' invisible and visible identities and school context. For example, a student's physical disability (e.g., orthopedic impairment) may be more salient in multiple contexts (e.g., physical education class, lunchroom, passing periods) since it is visible by other students and may result in challenges due to the disability. Conversely, invisible disabilities (e.g., specific learning disability, ADHD) may not be public information or easily observed by peers or only salient in particular academic settings (e.g., math tests but not English class). In short, capturing stereotype threat effects is challenging because it requires a specific moment or context, based upon a salient identity factor that may be visible or invisible.

Building off of the stereotype threat research, *social evaluative threat* is the feeling of negative evaluation or social rejection (Cook et al., 2012). Stereotype threat research in education focuses on individual task performance, whereas social evaluative threat expands to a student's entire schooling experience. Whether salient in the lunchroom, English, or mathematics class, social evaluative threat can be an ongoing and negatively cyclical experience for marginalized students (Cook et al., 2012). Cook et al. (2012) stated students encounter social evaluative threat when work and school are chronically evaluative and there are pervasive stereotypes. In a stressful transition to a new school, students' sensitivity to academic evaluation is particularly high, and magnified when one or more identities is marginalized within the school context (Yeager & Walton, 2011).

In the past, social evaluative threat was identified only by students' low school belonging (Cook et al., 2012). However, students' school social experience is also influenced by their perception of school-based systemic factors (Gray, Hope, & Matthews, 2018). Thus, identifying students' feelings of social evaluative threat can be improved by measuring students' perceptions of systemic and institutional-level bias within the school setting that are theoretically linked to social evaluative threat. For example, a student could experience social evaluative threat if they perceive teachers unfairly grade homework assignments of students in their racial category. If there is a perception that the rules governing the institution or the people in power are biased, there are also negative impacts on social belonging (Gray et al., 2018). In the following section, I define and identify both belonging and institutional trust, and draw parallels to the theory of social evaluative threat.

Belonging: Do I fit in here? School belonging is defined as the extent to which students feel personally supported, included, accepted, valued and respected by others in the school social environment (Goodenow & Grady, 1993). Walton and Brady (2017) further defined belonging as a general inference "drawn from cues, events, experiences, and relationships, about the quality of fit or potential fit between one-self and setting" (Walton & Brady, 2017, p. 272). Belonging

also includes a temporal element, or the anticipation or feelings of likelihood that one will feel belonging (Walton & Brady, 2017). Belonging is related positively related to both academic self-efficacy ($r = .44$) and school motivation ($r = .44$) in past research (Goodenow, 1992; Goodenow & Grady, 1993).

However, not all students experience a secure sense of belonging in school. Low school belonging or *belonging uncertainty* is negatively associated with other motivational variables, academic achievement, and attainment (Walton & Brady, 2017). Past empirical work has demonstrated students' interpersonal relationships may be dampened due to feelings of belonging uncertainty. Poor peer relationships may further reinforce negative psychological processes over time and result in feelings of isolation or loneliness (Cook et al., 2012; Walton, 2014; Walton & Brady, 2017). Low feelings of belonging may also be associated with a lack of trust for an entire community or school institution (Gray et al., 2018; Walton & Brady, 2017; Yeager, Purdie-Vaughns, Hooper, & Cohen, 2017).

Institutional trust: Do adults respect people like me and are the rules fair?

Institutional trust or school trust is a student's perception of procedural justice within a school setting, and the perceived personal regard from teachers and school staff (Tyler, Fagan, & Geller, 2014; Yeager et al., 2017). Procedural justice is defined as "fair processes to make consequential decisions" (Yeager et al., 2017, p. 659), whereas personal regard is "when authorities are respectful and have one's best interest at heart" (Yeager et al., 2017, p. 659). Within the school setting, examples of procedural justice include how disciplinary infractions are administered, as well as academic evaluations such as grades on an essay or homework. Personal regard may include a student's perceived relationships with adult staff within the school setting.

Yeager et al. (2017) investigated the lack or loss of institutional trust over time within a group of middle school students. The authors argued the loss of trust was a reasonable psychological response for many negatively stereotyped students of color engaging in school. This group of students may also experience disciplinary infractions or poor academic performance. Yeager et al. (2017) argued schools have caused some students to feel threatened as reasonable reactions to their environment. For some low-performing students, particularly students of color such as African American youth, institutional trust may be visualized as a negative spiral over time (Yeager et al., 2017).

Social evaluative threat: An individual and institutional perspective. Belonging and institutional trust are two variables used to demonstrate the perceived social experience of students while in school. The variables complement each other: Belonging captures the social relationships and institutional trust measures the student's perception of macro-level or institutional structures in the social experience. Both variables are relevant indicators for students with marginalized identities in school settings who may experience low belonging and trust (Yeager et al., 2017). Students who are marginalized in school may feel their belonging and trust are directly tethered to their academic or school-based performance (Cook et al., 2012). A negative experience early in the school year (e.g., a failed assessment or disciplinary event) may further spur feelings of social evaluative threat: a lack of trust for the teacher's academic evaluation or process of enforcing classroom rules. Also, a failed test may contribute to social evaluative threat if a marginalized student perceives non-marginalized students (e.g., high-performing White peers) are academically successful.

Reducing Social Evaluative Threat: Value Affirmations and Self-Affirmation Theory

Social-psychological interventions or nudges may be a tool to temper the negative impacts of social evaluative threat by fostering student well-being and success (Cohen & Sherman, 2014; Walton, 2014). The proposed study employs one particular nudge intervention: a value affirmation (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009). Value affirmation interventions are deliberate opportunities for individuals to self-affirm and assert the importance of core values (Cohen & Sherman, 2014). Often, during a short writing task, students self-select two or three identity-linked traits from a broader list (e.g., *athletic ability, being good at art, relationships with friends or family*) and expand upon the importance of these traits or values in three to five sentences (Cohen et al., 2006). There is an embedded self-tailoring feature of value affirmations as students can choose or create their own value, and are prompted to make connections to their own lives. Value affirmation exercises have been conducted in a variety of formats and settings, but typically are used in educational or healthcare settings (Cohen & Sherman, 2014).

Value affirmation interventions are grounded in self-affirmation theory (Steele, 1988), which assumes individuals aim to maintain a positive sense of self and will adapt and behave in ways that are worthy of esteem or praise (Cohen & Sherman, 2014; Sherman, 2013). Self-affirming is defined as “an act that manifests one’s adequacy and thus affirms one’s sense of global self-integrity” (Cohen & Sherman, 2014, p. 337). Self-affirmations help individuals create a broader sense of self and buttress an individual’s self-worth. They are touted to reduce psychological hurdles by buffering against social-psychological threat effects (e.g., stereotype threat; Steele & Aronson, 1995), and are particularly applicable for individuals who feel stigmatized. Rather than categorize an adverse event or failure as fulfilling a negative social stereotype of personal inadequacy, affirmed individuals are more likely to identify situations as isolated events. The positive attributions allow students to more effectively cope and respond to negative events or circumstances (Cohen & Sherman, 2014; Sherman, 2013). There are many social-psychological nudges employed by researchers; however, a value affirmation may be an effective tool in low-income contexts with a majority of students of color due to the benefits of stress reduction.

Value affirmation interventions may reduce psychological threat effects because individuals who affirm themselves appear to benefit on a physiological level (Creswell et al., 2005). However, the practical magnitude of the physiological effects of value affirmations have not been fully determined. Creswell et al. (2005) measured the stress-related hormones of college undergraduates immediately before giving a class-wide speech. Students who completed a value affirmation intervention showed lower levels of cortisol when compared to the control group 20 minutes after the stressful task onset ($t = 3.39, p = .001$). In another study, Sherman, Bunyan, Creswell, and Jaremka (2009) asked undergraduates to complete two value affirmation exercises before a stressful midterm examination. Individuals in the control condition showed higher levels of stress-related hormones (epinephrine) and affirmed students did not show an increase in epinephrine levels (Sherman et al., 2009). Notably, effect sizes were not available from either study and could not be calculated because standard deviations were not reported by the authors. The researchers argued that students who experience less stress can engage in more adaptive behaviors and are cognitively free to make prosocial decisions (Creswell et al., 2005; Sherman et al., 2009).

Values Affirmation Interventions in K-12 Education

Value affirmation interventions have also been used in K-12 school settings. Cohen et al. (2006) conducted two landmark experiments in a suburban middle school with seventh graders. Among the 64% of students who returned the parental permission slip, 80% provided parent consent. Those who provided consent were randomly assigned the value-affirmation or control writing task group. Students completed the value affirmation intervention in the fall, and teachers were kept blind to student condition. The Experiment 1 sample ($n = 133$) was 46% European American, 38% African American, 11% Hispanic or Latino American, and 5% Asian American. In the first value affirmation experiment, end-of-year African American student achievement improved by 0.26 GPA points. Experiment 2 had a similar number of students and demographic sample ($n = 149$): 46% were African American, 42% European American, 6% Hispanic or Latino American, 4% Asian American, and 1% of students were categorized as Other. In the second experiment, African American students in the treatment condition showed improvement of 0.34 GPA points when compared to students in the control condition. The authors stated, the intervention “reduced the racial achievement gap by 40%,” as European American students in the intervention group did not show a similar improvement in end-of-semester grades (Cohen et al., 2006, p. 1307).

Although these results are impressive, there were important methodological nuances that may have yielded such large effects. Specifically, the value affirmation targeted African American students and was tailored with authentic engagement during an in-class setting. The student population context, and the significant number of European American students, may have been a contributor to intervention effectiveness. As a group, African American students performed lower than their European American, Asian, and Hispanic student counterparts, and the underperformance likely meant their marginalized identities were salient. Thus, students whose performance were lower and identities were salient may have experienced psychological threat effects within their particular school context. The early value affirmation studies focused on the relationship between African American and European American students in suburban contexts (Cohen et al., 2006, 2009). Later, research expanded to a broader group of marginalized groups such as Latinx students or students with disabilities.

Visible and Invisible Identities: Social-Psychological Threat by Special Education Status

Alongside students in marginalized racial and ethnic subgroups, students in special education may encounter social-evaluative threat in school (Dunn, 2014; Harry & Klinger, 2014). Students who receive special education services and accommodations through an individualized education program (IEP) are identified through the school institution because they meet eligibility characteristics of one of the 13 federal disability categories (e.g., *Autism, Specific Learning Disability, Emotional Disturbance*). Additionally, multi-disciplinary school teams identify services and supports for these students to access their education (e.g., small group remediation instruction or extended time on tasks; Individuals with Disabilities Education Act, 2004).

Students in special education may encounter psychological threat effects because (a) they are identified and labeled by the school as individuals who struggle socially, behaviorally, linguistically and/or academically; (b) they receive different expectations and treatment from adults in the academic setting that may reinforce negative stereotypes about intelligence or ability (Rubie-Davies, 2015); (c) they are ostracized when taken from general education classes to receive services; or (d) they are mandated to attend class in a completely separate setting

(Dunn, 2014; Harry & Klinger, 2014). Students exist at the intersection of visible and invisible identities (e.g., Black male with Emotional Disturbance) and may encounter stereotype threat effects through one or more stigmatized identities. Negatively stereotyped identities may become salient depending on the classroom context, content taught, or due to a specific teacher (Harry & Klinger, 2014; Murphy & Walton, 2013; Steele, 2011).

Little research has examined psychological threat effects and value affirmation interventions on individuals with disabilities that qualify for special education in school settings. In a clinical setting, Silverman and Cohen (2014) found adult students with visual disabilities were negatively impacted by stereotype or social-psychological threat effects, and chronically stigmatized in a variety of societal settings. In Study 1, the authors found small but significant relationships between stereotype threat effects and other outcomes of well-being. Using zero-order correlations, threat negatively predicted integrity ($r = -.24$), unemployment ($r = .10$); satisfaction ($r = -.19$) and stress ($r = .45$; $p < .01$).

In a follow-up study, Silverman and Cohen (2014) aimed to reduce stereotype threat effects for a similar set of students. They examined value affirmation intervention effects of compensatory skill acquisition for two blind adult student cohorts ($ns = 19$ and 16). The students were from multiple racial/ethnic backgrounds: 51% European American, 17% African American, 9% Hispanic/Latino(a), 9% Middle Eastern, and 14% Other. Rather than their ethnicity, researchers targeted a more salient stereotype threat cue: their experiences as a person with a disability within a learning environment. For example, blind students who are learning compensatory skills often encounter failure, which can be both discouraging and further stigmatizing (e.g., mis-measuring ingredients while preparing a basic meal; Silverman & Cohen, 2014). The value affirmation intervention was intended to bolster self-integrity to help blind students persist with their skill training. A month after intervention, teacher evaluation scores of student compensatory skills on a 1–7 Likert scale indicated affirmed students progressed more in their classes overall ($M = .25$) than control students ($M = -.25$; $d = .64$).

The study indicated value affirmations may be one tool for programs to help students with visible disabilities derive greater benefit from rehabilitation programs. As many students with disabilities experience setbacks and failures across K–12 school settings, value affirmations could be a useful tool for practitioners (alongside traditional pedagogy and accommodations) to aid students with disabilities as they persist through academic tasks. However, more research is needed across disability categories, developmental ages, and academic measures.

Although the Silverman and Cohen (2014) findings are encouraging, disability may – or may not – be meaningfully associated with a student’s identity and school experience. Individuals who are blind have more situations (e.g., navigating public transportation) where their disability identity is salient due to their disabling condition. Similarly, other students with low incidence disabilities (e.g., orthopedic impairment, Deaf, H/H) have *visible disabilities* and can often be identified by their disability by the use of a wheelchair, audio amplification system, or mobility cane.

Conversely, most students with disabilities in special education have *invisible disabilities* and may have lower disability identity (Cortiella, 2013; Dunn, 2014). For example, many high-incidence disabilities (e.g., learning disabilities, language impairment, attention deficit hyperactivity disorder, depression) are not identified by physical manifestations or experienced across the school setting. Unlike physical or visible indicators linked to specific racial or ethnic groups, students may be able to pass as not disabled, and even consider themselves as individuals without a disability (Dunn, 2014). Of the approximately 13% of students nationwide who

qualify for special education services, more than 40% of students have a specific learning disability which is an invisible disability (Individuals with Disabilities Education Act, 2004; Cortiella, 2013). Students with disabilities – often taught alongside general education peers – achieve at lower levels, and are less likely to receive a high school diploma (Cortiella, 2013; Snyder et al., 2019). Future research should examine the impacts of a value affirmation intervention for students with a high-incidence or invisible disabilities, such as a learning disability, within K-12 school contexts.

Value affirmation intervention impacts and school demographic context. Alongside student racial/ethnic identity factors, school context is an influential variable impacting value affirmation intervention effectiveness. Hanselman, Bruch, Gamoran, and Borman (2014) used two factors to measure differences in school context: academic standing within the school and racial group presence. To estimate relative academic standing, the authors calculated the relative proportion of students from each racial group who scored advanced on reading and math examinations. Racial group presence was measured by utilizing school-based demographic information, and separating campuses into two groups depending on the numeric majority of White students. Hanselman et al. categorized 11 Wisconsin middle schools (average cohort size of 142.1 students) as either low-threat (Black 24%, Hispanic 27%, Asian 12% and White 37%) or high-threat (Black 13%, Hispanic 14%, Asian 8%, White 64%).

The authors found that value affirmation effects (measured by standardized achievement tests and end-of-year grades) were moderated by the estimated level of threat in each school context. Although the magnitude of the overall intervention effect on student GPA across all schools was small ($d = 0.068$), there was a significant difference in outcomes depending on school context for low and high threat schools ($ds = -0.025$ to 0.18 , respectively). Thus, the authors argued that the social-psychological experience of students of color was different in the low- and high-threat schools. The results indicated that a substantial White student majority is an important moderator for intervention effectiveness. Notably, even within the low-threat campuses, White students were the numerical majority in the study (Hanselman et al., 2014).

The achievement gap can occur in segregated schools with only students of color. Within the context of education, value affirmation exercises have been branded by researchers and secondary sources as a tool to help reduce the achievement gap (Brady et al., 2016; Cohen et al., 2006, 2009; Hanselman et al., 2014). The title of the Cohen et al. (2006) study indicates that a social-psychological intervention reduces the racial achievement gap. Readers may generalize the findings to the nationwide achievement gap, which cannot be fully explained by social-psychological phenomena within suburban schools. Rather, much of the achievement gap can also be attributed to concentrated poverty, school segregation, and overall school performance (Orfield et al., 2012; Reardon, 2013; Sirin, 2005). Racial and economic segregation continue to be pervasive elements of the United States school system and socio-economic status is a major contributor to the nationwide achievement gap (Orfield et al., 2012; Reardon, 2013; Sirin, 2005). In order for value-affirmation interventions to be branded as tools to reduce the racial achievement gap, research must be conducted in lower performing schools. Often, but not always, these schools are in urban and low-income communities where students of color are the numerical majority (Reardon, 2013, 2015; Sirin, 2005).

Value affirmation effects in urban schools. Only one peer-reviewed study to date has examined value affirmation intervention effects in urban school contexts where students of color are the numerical majority (i.e., Bratter, Rowley, & Chukhray, 2016). Bratter et al. (2016) conducted a value affirmation intervention in three schools with distinct racial demographic

profiles: majority Black, majority Latino, and mixed Black-Latino. The intervention effects were null for Hispanic students, as treatment and control groups had similar standardized test scores (reading and Algebra 1) and English grades, regardless of value affirmation condition. Black students who completed self-affirming exercises showed small but statistically significant improvement in their English grades in the spring semester (74% to 77%, respectively), but did not show a difference in standardized test scores.

On one hand, the results are surprising as students of color, overall, did not benefit from a threat-reduction intervention. Conversely, a White-majority student population may be an important moderator that triggers stereotype threat effects for marginalized youth, and may explain intervention effectiveness within this context. Bratter et al. (2016) called for future research to use student self-report measures to identify stereotype threat effects in urban schools. More research is needed to identify which students are under threat within urban school contexts.

Value affirmation intervention timing. Value affirmation intervention implementation timing also appears to be an important consideration. Previous value affirmation interventions were implemented as “close to the start of the term as possible” (Cohen et al., 2006) and “prior to... high-stakes tests” (Bratter et al., 2016). Past research has demonstrated other social-psychological interventions are most beneficial during the first few weeks of school, and may be less effective depending on the time in the school year (Cook et al., 2012). However, stressful time periods may occur throughout the school year (e.g., parent divorce, economic instability due to loss of job) and outside of previously recommended windows of time.

In the case of low-income urban schools, students are far more likely to experience negative social-psychological effects due to trauma or toxic stress (Blair & Raver, 2015; Felitti et al., 1998; Lupien, McEwen, Gunnar, & Heim, 2009; Shonkoff, Boyce, & McEwen, 2009). Students within these contexts may be chronically stressed due to challenges linked with poverty (e.g., unstable housing, lack of food, higher crime rates in neighborhoods, etc.). Indeed, occasional or small amounts of stress (e.g., prior to an academic exam) may enhance motivation (e.g., increased duration of studying) and can improve school-based performance (Williams Shanks & Robinson, 2012). However, students who are chronically stressed perform lower on performance-based tasks, academic achievement tests, and report lower motivation and school satisfaction (Williams Shanks & Robinson, 2012). Intervention timing may be less sensitive in low-income schools as school-related stress may not be the leading cause of stress in students’ lives.

The Current Study

As has been seen in past examples of value affirmation interventions, psychological threat-reduction nudges can have a positive impact on marginalized groups’ academic performance and well-being (Brady et al., 2016; Cohen et al., 2006, 2009). However, methodological (i.e., timely, targeted, and tailored) and contextual (i.e., school environment) factors appear to influence intervention effectiveness (Bratter et al., 2016; Bryan et al., 2016; Cohen et al., 2017; Hanselman et al., 2014). In order for social-psychological nudges to be branded as a tool to reduce the achievement gap, more research is needed in low-income schools where students of color are the numeric majority. Additionally, students’ thoughts and feelings should not be assumed by researchers within these contexts, but reported by the students themselves.

Thus, the present study will focus on two implementation considerations: (a) targeting students experiencing social evaluative threat and (b) school contexts where students of color are

the numeric majority (Bratter et al., 2016; Cohen et al., 2017; Hanselman et al., 2014). I will assess students' belonging and institutional trust to identify students experiencing social evaluative threat, and conduct the study within four urban schools serving mostly Black and Latinx students, as well as students in special education with high-incidence disabilities. The study will be guided by three research questions, each with a specific hypothesis:

1. Are belonging and trust associated with student grades and attendance?
2. Do value affirmation interventions impact students who report social-evaluative threat?
3. Do value affirmations impact Black, Latinx, and students with disabilities' psychological and school-based outcomes?

The first research question will be addressed by establishing the relationship of belonging, trust, academic grades, and attendance among Black and Latinx students, and students in special education. This analysis will help target students experiencing social evaluative threat. Belonging and institutional trust appear to be important variables that contribute positively to student success in schools (Walton & Brady, 2017; Yeager et al., 2017). However, school context may play a role in the strength of the relationships. Consistent with past research, I hypothesize belonging and trust will be positively associated with achievement and attendance for Black and Latinx students, as well as students in special education.

The second research question will be addressed by examining the psychological and school-based outcomes of a value affirmation intervention for students who self-report social evaluative threat. Students' self-reported feelings of belonging and institutional trust will be used to indicate social evaluative threat. I predict students who report experiencing social evaluative threat (i.e., those with low trust or low belonging) and participate in the value affirmation in the fall will have higher belonging, institutional trust, grades, and daily attendance at the end of the semester than students who did not complete the value affirmation. In other words, social evaluative threat will moderate the impact of a value affirmation intervention on a psychological level (belonging and trust) and school outcomes (grades and attendance).

The third research question will be addressed by examining value affirmation intervention effects on three traditionally marginalized student subgroups: Black students, Latinx students, and students with disabilities. I hypothesize students within each subgroup who complete the value affirmation will show higher end-of-year grades and better attendance than students who did not complete the value affirmation.

The proposed study will add to the current literature in several ways. First, the value affirmation intervention will be conducted in a relatively novel context, a low-income urban school setting where students of color are the majority. Second, self-report measures of belonging and trust will provide insight into social-psychological threat phenomena in urban schools. Third, specific marginalized groups including students with disabilities, as well as Black and Latinx youth will be identified and disaggregated in analysis. Fourth, psychological (belonging and trust) as well as school-based (student grades and attendance) variables will be used as outcome variables to determine intervention effectiveness. Finally – and more broadly – this study has implications for both practitioners and policy-makers working to scale social-psychological nudges in a variety of school contexts to more fully address the achievement gap.

Method

Participants

I reviewed public school demographic data before recruiting specific schools. Four urban schools where students of color were the numeric majority were selected. Each school was

recruited via email to participate in the study. Next, I met with each school's principal and participating teachers to explain the study procedures. School participation was entirely voluntary. At each participating school, staff expressed interest in improving the motivation and achievement of students.

The first school was a public charter middle school (Grades 5–8) with a total enrollment of 416, drawing from a broad urban metropolitan area in northern California. According to school accountability reports, participants were 58% Latino, 31% Asian/Pacific Islander, 3% African American and 8% other. Approximately 8% of the school population qualified for special education services, 21% of students were classified as English Language Learners, and 75% of families qualified for free or reduced lunch. The special education program has two education specialists and a student-teacher staff member. Most of the students' specialized academic instruction services were in a pull-out resource room. Students were included in the general education setting with a variety of accommodations. All 5th-grade students were invited to participate in the study through three teacher homerooms. Of the 104 participants invited, 84 participants (80.07% participation rate) were included in the final study. Students were excluded if they declined to participate, failed to return parent consent, or were absent on the day of the fall survey or intervention.

The second school was a charter high school drawing from a broad urban metropolitan area in northern California, serving grades nine through twelve. The school has a college-prep curriculum and a college-for-all focus is emphasized in the school culture. The total enrollment was 618 students. Student demographics were 49% Latino, 27% Asian/Pacific Islander, 15% African American and 9% other. Approximately 62% of students reported eligibility for free or reduced-price lunch, 9% received special education services, and 5% of students had English Language Learner status. The school's special education program staff included three education specialists and one instructional aid. Two education specialists served a majority of the students with high-incidence disabilities through a push-in, inclusion model. Most students with an IEP had one special day class called resource lab, designed as a supported study hall with targeted literacy support by the education specialist. The other education specialist and instructional aid served three students with autism that required a modified instructional curriculum in a special day class. Students in the special day program were included in non-core classes (i.e., Art and P.E.). After meeting with the principal, all students enrolled in the grade-level seminar classes were selected to participate. In School 2, 389 of 625 students participated in the survey (62.24% participation rate).

The third school was a public charter high school serving grades nine through twelve located in an urban city in northern California. The total enrollment was 644 students. The demographics of the students were 73% Latino, 24% Asian/Pacific Islander, 1% African American, and 5% other. About 73% of students were eligible for free or reduced-price lunch, 8% received special education services, and 6% of students had English Language Learner status. The school's special education staff consisted of two education specialists and two instructional aids, they provided specialized academic instruction through a push-in and co-teaching model. Most students were fully included in general education classes except one special day class, resource lab, a study skills support class. All students were invited to participate in the study through advisory classes. In School 3, 361 of 644 students participated in the survey (56.05% participation rate).

The fourth school was a public district high school in an urban city in northern California with a total enrollment of 1,845. Racial/ethnicity demographics were 39% Latino, 33% Black,

17% Asian/Pacific Islander, 7% White, and 4% other. Schoolwide special education percentage was approximately 6%. Students with English Language learner labels were 16% of the total population, and 78% of families qualified for free or reduced lunch. The schoolwide special education department had nearly a dozen special education team members in settings from special day class to inclusion. However, 9th-grade students with IEPs within the sample were served by one education specialist who completed services in a pull-out setting. A total of 132 students were invited to participate through one teacher's four periods of Algebra 1 and one Statistics class. Of the invited students, 107 participants completed the study (81.0% participation rate).

Procedure

The study was conducted in four phases: (a) recruitment and parent/student consent, (b) fall student surveys and value affirmation, (c) spring student surveys, (d) and school record (grades and attendance) collection. The University of California, Berkeley's Committee of the Protection of Human Subjects approved the study. San Francisco State University's Office of Research and Sponsored Programs also approved the research. All student participants provided written informed assent and written parent permission. Additionally, both students and parents provided additional consent for sharing academic achievement data and demographic information from school records. All students were offered incentives (e.g., Amazon gift cards and tickets to a professional sports event) to return permission forms, regardless of the response. However, they were not compensated for their participation.

In the first phase, a brief student recruitment script emphasized participation and how the information gathered would help improve school climate and student motivation. IRB parent consent forms were provided in each class and students were given a one-week deadline to obtain parent consent. Teachers collected consent forms and returned them to a central location (i.e., main office) in the school in September of the first year.

The second phase of the study was conducted the following week during homeroom or advisory seminar classes. Each school used laptop computers often during instruction, thus computer-based administration of surveys was considered most appropriate. Teachers provided a hyperlink to student surveys via Qualtrics, a secure, internet-based survey platform. At the end of the survey, students were randomly assigned to the value affirmation intervention and control conditions through the Qualtrics platform. Instead of using paper and pencil to write about values, students selected values through a drop-down survey menu and typed their responses on the computer (Appendix C).

Teachers and students were told that there were different prompts at the end of the survey but were blind to either intervention or control condition. The directions and language included in the value affirmation intervention were replicated from the Cohen et al.'s (2006) supporting online material. In addition, a short sentence frame was added to each writing prompt to promote student responses in the intervention condition "*optional sentence starter: _____ is important to me because...*" and control condition "*optional sentence starter: _____ might be important to other people because...*" See Appendix C for a computer screenshot of the intervention.

The third phase of the study was completed in the spring semester. The survey administration procedures and content were identical, except the value affirmation intervention was not included at the end of the student survey. In the fourth phase, researchers partnered with designated school staff and collected demographic data, attendance, and end-of-semester grades.

In general, the implementation of the intervention reflected the procedures of Cohen et al. (2006) and other value affirmation intervention studies. However, since many implementation factors (i.e., context, timing, dosage) influence social-psychological intervention effectiveness, the present study should be considered an extension of Cohen et al. (2006) rather than a replication. Several notable differences include (a) time of intervention (October rather than the first few weeks of school), (b) computer-based implementation rather than paper-pencil, (c) fifth through twelfth grade students rather than middle school, (d) an urban school setting where students of color are a numeric majority rather than a White-majority student body.

Measures

Psychosocial and demographic variables collected via the student survey. The following variables were collected using an online Qualtrics survey on school-issued laptop computers.

Belonging. A five-item scale was used to measure belonging. Each of the items (e.g., *right now, I feel like I belong at my school*) used a 1-5 Likert scale, and responses ranged from (*strongly disagree* to *strongly agree*). This scale is a subset of the 17-item scale (Cohen's Kappa = 0.72) used in previous school belonging intervention literature (Walton & Cohen, 2011). The five-item scale was sent by email by a research assistant in Greg Walton's research lab. Upon reviewing the scale, the fifth item was dropped as it had a five-level Likert scale whereas the other four items had six levels. In a previous study (Cook et al., 2013) scores on a five-item scale of belonging with similar items yielded good reliability ($\alpha = .78$). In this sample, scores on the five-item scale had good reliability ($\alpha = .82$), and scores on the four-item scale had excellent reliability ($\alpha = .94$).

Institutional trust. A seven-item scale adapted from Yeager et al. (2017) was used to measure institutional threat. The original scale had additional items that included specific comparisons. The instrument included two subscales. Four items were used to measure student trust in the broader school institution. Three other items were used to measure student perceptions of teachers' treatment of students from different racial/ethnic subgroups (e.g., *teachers and other adults treat students in my racial group with respect*). Item responses were based on a six-point Likert scale ranging from lowest (e.g., *very much disagree*) to highest (e.g., *very much agree*). Composite trust scores were calculated by taking an average of the seven items. Yeager et al. (2017) reported good reliability ($\alpha > .70$) for middle school students' scores. See Appendix B for the full measure as it appeared to students.

Social evaluative threat. In order to estimate the effects of social evaluative threat, a dummy variable was created using belonging and trust composite scores. Students who reported low levels of belonging and trust were assumed to be negatively impacted by social evaluative threat, as both have been identified as potential mediators during past value affirmation research (Cohen & Sherman, 2014; Cook et al., 2012). Similar with past research, students with belonging or institutional trust scores that were greater than one-and-a-half standard deviations below the mean were coded as 1 "*experiencing social evaluative threat*" and 0 "*not experiencing social evaluative threat*."

Ethnicity. The ethnicity item from the revised Multigroup Ethnic Identity Measure (MEIM; Phinney & Ong, 2007) was used to measure student's ethnicity. Response categories were coded 1 "*Asian or Asian American, Including Chinese, Japanese, and others*;" 2 "*Black or African American*;" 3 "*Hispanic or Latino, including Mexican American, Central American and others*;" 4 "*White, Caucasian, Angelo, European American; not Hispanic*;" 5 "*American Indian*/"

Native American;” 6 “*Mixed; Parents are from two different groups;*” 7 “*Other;*” and 8 “*No response.*” Student-reported ethnicity was collected rather than school-based demographic racial/ethnic information. Thus, students could self-identify using a broader set of categories. One student who reported “*American Indian/ Native American;*” was recoded to “*Other;*” for analysis.

Demographic variables collected via school records.

Special education status. Special education status was collected through school records and transformed into a dummy variable. Students were coded as a 1 “*student in special education,*” or 0 “*general education.*” Notably, this categorization is a broad label representing a highly heterogeneous special education population.

Free and reduced lunch. Free and reduced lunch status was collected from the student information system and coded as 0 “*not eligible*” and 1 “*F/RL eligible.*” In total, 722 students were used in the analysis: 490 students were coded as eligible, and 232 students were found not eligible. The district school did not agree to share free and reduced lunch status data with researchers, thus were not included in the analysis. More discussion is in the limitations section.

English language proficiency (EL Status). English language proficiency scores from state-mandated testing (i.e., California English Language Development Test, and English Language Proficiency Assessments for California) were collected from students’ cumulative records. Students were coded as a 1 “*English only,*” 2 “*reclassified fluent English proficient,*” 3 “*initial English fluent proficient,*” and 4 “*English language learner.*” In total, 722 students were used in this analysis: 149 students were “*English Only,*” 38 were “*reclassified fluent English proficient,*” 468 were “*initial English fluent proficient,*” and 67 were “*English Language Learner.*” The district school did not agree to share language proficiency data with researchers. More discussion is in the limitations section.

School performance variables collected in the student survey. The following variables were collected from student records.

Student grades. Students’ term grades (fall and spring) from their Math and English classes were collected and standardized across schools onto a scale of 0-100. The three charter schools used percentage points 0-100%. The district school letter grades were gathered via transcripts and transformed onto the 100-point scale (i.e., A+ = 97.5, A = 95, A- = 90, B+ = 87.5, B = 85, B- = 80, C+ = 77.5, C = 75, C- = 72.5, D+ = 67.5, D = 65, D- = 60, F = 50). There were 5 students who scored above 100% in Semester 1, and 4 students who scored above 100% in Semester 2. Grades of the nine students who scored above 100% were recoded to 100.

Student attendance. Student attendance was collected from each site. Each school used the same attendance codes: EA “*Excused Absence,*” and UA “*Unexcused Absence.*” Both absence categories were combined for an aggregate attendance measure of number of missed school days. The district school attendance system was different than the three charter schools: each teacher was required to take attendance at the start of class rather than daily attendance. Some students had a significant difference in absences across class periods. As a result, an average of the absences from classes was taken to most accurately reflect daily attendance. Also, each school had a different number of instructional days. Scores were transformed using a proportion (number of days attended/ total instructional days) to standardize average daily attendance. More information can be found in Table 1.

Survey Completion, Missing Data, and Detailed Demographic Information. Of the 942 students who participated in the study, 911 completed the fall survey, and 544 completed the spring survey. Two students stated “other” on identified school and were dropped from analyses.

I used listwise deletion as a strategy to address missing data (Allison, 2002). In order to maximize statistical power while also maintaining data quality to address each goal of the study, I used listwise deletion in three stages. This was also done due to the differences in sample subsets between the three stages. The following sections provide additional information about the differences in observations between analyses.

Stage one. In stage one, I used listwise deletion for all variables included in Tables 1-8, resulting in a loss of 133 observations. Means of all variables in Table 1 were within 1 tenth of point before and after listwise deletion, suggesting that scores did not change substantially for remaining participants (Allison, 2002).

Stage two. In stage two, additional variables in Tables 9 and 10 (e.g., Free/Reduced Lunch, EL Status) resulted in a loss of 86 observations. Means for Semester 1 ($M = 83.61$, $SD = 9.79$, $t = 1.73$, $p = .08$) and Semester 2 ($M = 83.78$, $SD = 10.22$, $t = 1.91$, $p = .06$) were similar to the sample of 808 students used in stage one. However, there was a significant difference in attendance scores between samples, likely due to the disproportionate number of students from the district high school excluded from the analysis ($M = 97.99$, $SD = 2.78$, $t = 4.71$, $p < .001$). The effect size was not substantial, $d = 0.24$. See study limitations for additional commentary.

Stage three. In stage three, I used listwise deletion for spring belonging and trust, resulting in a loss of 301 additional observations (Tables 11-12). Stage three had the most substantial loss of observations because participants needed to have fall survey data, spring survey data, and school-based demographic and performance data. However, the third stage of listwise deletion was only relevant for the final goal of the study. Institutional trust in the spring was similar to the original sample ($M = 4.36$, $t = 0.35$, $p = .72$). However, the mean of belonging in the spring ($M = 4.07$, $t = 2.35$, $p < .02$, $d = 0.16$) was greater compared to the sample of 808 students used in stage one. See study limitations for additional commentary. The following sections provide additional information about demographic subgroups used in the study.

Special education information within the sample. Of the 808 students used in the analysis, 761 students were in general education, and 47 were in special education. Among the students who had a disability, federal student disability eligibility categories under the Individuals with Disabilities Education Act were collected when available. Of the 47 students in special education included in the study, 38 students had additional disability eligibility information. The students in special education qualified under the following eligibility categories: 26 as specific learning disability (SLD), six as other health impairment (OHI), three as autism (AUT), two as emotional disturbance (ED), and one student as deaf (DEAF). Eligibility information was not analyzed in the study due to the small number of students in each disability eligibility category.

Free and reduced lunch within the sample. 722 students free and reduced lunch data was collected: 490 students were coded as eligible, and 232 students were found not eligible.

English language proficiency (EL Status) within the sample. 722 students had language proficiency data available for analysis: 149 students were “English Only,” 38 were “reclassified fluent English proficient,” 468 were “initial English fluent proficient,” and 67 were “English Language Learner.”

Results

Table 1 shows the descriptive statistics for student grade point average, attendance, belonging, institutional trust, and social evaluative threat. Table 1 also shows the skew and kurtosis for all variables, as well as the reliability coefficients for belonging and institutional

trust measures for fall and spring. On average, students reported similar grades both semesters. The reliability of belonging and trust scores for both semesters ranged from .70 to .89.

Relationships Among Social-Psychological and School-based Variables

I hypothesized that belonging and trust would be associated with grades and attendance. The relationships between psychosocial variable scores and student grades were calculated using Spearman and Pearson correlations (see Table 2). Pearson correlations were used between two continuous variables (i.e., semester grades and attendance). All other associations in Table 2 involving social-psychological variables are Spearman correlations. A Bonferroni correction was used for all correlations in Table 2, $p < .05$. Semester 1 and Semester 2 grades were strongly and positively related to each other, as well as moderately and positively related to attendance. Fall and spring belonging were not associated with Semester 1 or 2 grades, or attendance. Fall and spring belonging were moderately associated with one another. Institutional trust in the fall was not associated with Semester 1 grades, but had small but statistically significant association with Semester 2 grades. Institutional trust in the fall was related to belonging in the fall and spring; as well as the institutional trust in the spring. Finally, social evaluative threat was negatively associated with Semester 2 grades, fall and spring belonging, as well as fall and spring institutional trust.

Social Evaluative Threat: School Context, Ethnicity, and Special Education Status

To identify if there was a difference in the number of students who reported social evaluative threat among schools (see Table 3), a χ^2 test of independence was conducted. Because there was a small percentage of students who reported social evaluative threat, a Fisher's exact test was used (Fisher, 1922). The results indicated there was no difference in the percentage of students who reported social evaluative threat among schools, $\chi^2(3) = 1.77, p = 0.62$. The percentage of students reporting threat ranged from 13.64% in the charter middle school to 17.24% in the district high school.

Student-reported threat by ethnicity is displayed in Table 4. A χ^2 test of independence and Fisher's exact test indicated students who reported feeling under threat differed significantly by ethnic group, $\chi^2(5) = 15.73, p = 0.01$. The percentage of students reporting social evaluative threat ranged from almost 10% of Black students to almost 33% of students who defined themselves as Other. Latinx (i.e., Hispanic or Latino) students reported social evaluative threat at a rate similar to the average of all ethnicities. Students from traditionally non-marginalized subgroups such as White students had rates similar to the average, and Asian students had rates lower than the average.

Student-reported threat by special education status is displayed in Table 5. A χ^2 test of independence and a one-sided Fisher's exact test indicated students who reported feeling under threat did not significantly differ by special education status, $\chi^2(1) = 2.59, p = 0.08$. Special education students were not more likely to experience social evaluative threat than their general education peers. Students reporting social evaluative threat ranged from 15% (general education) to over 20% (special education).

Value Affirmation Effects for Students Reporting Social Evaluative Threat

In order to address the second hypothesis, a hierarchical linear regression was conducted to examine contributing factors to Semester 2 grades (Table 6). The four predictor blocks included school, social evaluative threat, value affirmation intervention, and the interaction between social evaluative threat and value affirmation intervention. The results indicated school

was a significant predictor, but only 3% of the variance was explained in student grades. Students who reported social evaluative threat, entered in Block 2, had lower grades than students who did not. Although the contribution of social evaluative threat was statistically significant, social evaluative threat explained only 1% of additional variance in student grades. In the two subsequent blocks, no additional variance was explained by the value affirmation intervention and the interaction between social evaluative threat and the value affirmation intervention.

Value Affirmation Effects for Marginalized Student Groups

The third hypothesis was marginalized students (i.e., Black, Latinx, and students with disabilities) who completed the value affirmation would show higher end-of-year grades and better attendance than students who did not complete the value affirmation. These results are presented in Tables 7–11. On average, students attended a high percentage of days of the school year ($M = .97$, $SD = .05$). However, attendance scores were not normally distributed (see Table 1); thus, a Quantile regression – a non-parametric test – is a more appropriate tool than a multiple linear regression (Beyerlein, 2015). Quantile regression uses comparisons (rather than means) to a particular percentile rank for students to limit the impact of extreme scores (e.g., a student who attends only 50% of school days). Students at the 50th percentile attended 98.3% of school days. The attendance scores at the 25th percentile ($Mdn = 96.00$) were set as the reference, $R^2(807) = .15$, as their attendance behavior may be affected by a psychological nudge intervention.

Table 7 shows the four predictor blocks in the quantile regression: school, ethnicity, value affirmation intervention, and the interaction between value affirmation and ethnicity. In Block 1, school is a significant predictor of student attendance. However, in Block 2, social evaluative threat did not predict end-of-year attendance. Black, as well as Hispanic or Latino students attended fewer days than Asian (i.e., including Chinese, Japanese, and others) students (reference group). Students who completed a value affirmation intervention showed similar attendance to those who did not complete the intervention. There was one significant interaction effect between value affirmation intervention and student ethnicity: students who identified as “Other” attended seven *fewer* days if they completed the value affirmation intervention.

A multiple linear regression was conducted to identify if students who completed the value affirmation intervention showed a difference in Semester 2 grades depending on their ethnicity (Table 8). The predictors were school, social evaluative threat, ethnicity, value affirmation intervention, and the interaction between ethnicity and value affirmation intervention. School and social evaluative threat were significant predictors of Semester 2 grades. The results indicated all student subgroups (i.e., Black or African American, White, Hispanic or Latino, Mixed, and Other) had significantly lower grades (see B values in Table 8) than the reference group of Asian students, $R^2(807) = .17$, $p < .001$. Students who completed the value affirmation intervention had similar Semester 2 grades than those who did not. The results indicate there were no significant interactions between value affirmation intervention and student ethnicity on Semester 2 grades.

In order to determine value affirmation effects on attendance, I used a quantile regression reported in Table 9. The regression blocks included school, free/reduced lunch, special education status, English language status (i.e., language proficiency), social evaluative threat, value affirmation, and the interaction between value affirmation and special education status. School as well as free/reduced lunch were not significant predictors of attendance. Students in

special education attended fewer days when compared to general education students. When compared to their English Only counterparts, students who were categorized as Initially Fluent English Proficient and English Language Learner attended school at a higher rate. Students who completed the value affirmation intervention attended fewer days than peers who did not, and there was no interaction effect between the value affirmation and special education status.

Table 10 shows results of a hierarchical regression predicting Semester 2 grades with student school, demographic information (i.e., free/reduced lunch, special education status, language status), social evaluative threat, as well as the interaction between value affirmation and student special education status. Students with free/reduced lunch status had lower grades than their peers that did not. Similarly, students in special education had lower Semester 2 grades than students in general education. Finally, students who reported social evaluative threat also had lower Semester 2 grades than peers who did not. Students who completed the value affirmation had similar Semester 2 grades than those who did not. However, special education students who completed the value affirmation intervention had higher grades than special education students who did not complete the intervention grades.

Tables 11 shows a hierarchical regression of value affirmation effects on spring trust. The predictor blocks were school, social evaluative threat, value affirmation, and the interaction between social evaluative threat and the value affirmation intervention. Results indicate that students who reported social evaluative threat in the fall reported lower trust in the spring. There was no difference in institutional trust scores in the spring for students who completed the value affirmation. Similarly, there was no interaction effect between social evaluative threat and trust. Table 12 shows a hierarchical regression of value affirmation effects on spring belonging. Students who reported social evaluative threat reported lower belonging in the spring. However, the value affirmation intervention did not result in higher belonging in the spring. In addition, there was no interaction between social evaluative threat and value affirmation for spring belonging.

Individual Student Profiles: A Closer Intersectional Lens

Table 13 provides single-student profiles for a randomly selected group of seven students in the sample. The table provides information on demographic variables (i.e., ethnicity, disability eligibility, and English language status), a psychological variable (i.e., social evaluative threat), and outcome variables (i.e., Semester 1 grades, Semester 2 grades, and attendance). Two of the seven students reported social evaluative threat, whereas two students were in special education. Student grades in Semester 1 ranged from 65.0% and 95.0%, and between 70.3% and 96.0% in Semester 2. Within the group of student profiles, there was a range between 66.0% and 100% of average daily attendance.

Discussion

In this study, I evaluated the relationships among belonging, trust, student achievement, and attendance. I also examined the impact of a value-affirmation intervention for several student subgroups: (a) students who reported social evaluative threat, (b) Black students, (c) Latinx students, and (d) students in special education. The study was conducted within four urban schools where students of color were the numeric majority in each setting. The first hypothesis was social-psychological variables (i.e., belonging and trust) would predict the school-based outcomes (grades and attendance). The first hypothesis was partially supported. Belonging scores were not related to either grades or attendance institutional trust scores were

not related to attendance. However, both fall and spring institutional trust scores had a small but statistically significant relationship with Semester 2 grades.

For the second hypothesis, I predicted social evaluative threat would moderate the impact of a value affirmation intervention for psychological variables (e.g., belonging and trust), and school outcomes (e.g., grades and attendance). The findings did not support the second hypothesis. Finally, the third hypothesis predicted that Black, Latinx, and students with disabilities who completed the value affirmation would show higher end-of-year grades and higher rates of attendance. The hypothesis was partially supported. The end-of-year grades for Black, Latinx, and special education students who completed value affirmation intervention were similar to those who did not complete the intervention. However, there was an interaction effect for students in special education who completed the value affirmation intervention on Semester 2 grades. In the subsequent sections, I discuss the findings using the targeted, timely, and tailored social-psychological nudge framework (Cohen et al., 2017), address study limitations, and briefly explore future directions of research and practice.

Targeting Social Evaluative Threat: Student Experience and Intersectionality

Social evaluative threat or stereotype threat effects are difficult to capture within real-world contexts (Worrell, 2014) in reliable and meaningful ways, particularly within urban schools where students of color are the majority of the student population (Bratter et al., 2016). In this sample, 85% of students did not report social evaluative threat. The findings from this study suggest that the field needs to reconsider if and how social evaluative threat occurs in contexts where students of color are the numeric majority. In the extant literature, researchers have assumed that all Black and Latinx students, as well as students with disabilities have a negative social-psychological experience with school (Bratter et al., 2016; Cohen et al., 2006). However, the assumptions were not consistent with the data from the present study. The difference in the prevalence of social evaluative threat may have been due to the study design and methodology (i.e., student survey instead of an interview). In addition, other visible/invisible identity factors may be more salient when students report their belonging and trust for a school institution. The findings of this study should provoke a more critical and sophisticated lens of whom to target when using social-psychological nudge interventions.

Student profiles (i.e., Table 13) are a starting point for the myriad of perspectives to accompany quantitative survey data and may lead to unique meaning-making for how social-psychological variables (and nudges) impact students in schools. As can be seen in Table 13, Student 1 has a disability, does not report social evaluative threat in the fall, has fall grades of 72.5%, and is frequently absent (i.e., absent for more than 10% of school days). This snapshot of one student illustrates social psychological experience may not be only the predictor of school performance or attendance. Indeed, other factors, such as access to reliable transportation or poverty may more meaningfully explain their school attendance and performance.

Additionally, Student 5 identified as Black while also reporting social evaluative threat, but has an A average (i.e., 90% or higher grades in both semesters) and attends most school days (98.3%). In this example, a Black student experiencing social evaluative threat is aligned to findings from previous research (Cook et al., 2012). However, the achievement level of Student 5 also challenges the assumption that a student who reports social evaluative threat cannot receive high grades in school. Each student is an individual with unique circumstances, identities, and social-psychological well-being that result in a range of school-based outcomes.

The Impact of Timing: Intervention Date and Study Duration

In the present study, the value affirmation intervention date was later in the school year than previous studies (Brady et al., 2016; Cohen et al., 2006; 2009). Past research recommended a value affirmation intervention should be conducted within the first few weeks of school when students are sensitive and attuned to social evaluative threat (Cook et al., 2012; Cohen et al., 2017). At the start of the year, many students transition to different school contexts (i.e., schools, classrooms, teachers, classmates) and are more likely to experience social evaluative threat (Cook et al., 2012). In the present study, the intervention occurred in the month of October. This delay may have resulted in differing intervention effects because students were less sensitive to social evaluative forces. The intervention timing may influence intervention effectiveness, particularly for students who recently transitioned to the sampled school.

Additionally, the total duration of the study was different from previous research. Previous studies measured value affirmation intervention effects over a one or two-year period and theorized recursive or compounding effects over time (Cohen et al., 2006; Cohen & Sherman, 2014). The study's duration was a total of one year, which may have resulted in differences in psychological and school-based outcomes.

Tailoring for School Context: Public Charter Schools and School Demographics

It is critical to examine student social-psychological experience within a bioecological model (Allen, Kern, Vella-Brodrick, Hattie, & Waters, 2016; Bronfenbrenner & Ceci, 1994). A student's experience in school may differ depending on contextual factors such as the student population (e.g., racial demographics, socio-economic status), school community (e.g., teacher expectations, school culture), and institutional systems and structures (e.g., curriculum, discipline system, local education code). The findings of the study do not unilaterally discount the conclusions of previous value affirmation studies, but instead should draw attention to the critical levers of context and implementation within low-income communities of color and charter schools.

The three charter schools selected are not a representative sample of the broader education system in the United States of America; however, a growing number of schools in urban areas are charter schools. First, charter schools are also public schools, but often use a lottery admission system that differs from the typical district schools. Also, each of the charter schools selected in the study set high-expectations and employed a college-preparatory curriculum that was unique from the surrounding neighborhood district schools. Despite their differences from typical district schools, charter schools are a growing category of public schools in the United States, growing from two to seven percent of schools from the years 2000 to 2017 (U.S. Department of Education: National Center for Education Statistics [NCES], 2019). Also, the growth of charter schools has concentrated in specific states with large urban cities and people of color. For example, particular states have a higher number of students enrolled than the national average: 10% of students in California, 17% in Arizona, and 44% in Washington D.C (NCES, 2019). Although they are not representative of the entire United States school system, charter schools are a growing subset of public schools – particularly in urban areas – that researchers should acknowledge and examine.

School demographics appear to have an impact on the social-psychological experience for students. Given the data from the present study and previous literature in urban or White-majority communities (Bratter et al., 2016; Cohen et al., 2006; 2009, Cook et al., 2012), I have two theories of how school demographics impact social evaluative threat. First, a numeric

majority of White students may be a leading cause of social evaluative threat for students with marginalized ethnicities. Second, students of color – in contexts where they are the numeric majority– do not report social evaluative threat in disproportionate numbers as compared to White-majority contexts. Nonetheless, researchers and practitioners must acknowledge historically marginalized groups encounter inevitable and ubiquitous negative social-psychological headwinds. However, a single identity factor does not appear to be a predetermination of a student’s sense of belonging and trust for *all* students with marginalized backgrounds within *all* school-based institutions.

The Question of Scaling Interventions: No Silver Bullets in Education

Effective implementation of social-psychological interventions relies on adaptations to students and the surrounding social system or context in an iterative process (Yeager et al., 2016). First, the context appears to be an essential variable in the replication and scaling of social-psychological research (Pettigrew, 2018). Also, within the social system of schools, there are countless variables (students, teachers, staff) that may play a unique role in the implementation of research. Brady et al. (2016) cautioned against a one-size-fits-all approach: appropriately matched interventions in the medical field can save lives, but the same medicine for a different condition may cause iatrogenic effects. The implementation of social-psychological research is unlikely to lead to adverse effects; however, the time and energy invested must yield positive outcomes for students. As schools implement social-psychological research, they must continuously seek to improve the implementation and tailor the practices and principles to their unique context. As stated by previous scholars within the field: social-psychological interventions should be used to address specific contextual psychological processes in a targeted, timely, and tailored manner (Cohen et al., 2017; Yeager & Walton, 2011).

Thus, the findings of the present study should caution readers from interpreting the Cohen et al. (2006) study title with the language “reducing the racial achievement gap” as a remedy for the nationwide achievement gap. The intervention cannot be quickly scaled and branded as a panacea for the broader systemic issues our society and schools face. Researchers and practitioners alike should not immediately generalize from the findings of a small sample and single intervention, particularly when associated with the broader and complex racial achievement gap. The findings in the current study do not indicate that value affirmation is a poor strategy to support students, but rather, suggest additional prerequisites that may be important in implementing a value affirmation intervention successfully.

One hypothesis for the lack of value affirmation effectiveness is that the school-level systems and environmental factors may have saturated all students with “value affirmation intervention-like” experiences. Examples that were consistent with this hypothesis at the schools from which the samples were drawn include small advisory class-communities including other team-building exercises, schoolwide restorative justice discipline systems, and campus cultures with an emphasis on diversity, equity, and inclusion. These facets may have also resulted in fewer differences among student subgroups who reported social evaluative threat. In the landmark Cohen et al. (2009) study, the broader school culture was not explicitly measured or described aside from noting the numeric majority of White students.

Another takeaway from the study is high-performing schools (either purposefully or inadvertently) incorporate social-psychological research into their daily practice and institutional systems. Each of charter schools in the sample had common factors such as supportive and

trusting communities and high expectations for all students (Valenzuela, 1999; Yeager et al., 2017). Schools have the opportunity to embed social-psychological principles in their functioning, from the way teachers interact with students to the pedagogical systems and structures that organize classrooms. Indeed, some schools are suffocated by the toxic impacts of economic poverty, whereas others with similar socioeconomic profiles are performing at the same or higher levels than predominantly White middle-class communities (Reardon, 2013, 2015; Reardon et al., 2013).

Limitations

Capturing social evaluative threat. One limitation and inevitable challenge – often encountered in social psychological research– is effectively capturing a latent variable: social evaluative threat. The self-report survey measures used are single snapshots of general feelings of belonging and trust; these feelings may change over time, and the scales may not accurately capture each event when a student experiences social evaluative threat. Additionally, students categorized as experiencing social evaluative threat using belonging and trust self-report surveys is an epistemological choice guided by past research and practicality given the large group of students. If resources were not a factor, a mixed methodology (i.e., quantitative and qualitative) with a subset of student and teacher interviews alongside surveys could more closely examine social evaluative threat and the exploration of teacher-level variables.

Missing voices. Another limitation of the study is the student participation rate. Informal interviews with teacher participants from schools with lower participation rates indicated they had difficulty collecting parent signatures from many students. Several parents returned forms with explicit instructions for their students not to participate in the study. A parent’s decision to not allow their child to participate in the study may have occurred due to suspicion or distrust of outside researchers from an unfamiliar academic institution. Also, the study design did not include opportunities to maximize student participations such as make-up days for students who were frequently absent or targeted outreach to students whose parents may be distrustful of outside researchers collecting sensitive student information. Students who experience social evaluative threat may have been underrepresented in the fall and spring data collection.

Second, at the start of the study, personnel at the district school had initially confirmed they would be able to share demographic data for participating students. However, there was a change in school leadership during the course of the study, and the new administration was not willing to share the some demographic data (i.e., free and reduced lunch status, English language proficiency scores), resulting in a less data for some analyses.

Similarly, schoolwide public statistics of students with disabilities were significantly underrepresented compared to national rates of special education students. In the current sample, 47 of 808 students (5.8%) were identified with a disability as compared to the school-reported rates ranging from 6-9%. For context, the nationwide rate of students in special education is 13% but differs state to state (NCES, 2019). Additionally, some students were identified as special education students, but the disability categories were not available. A majority of students with disabilities (i.e., 32 of 47) were identified with Specific Learning Disability (SLD) or Other Health Impairment (OHI). Of the 13 federal disability eligibility labels used in special education, seven were represented as the primary disability eligibility within the sample. One contributing factor was that many students with a disability in the two charter high schools were often placed in a resource lab special education class, and a significant portion did not enroll in the seminar class where the survey was administered.

The student participation rate raises several questions. First, who are the participants included in social-psychological research and who is excluded? Second, how can we better include authentic measures of students' thoughts, beliefs, and feelings? Third, how can we encourage students with a low sense of belonging or trust to participate in research? Researchers must continue to build bridges with communities and families who feel ostracized and may be less likely to participate in research studies.

The danger of reductionist labels: Race/ethnicity and disability categories. Student-level ethnic subgroups and categories are socially-constructed categories, and a significant portion of students marked "Other" when asked to identify an ethnic subgroup. Students who identified as Mixed and Other included were from a plethora of backgrounds and were meaningful numeric subgroups. Thus, results for ethnic-racial groups should be interpreted with caution as ethnic categories can be both helpful and reductionist. However, the measure was selected for the study as an important tool for students to opt-in to the category they felt most reflected their ethnicity, rather than using school-based racial or ethnicity labels.

Special education status and disability eligibility are two heterogeneous categories. Students with disabilities may or may not qualify for special education status, and the 13 federal eligibility categories are broad, even within specific eligibility labels. The experience of a student with a visible or physical disability varies considerably from a student with an individual disability in terms of social experience and peer stigma (Dunn, 2014). Conversely, a specific learning disability may be invisible to peers but manifest itself for students internally during specific classes or content areas (e.g., math or reading). Special education and disability eligibility are broad labels that represent a range of experiences, particularly between schools and educational programs. A student's disability eligibility label does not reflect the totality of that student's experiences. However, special education status is important – and was selected as an identifier in this study because it is tied to many day-to-day decisions that impact a student's life, such as educational services, accommodations, placement, and a school's access to financial resources.

Intersectionality. The student profiles in Table 13 provide an opportunity (a) to build upon work employing intersectionality theory (Crenshaw, 1989) and (b) to consider invisible and visible identity factors and how each contributes to social evaluative threat. Multiple layers of identity could more fully explain social evaluative threat in school settings. For example, an analysis using a number of risk factors (e.g., marginalized demographic labels) may provide a more comprehensive description of a student. Students' identities may become more or less salient depending on their context and surrounding experience. For example, a Latinx male student with a learning disability may or may not encounter social evaluative threat effects in school. On the one hand, the student's disability may trigger social evaluative threat effects during math tests; on the other the student may excel in other classes, such as P.E., where he exhibits personal strengths and his disability label is not salient.

Future Research and Application for Schools

Social-psychological interventions such as value affirmation interventions may be supplemental tools to support students in White-majority contexts, but do not appear to be effective in urban schools where students of color are the numeric majority (Bratter et al., 2016). Although the value affirmation intervention did not yield the hypothesized effects in the current sample, the present study does not speak to the utility of value affirmation interventions in high-threat school contexts. Researchers and practitioners must identify other well-defined contextual

factors. Explicit, equitable, and transferable practices will allow students from marginalized backgrounds to be more motivated and engaged in the 21st-century school system (Duckworth & Yeager, 2015; Dweck, Walton, & Cohen, 2011).

More research is needed to interview students who identify as Other. In the present sample, students who identified as Other had the highest rate of social evaluative threat compared to students of other ethnicities. Students who do not identify with the ethnicity categories used in a study are often not included in research studies but may be a group that will benefit from social evaluative threat-reduction interventions. Future research must ensure there are opportunities for students who feel marginalized to participate during the research process. It is important for student participants to reflect the broader school community. Social psychological research for students on the margins (e.g., some Black, Latinx, and students with disabilities) must include students who feel they do not belong in nor trust the school. Nudges will only be useful if they reach and have a positive impact on the students who need them most: individuals with marginalized identities who report social evaluative threat in schools and are not performing well in school.

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Table 1

Descriptive Statistics of Student Grades, Attendance, and Psychological Variables

Variable	<i>N</i>	Range	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α
1. Semester 1 Grades	808	32.50 – 100	82.70	10.65	-1.13	4.98	
2. Semester 2 Grades	808	29.00 – 100	82.72	11.35	-1.12	4.71	
3. Attendance	808	49.00 – 100	97.0	5.0	-3.62	21.96	
4. Belonging (fall)	808	1.00 – 6.00	4.21	1.06	-0.67	3.33	.83
5. Institutional trust (fall)	808	1.43 – 6.00	4.50	0.76	-1.00	4.92	.86
6. Belonging (spring)	471	1.00 – 5.75	3.92	0.90	-0.93	3.91	.70
7. Institutional trust (spring)	463	1.00 – 6.00	4.39	0.85	-0.63	3.92	.89

Table 2

Correlation Coefficients of Student Grades, Absences and Psychological Variables

Variable	1	2	3	4	5	6	7	8
1. Semester 1 Grades	1.00							
2. Semester 2 Grades	.88*	1.00						
3. Attendance	.35*	.36*	1.00					
4. Belonging (fall)	.00	.01	-.05	1.00				
5. Belonging (spring)	-.01	.00	-.03	.58*	1.00			
6. Institutional trust (fall)	.06	.11*	.06	.49*	.25*	1.00		
7. Institutional trust (spring)	.02	.10*	-.06	.33*	.52*	.47*	1.00	
8. Social Evaluative Threat (fall)	-.09	-.12	-.07	-.52*	-.33*	-.37*	-.19*	1.00

* $p < .05$.

Table 3

Psychological Threat in Context: Student Social Evaluative Threat by School

School	No Reported Threat	Social Evaluative Threat	Total
Charter MS (1)	57 (86.36%)	9 (13.64%)	66 (100%)
Charter HS (2)	277 (86.56%)	43 (13.44%)	320 (100%)
Charter HS (3)	279 (83.39%)	56 (16.72%)	335 (100%)
District HS (4)	72 (82.76%)	15 (17.24%)	87 (100%)
Total	685 (84.77%)	123 (15.23%)	808 (100%)

Table 4

Social Evaluative Threat by Ethnicity

Student-Reported Ethnicity	No Reported Threat	Social Evaluative Threat	Total
Hispanic or Latino, including Mexican American, Central American and others	360 (83.92%)	69 (16.08%)	429 (100%)
Black or African American	48 (90.57%)	5 (9.43%)	53 (100%)
Mixed; Parents are from two different groups	42 (84.00%)	8 (16.00%)	50 (100%)
Asian or Asian American, Including Chinese, Japanese, and others	190 (89.20%)	23 (10.80%)	213 (100%)
White, Caucasian, Angelo, European American; not Hispanic	14 (82.35%)	3 (17.65%)	17 (100%)
Other	31 (67.39%)	15 (32.61%)	46 (100%)
Total	685 (84.77%)	123 (15.22%)	808 (100%)

Table 5

Social Evaluative Threat by Special Education Status

Disability Eligibility	No Reported Threat	Social Evaluative Threat	Total
General Education	649 (85.28%)	112 (14.72%)	761(100%)
Special Education	36 (76.60%)	11 (23.40%)	47 (100%)
Total	685 (84.770%)	123 (15.22%)	808 (100%)

Table 6

Hierarchical Regression of Social Evaluative Threat Predicting Semester 2 Grades

Variable	<i>B</i>	<i>SE</i>	β	Adjusted <i>R</i> ²	ΔR^2	<i>p</i>
Block 1						
School	-2.11	0.43	-4.91	.03		0.00
Block 2						
Social Evaluative Threat	-4.49	1.71	-2.62	.04	.01	0.00
Block 3						
Value Affirmation Intervention	-0.71	0.85	-0.84	.04	.00	0.65
Block 4						
Interaction: Feeling Under Threat x Value Affirmation	2.09	2.22	0.95	.04	.00	0.27

Table 7

Quantile Regression of Ethnicity Predicting Attendance (25th Percentile)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
School	-1.13	.25	-4.46	0.00
Social Evaluative Threat	-.59	.65	-0.92	0.36
Ethnicity				
Black or African American	-5.55	1.36	-4.08	0.00
Hispanic or Latino	-2.87	0.76	-3.77	0.00
White	-4.60	2.98	-1.54	0.12
Mixed; parents from two or more ethnic groups	-5.78	1.59	-3.64	0.00
Other	-0.60	1.52	-0.36	0.63
Value Affirmation Intervention	-0.5	0.89	-0.56	0.56
Interaction: Value Affirmation Intervention x Ethnicity				
Black or African American	-2.20	2.00	-1.10	0.27
Hispanic or Latino	1.06	1.09	0.98	0.33
White	2.20	3.58	0.61	0.54
Mixed; parents from two or more ethnic groups	2.78	2.08	1.34	0.18
Other	-7.07	2.12	-3.32	0.00

Note. Students who selected “Asian or Asian American, including Chinese, Japanese, and others” were used as the reference group for the ethnicity variable

Table 8

Multiple Linear Regression of Ethnicity Predicting Semester 2 Grades

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
School	-1.75	.41	-4.30	0.00
Social Evaluative Threat	-2.56	1.04	-2.37	0.01
Ethnicity				
Black or African American	-14.80	2.17	-6.80	0.00
Hispanic or Latino	-7.44	1.22	-6.10	0.00
White	-11.40	4.77	-2.39	0.02
Mixed; parents from two or more ethnic groups	-9.11	2.54	-3.59	0.00
Other	-6.40	2.44	-2.62	0.00
Value Affirmation Intervention	-0.07	1.43	-0.05	0.96
Interaction: Value Affirmation Intervention x Ethnicity				
Black or African American	1.38	3.21	0.43	0.67
Hispanic or Latino	-1.40	1.75	-0.80	0.43
White	3.06	5.77	0.53	0.59
Mixed; parents from two or more ethnic groups	4.59	3.33	1.38	0.17
Other	0.63	3.40	0.18	0.85

Note: Students who selected “*Asian or Asian American, including Chinese, Japanese, and others*” were reference group for ethnicity analysis.

Table 9

Quantile Regression of Student Demographic Variables Predicting Attendance (25th Percentile)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
School	.05	0.16	0.32	0.75
Free/Reduced Lunch	-0.55	0.29	-1.91	0.06
Special Education Status	-2.15	0.95	-2.26	0.02
EL Status				
Reclassified English Proficient	1.20	0.64	1.89	0.06
Initially Fluent English Proficient	1.75	0.34	5.21	0.00
English Language Learner	1.15	0.56	2.04	0.04
Social Evaluative Threat	-0.45	0.36	-1.24	0.22
Value Affirmation	-1.05	0.27	-3.93	0.00
Value Affirmation x Special Education Status	1.55	1.21	1.28	0.20

Note. Due to the availability of demographic data from the district school this model only included the data from the three charter schools.

Table 10

Hierarchical Regression of Student Demographic Variables Predicting Semester 2 Grades

Variable	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2	<i>p</i>
Block 1						
School	-0.99	0.43	-2.32	0.01		0.04
Block 2						
Free/Reduced Lunch	-2.47	0.81	-3.04	0.02	0.01	0.00
Block 3						
Special Education Status	-12.91	2.62	-4.93	0.07	0.05	0.00
Block 4						
EL Status	0.54	0.42	1.28	0.07	0.07	0.19
Block 5						
Social Evaluative Threat	-3.03	1.03	-2.96	0.08	0.08	0.00
Block 6						
Value Affirmation	-0.35	0.75	-0.46	0.08	0.08	0.84
Block 7						
Value Affirmation x Special Education Status	4.11	3.41	1.20	0.08	0.00	0.00

Note. Due to the availability of demographic data from the district school this model only included the data from the three charter schools.

Table 11

Hierarchical Regression of Value Affirmation Intervention Effects on Spring Trust

Variable	<i>B</i>	<i>SE</i>	β	Adjusted R^2	ΔR^2	<i>p</i>
Block1						
School	0.06	0.05	1.16	0.00		
Block 2						
Social Evaluative Threat	-0.82	0.19	-4.39	0.07	0.07	0.00
Block 3						
Value Affirmation	0.01	0.09	-1.40	0.07	0.00	0.61
Block 4						
Interaction: Social Evaluative Threat x Value Affirmation	0.25	0.24	1.05	0.07	0.01	0.29

Table 12

Hierarchical Regression of Value Affirmation Intervention Effects on Spring Belonging

Variable	<i>B</i>	<i>SE</i>	β	Adjusted <i>R</i> ²	ΔR^2	<i>p</i>
Block1						
School	0.09	0.05	1.74	0.00		
Block 2						
Social Evaluative Threat	-0.91	0.21	-4.37	0.15	.15	.00
Block 3						
Value Affirmation Int.	0.05	0.10	0.56	0.15	.00	.94
Block 4						
Interaction: Social Evaluative Threat x Value Affirmation	-.36	0.27	-1.35	0.18	0.03	.17

Table 13

Student Social-Psychological Profiles

Student	Ethnicity	Disability Eligibility	English Language Status	Social Evaluative Threat	Semester 1 Grades	Semester 2 Grades	Attendance
Student 1	Mixed	SLD	EO	No	72.5%	87.5%	66.0%
Student 2	Hispanic or Latino	None	RFEP	Yes	93.0%	87.5%	100%
Student 3	Asian	None	RFEP	No	95.0%	96.0%	100%
Student 4	Black or African American	None	EO	No	79.5%	80.5%	98.8%
Student 5	Black or African American	None	EO	Yes	94.5%	92.0%	98.3%
Student 6	Hispanic or Latino	OHI	N/A	Yes	65.0%	70.0%	70.3%
Student 7	Mixed	None	EO	No	71.5%	74.5%	95.3%

Appendix A

Belonging Scale

Respond to the following questions. There are no right or wrong answers!

	Strongly disagree	Disagree	Sometimes Disagree	Sometimes Agree	Agree	Strongly Agree
Right now, I feel like I belong at my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now, I fit in well at my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now, I feel like an outsider at my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Right now, I feel comfortable at my school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B

Institutional Trust Scale

Directions: Below are questions about your feelings in school. Mark the answer that matches your feelings about each statement.

There are no right or wrong answers and your individual responses will be kept secret.

	Very Much Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Very Much Agree
I am treated fairly by teachers and other adults at my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When students at my school break the rules, their punishment is decided in a fair way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers and other adults treat me with respect.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students in my racial group are treated fairly by the teachers and other adults at my school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very Much Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Very Much Agree
Teachers give me the grades I think I deserve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My teachers at my school have a fair and valid opinion of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teachers and other adults treat students in my racial group with respect.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix C

Value Affirmation Intervention

Drag and drop ONLY two or three values that are MOST important to YOU...

Items	MOST Important Values to YOU
Athletic Ability	
Being good at art	
Being smart or getting good grades	
Creativity	
Independence	
Living in the moment	
Membership in a social group (such as your community, racial group, or school club)	
Music	
Politics	
Relationships with friends or family	
Religious Values	
Sense of humor	

Describe in a few sentences why the values selected might be important to YOU.

Focus on your thoughts and feelings—don't worry about spelling, grammar, or how well written it is.

(Optional sentence starter: _____ is important to me because....)

Appendix D

Key Terms and Definitions

Key Term	Definition	Citation
Stereotype Threat	the concrete and real time worry or concern of confirming a negative stereotype with performance during a specific situation	Cohen, Steele, & Ross (1999)
Social Evaluative Threat	the feeling or risk of negative evaluation or social rejection	Cook et al. (2012)
Nudge	an intentional addition to, or arrangement of, an environment to alter people's behavior in a predictable way	Thaler & Sunstein (2008)
Social-Psychological Nudge	“Nudges that target specific underlying psychological processes that contribute to social problems or prevent people from flourishing... researchers identify an aspect of people's psychology that harms their outcomes and aim to change this process”	Walton (2014, p. 73)
Value Affirmation	Value affirmation interventions are deliberate opportunities for individuals to self-affirm and assert the importance of core values	Cohen & Sherman (2014)