

Reducing the Achievement Gap: Why Are Self-Affirmation Interventions Effective?

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Abstract

The achievement gap between White and Black students and White and Latino students remains one of the largest issues in education today despite countless efforts to reduce it. Previous reforms have focused on school-centered initiatives such as improving teacher quality or expanding Pre-Kindergarten programs. While these attempts are laudable, they have not found great success. However, recent trends in social-psychological research have pointed to student-centered intervention strategies that are subtle but powerful and that have achieved long-lasting effects like heightened GPA and standardized test scores. These strategies are appealing because they are inexpensive, simple, and easy to execute. The present review focuses on a self-affirmation intervention strategy that has been shown to mitigate the effect of stereotype threat and thus diminish the achievement gap. In order to understand this intervention, the paper merges the literature on stereotype threat and the literature on self-affirmation to shed light on how the processes interact. More specifically, the review explores how self-affirmation, in the form of values affirmation exercises, disrupts negative self-reinforcing recursive processes that inhibit success in school for minority students. Self-affirmation reduces the stress students experience in psychologically threatening situations and frees up cognitive resources to focus on the task at hand, thereby beginning an alternative recursive cycle that leads to greater success in school. The paper reviews studies on self-affirmation interventions that have been both successful and unsuccessful at lessening the achievement gap. Finally, future research directions and implications for schools are conveyed.

Reducing the Achievement Gap: Why Are Self-Affirmation Interventions Effective?

The achievement gap between White and Black students and White and Latino students continues to plague our country, systemically undermine the success of thousands of students, and hinder our global competitiveness. The “achievement gap” points to the persistent disparity in educational outcomes between minority and/or low-income students and their White and Asian counterparts (National Education Association, 2015). According to National Assessment for Education Progress (NAEP) data, the difference in average math and reading scores between European Americans and African Americans was virtually unchanged between the early 1990s and 2007 (Vanneman, Hamilton, Baldwin Anderson, & Rahman, 2009). Data from the 2011 National Center for Education Statistics (NCES) show that the Black-White achievement gap persists by as many as 18 to 26 points on a 500-point scale score, even when controlling for socioeconomic status (Bohrstedt, Kitmitto, Ogut, Sherman, & Chan, 2015). More recent data shows that the achievement gap in some school systems is as large as 1.2 standard deviations, with the average across the United States at roughly 0.5 to 0.7 standard deviations (Reardon, Kalogrides, & Shores, 2017). The gap in achievement is not only problematic for low-income and minority students, but also for the United States as a whole because it is detrimental to our global competitiveness. On the 2015 Program for International Student Assessment (PISA), students in the United States fell behind at least 20 other countries including Finland, South Korea, and Canada (NCES, 2015). The scores on these international exams will not significantly improve until the achievement gap lessens. Therefore, even minor changes to the achievement gap can have significant consequences at many levels.

Given the magnitude of the problem and the variety of systemic factors that contribute to its scope and persistence, there is no singular remedy that will eradicate the achievement gap.

Previous efforts have largely focused on school-centered initiatives such as improving teacher training, instructional materials, and expanding Pre-K programs (Wilson & Buttrick, 2016).

While these efforts are important and have great potential to alter educational outcomes, past attempts have largely failed to make a noteworthy impact as the achievement gap has not significantly changed since the 1980s (Barton & Coley, 2010). Since students are not just passive recipients of knowledge and successful learning depends on much more than quality of services (Wilson & Buttrick, 2016), it is worth exploring how nuanced student-centered approaches may find greater success in diminishing the achievement gap.

Social-psychological research has uncovered promising intervention strategies that are student-centered and can lead to large gains in achievement (e.g., Cohen, Garcia, Apfel, & Master, 2006). These interventions target students' beliefs, construals, and interpretations of events in order to make them more adaptive. Unlike traditional educational interventions that focus on academic content, these psychological interventions are designed to change students' thoughts and feelings in and about school (Yeager & Walton, 2011). Examples of such interventions are those designed to teach students that poor academic performance is normal in the transition to a new school and that grades typically improve after the transition (Wilson & Linville, 1982) or interventions that encourage students to view intelligence as malleable instead of fixed (Dweck, 2006). These subtle yet powerful interventions are appealing because they are simple and inexpensive to execute, and they can have significant and lasting effects. Effects in the short-term result from targeting students' subjective perceptions of experiences in school. Effects in the long-term come from changing the course of recursive processes, or self-reinforcing processes that accumulate effects over time (Yeager & Walton, 2011). Yeager, Walton, and Cohen (2013) proposed that psychological interventions raise student achievement

by: 1) influencing students' construals of themselves and the classroom, 2) using delivery tactics grounded in psychological research, and 3) tapping into self-reinforcing or recursive processes.

The current paper focuses on a specific type of social-psychological intervention – a values affirmation intervention proven to mitigate the effect of stereotype threat and subsequently diminish the achievement gap. The seminal intervention study of this nature was conducted by Cohen et al., (2006). In a double-blind randomized controlled experiment, the researchers tested whether psychological threat could be lessened by having students reaffirm their sense of personal adequacy or “self-integrity.” Middle- to low-income 7th graders in a racially diverse school were provided with a list of 12 values (e.g., relationships with friends/family, being good at art, religion) and were randomly assigned to one of two conditions. The students in the experimental condition were asked to choose the two or three values most important to them and then write a paragraph about why they were important to their lives. The students in the control condition chose their least important values and wrote about why someone else might find those values to be important. The research team found that the brief in-class writing assignment significantly improved the grades of the African American students in the experimental condition and reduced the achievement gap by 40%. Participation in the affirmation yielded no effect on the grades of White students, suggesting that self-affirmation reduced stereotype threat among Black students or at least bolstered dimensions of their self-worth that helped reduce their stress levels and thereby facilitated performance.

Two years later the authors conducted a follow-up study to see if the results persisted (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoksi, 2009). While some psychological interventions have only short-term impact, this particular intervention demonstrated a lasting impact two years later, especially for low-achieving African American students. Over the two

years between studies, the GPA of African American students was, on average, 0.24 points higher than that of control group African American students. The intervention also lessened the likelihood of affirmed students being assigned to a remedial track. This seminal study demonstrated the potential long-term impact of psychological interventions as a means to reduce the achievement gap.

Following the Cohen et al. (2006) study, many other researchers have explored values affirmation as a means to mitigate stereotype threat and have examined the success of the intervention in different contexts (e.g., Cook, Purdie-Vaughns, Garcia, & Cohen, 2012; Sherman et al, 2013). The current paper will review the literature on stereotype threat and self-affirmation, and then examine how these separate processes interact. The paper looks at both successful and unsuccessful affirmation interventions in the classroom in order to further understand how and why they work and to suggest further studies. Given the subtle yet powerful nature of the intervention, there are clear implications for policymakers and educators to execute the intervention.

Stereotype Threat

Stereotype threat is the risk of confirming, as a self-characteristic, a negative stereotype about one's group (Steele & Aronson, 1995). The term was coined more than two decades ago when Claude Steele and Joshua Aronson sought to uncover an explanation for the long-standing finding that African American students underperform on standardized tests. They hypothesized that African Americans underperformed when they were aware that failure could reinforce a negative stereotype, interfering with the intellectual functioning of these students, particularly during standardized exams. In the first of several studies, African American college students performed worse than White peers on standardized tests when the exams were presented to them

as diagnostic of their ability and when students were asked to report their race beforehand. Students in the control condition were told they were completing an exercise in problem solving. In the diagnostic condition, African American students performed significantly worse than White students. However, African American students in the control condition performed as well as control-condition Whites, and better than their African American counterparts in the diagnostic condition. Steele and Aronson reasoned that when exams were presented as diagnostic of ability, knowledge of prevalent cultural stereotypes asserting intellectual inferiority of African Americans triggered fear of confirming the stereotypes, and interfered with student performance.

In a series of follow-up studies, Steele and Aronson (1995) found that even when tests were not presented as diagnostic of ability, the salience of negative stereotypes still impaired performance. Simply by indicating race on an exam, African American students did worse than their White counterparts. However, when students did not indicate their race, African Americans performed as well as White students. Regardless of how the stereotype was primed, being confronted with the threat of confirming negative stereotypes impeded the performance of African American students.

Following Steele and Aronson's original study, hundreds of others have demonstrated how negative stereotypes about intellectual ability impact the performance of those in stereotyped groups including Black, Latino, female, and low-income students (for a review, see Nguyen & Ryan, 2008). Spencer, Steele, and Quinn (1999) found that when negative stereotypes about women's math abilities were made explicit beforehand, women underperformed relative to their potential on quantitative tasks in relation to men. Women did not underperform, however, when stereotypes were presented as irrelevant to the task. Even groups who typically benefit from privileged social status can be made to experience stereotype threat. For example, White

men performed worse on a math test when they were told their performance would be compared with that of Asian men (Aronson et al., 1999). Additionally, Whites performed worse than Blacks on a motor task when it was described to them as measuring their natural athletic ability (Stone, 2002).

Psychological Processes Underlying the Effect of Stereotype Threat

In order to reduce the impact of stereotype threat, it is imperative to understand the psychological processes underlying its effects. Schmader, Forbes, and Johns (2008) developed an integrated process model of stereotype threat in which motivational, affective, physiological, and cognitive processes interact to hinder performance (see Figure 1). As shown in the model, stereotype threat induces physiological stress responses, negative emotion regulation, and monitoring processes. When a person experiences negative emotion regulation, the person uses suppression processes to deal with it, further encouraging physiological stress responses and monitoring processes, and thereby consuming mental resources. Altogether, these responses diminish working memory efficiency and hinder performance on cognitive and social tasks that require effortful processing. Working memory efficiency is essential to perform well in school. As such, students cannot perform to their highest potential when they experience stereotype threat. Performance on more automatic sensorimotor tasks is stunted as well, specifically by the monitoring processes.

Another consequence of stereotype threat that is not explicitly demonstrated in the model is the increased likelihood of exhibiting a prevention focus, i.e., a mindset in which one works vigilantly to prevent negative outcomes instead of working toward achieving positive ones (Higgins, 1998). A prevention focus is less adaptive in gains-focused evaluative settings where

students work to achieve their highest performance levels; cognitive processes associated with a promotion focus are better-suited to performance on tasks in school (Seibt & Forster, 2004; Grimm et al., 2009). Students who exhibit a promotion focus instead of a prevention focus are more focused on learning instead of performance and are therefore less likely to experience the anxiety associated with performance. Promotion-focused students are also more oriented toward mastery of material. Although the Schmader et al. (2008) model does not mention prevention focus and is not entirely comprehensive because it fails to account for processes that occur prior to stereotype threat, it effectively summarizes how stereotype threat disrupts performance via three mechanisms: 1) psychological stress response that directly impairs prefrontal processing; 2) the tendency to actively monitor performance; and 3) efforts to suppress negative thoughts and emotions in the service of self-regulation. These mechanisms consume all of the executive resources needed to perform well on cognitive and social tasks.

Furthermore, Schmader et al. (2008) proposed that all stereotype-threat relevant situations involve activation of three core concepts: the concept of one's ingroup, the concept of the ability domain in question, and one's self-concept. The way one sees the relation between these three concepts influences one's experience of stereotype threat. For example, a student may think the following: My group has this ability; I am like my group; I have this ability. Another might also think the opposite: My group does not have this ability; I am like my group; I do not have this ability. Stereotype threat comes from a situationally-induced state of imbalance between these three core concepts, so the second student is experiencing stereotype threat because there is an imbalance in that thought. Stereotype threat is triggered by situations that pose a threat to self-integrity, creating a cognitive imbalance when one's concept of self and expectation for success conflict with stereotypes that suggest one will perform badly. Wheeler,

Jarvis, and Petty (2001) found that individuals perform consistently with an outgroup stereotype only when the outgroup is temporarily incorporated into their own working self-concept. In this way, even if an individual does not always identify with a negatively stereotyped group, if they are manipulated in such a way to temporarily do so, they are left in a state of cognitive imbalance that underlies stereotype threat. It is also worth noting that positive self-identification is derived in part from membership in social groups (Tajfel, 1982) so group membership and identification *could* serve as an affirmation. However, when the group is negatively stereotyped it can also serve as a psychological threat. In summary, it is difficult to maintain one's positive self-concept and negative group concept in a stereotype-relevant domain.

Stereotype threat can have effects that people are either unable or unwilling to consciously report (Johns et al., 2008). In fact, that is one factor that differentiates stereotype threat from other social-evaluative threats that are detrimental to performance, such as test anxiety. Firstly, stereotype threat is unique from test anxiety because it is triggered by activating one's membership in a negatively stereotyped group (Schmader et al., 2008). Stereotype-threatened individuals who are typically confident in their abilities, or who have a positive self-concept, can find themselves in situations that are not explicitly evaluative and still perform badly. Notably, people may not know they are suffering from stereotype threat whereas it is fairly obvious when one is experiencing test anxiety. Stereotype threat is often cued subtly and can impair performance while leaving individuals unaware of their resulting feelings of anxiety (Johns et al., 2008).

There are also situations in which, although stereotypes are present and relevant, they are not activated for individual students and therefore do not explain students' underperformance. For example, if students have already de-identified with school and lost motivation to work hard

then a focus on eliminating stereotype threat may not make a difference (Steele, 1997). If a student does not identify with a school-domain at all then the self will not be threatened in the stereotype-relevant domain of school. There are also situations in which students simply do not have awareness of negative stereotypes about their group (Wasserberg, 2014). Thus, not every stereotype-relevant situation engenders stereotype threat in every student. In this way, stereotype activation may be a critical step in the process beginning with a stereotype-relevant situation and ending with underperformance that is left out of Schmader's model. A model introduced later in this paper will address that gap.

Stereotype Threat Affects Learning, Not Just Performance

It is well established that stereotype threat is detrimental to performance in school settings (e.g, Nguyen & Ryan, 2008; Steele et al., 2002). However, Taylor and Walton (2011) explored how stereotype threat might impact learning itself. Measures of performance are not always the same as measures of learning, especially given today's emphasis on high-stakes testing. Students who are subject to stereotype threat may not be able to convey all of their knowledge on exams, the traditional performance indicators, in such a way that demonstrates everything they have learned. Taylor and Walton reasoned that if stereotype threat impacts both learning and performance environments, it could cause cumulative performance deficits that could further explain the stark differences amongst different groups. They tested the effect of stereotype on learning directly by manipulating the presence or absence of stereotype threat in a learning environment and then assessing performance in both nonthreatening and then threatening environments. Black and White students studied rare words in either an evaluative, threat-inducing learning environment or in a non-evaluative learning environment. In the learning threat condition, the word-learning task was described as relevant to negative

intellectual stereotypes about African Americans. One to two weeks later, when students were tested, Black students who had studied in the evaluative environment defined about half as many words correctly as their peers who had studied in the nonthreatening performance setting. Whether or not White students studied in an evaluative environment made no difference on their performance since White students defined the same number of words in both settings. These results provided direct evidence that stereotype threat can undermine academic learning, leading the authors to claim that stereotype threat causes a form of “double jeopardy” (p.1057) because it both interferes with how well stereotyped students learn new material and also prevents stereotyped students from performing as well as they could on material they learned. One major implication of this study is that grades and test scores are not necessarily representative of stereotyped students’ ability. The study results are also a testament to the widespread and immense impact of stereotype threat. More specifically, stereotype threat prevents students from acquiring the intellectual building blocks they need to perform well in school.

Lasting Impact of Stereotype Threat

The Taylor and Walton study (2011) demonstrates how stereotype threat can have a long-term impact on academic success. When students fear confirming negative stereotypes about their intelligence, they may not learn as well and underperform in class despite high intellectual potential. After performing poorly in a class that provides foundational knowledge to be used in future classes and not acquiring the building blocks of knowledge they need from that course, students are less prepared for subsequent related courses. This could further undermine their confidence and feelings of self-efficacy, putting them at an increased disadvantage, and leading to successively worse performance. Thus, a maladaptive recursive process can be set in motion by stereotype threat.

Research emphasizes how poor performance and negative social and psychological processes may perpetuate over time in recursive cycles (e.g. Cohen et al., 2009). For example, with repeated exposure, stereotype threat can cause disidentification, whereby students detach their sense of self-worth from academic tasks and disengage from school (Steele, 1997). Identification with school and its subdomains is crucial for academic success. Additionally, students who expect rejection based on race may interpret any negative events in school as evidence of their lack of belonging, and belongingness is known to affect both motivation and performance (Connell, Halpern-Flesher, Clifford, Crichlow, & Usinger, 1995). Figure 2a illustrates how a negative recursive process stemming from stereotype threat can lead to underperformance over time and repeated instances of threat. Stereotype threat impairs learning which leads to decreased performance (Taylor & Walton, 2011). After performing badly, students will likely have lower confidence and feelings of belongingness in school, a construct that contributes to lower performance (Connell et al., 1995). When students continue to perform badly they are more likely to de-identify from school, resulting in less motivation to work hard (Steele, 1997), less engagement, and eventual long-term failure in school. Once students are caught in this negative recursive cycle in school it is exceedingly difficult to change their trajectories.

We can, however, change students' academic trajectories by employing interventions to successfully reduce the impact of stereotype threat. One strategy to combat stereotype threat is quite simple – tell the participants about stereotype threat. Johns, Schmader, and Marten (2005) conducted a study in which making participants aware of their susceptibility to stereotype threat was enough to combat it. In the threat condition, women were told they were taking a math exam that would examine gender differences in math ability. In the no-threat condition, women were

told they were taking an exam that tested individual differences on problem-solving exercises. In the third condition, like the first one, women were told they were taking a math exam that would examine gender differences in math ability; however, they were also told about stereotype threat and how it may make women feel more anxious while taking a math test and lead them to underperform as a result. Unsurprisingly, women underperformed men in the first condition and performed equally in the second condition. Women also performed equally to men in the third condition, though, showing that how individuals interpret their experience when under threat plays a critical role in performance. Perhaps making people aware of the threat they are experiencing allows them to overcome it or at least understand how the threat may impact them so that they can look past it. The researchers explained that knowing about stereotype threat provided a situational attribution, instead of an internal or personal one, thereby providing an external explanation for any arousal they felt. In the context of Schamder et al.'s model (2008), when people are told about stereotype threat, it affects their reappraisal of the situation in the negative emotional regulation cycle. Nevertheless, there is not yet enough research supporting this intervention strategy. Also, according to a meta-analysis conducted by Nguyen and Ryan (2008), stereotype threat led to a smaller decrease in performance for women than it did for minorities on difficult tests, suggesting that this method of informing people of stereotype threat may not have the same impact on minority populations other than women. The rest of the paper will focus on another important effort to reduce the impact of stereotype threat - the aforementioned intervention strategy that uses self-affirmation exercises to reduce the impact of stereotype threat.

Self-Affirmation

Self-affirmation is an act that demonstrates one's adequacy and directs one's attention to valued aspects of the self (Steele, 1988). Self-affirmation has also been defined as behavioral or cognitive events that bolster the perceived integrity of the self as well as one's overall self-image as competent, effective, and able to control important outcomes (Cook, Purdie-Vaughns, Garcia, & Cohen, 2012). Self-affirmation was first introduced as a route to resolving cognitive dissonance (Steele, 1988). Steele, who is also credited with coining the term "stereotype threat," found that people were able to resist the normal urge to rationalize bad decisions or failure if they had the opportunity to reflect upon important sources of self-worth. At the center of self-affirmation theory is the fact that people are motivated to maintain self-integrity, or a global sense of personal adequacy and an image of oneself as able to control important adaptive and moral outcomes in one's life (Cohen & Sherman, 2014). But self-integrity can be challenged by psychologically threatening events, i.e., those perceived as environmental challenges to the adequacy of the self (Cohen & Sherman, 2014). Psychological threats - including stereotype threat, as mentioned above - can impede adaptive coping by consuming mental resources and prompting rationalizations or other defensive processes to lessen the threat. However, when people affirm their overall self-integrity they have less need to suppress or rationalize away threatening information. Self-affirmations can reduce stress by putting psychological threats in the context of the overall narrative of self-integrity (Sherman, 2013).

Values Affirmation Exercises and Effects

Self-affirmation exists in various forms, including positive feedback on a personally important skill, purchasing of status goods, and updating one's Facebook page, but in experimental manipulations it is usually in the form of values affirmation exercises in which people write about core personal values. People completing values affirmation exercises are told

to look over a list of values and then choose a few that are most important to them. Then they write about those values that they deemed most important. People often chose to write about relationships with friends and family or religion. One child wrote “If I didn’t have my family, I [wouldn’t] be raised right and if I didn’t have my friends I would be a boring person.” Notably, a crucial aspect of the intervention is that it is self-generated and is designed to tap into an individual’s particular identity (Sherman, 2013). It is in the process of writing about one’s personal sentiments that the values affirmation exercise impacts one’s self-concept.

Studies using values affirmation interventions have found that the small yet significant act of writing about values can reduce psychological stress and improve academic performance (eg., Cohen et al., 2009). It is through two routes that affirmations lift psychological barriers: the buffering or lessening of psychological threat and the curtailment of defensive adaptations to it (Cohen & Sherman, 2014). Affirmation exercises remind people of their psychosocial resources beyond the particular threat they are facing in that moment, thus enabling them to think more globally and see beyond the particular threat. In typical threatening situations, such as an exam, students’ attention is narrowed to the immediate threat of failure, thus eliciting a fight-or-flight response, defensive coping strategies, and perhaps a prevention orientation to the task. However, when students are affirmed, they are less likely to experience these physiological and psychological factors and can see these stressors in a more global context (Schmeichel & Vohs, 2009). When affirmed, people can see the minor stressors of daily life in the context of a bigger picture, thus ensuring that specific threats do not demand as much vigilance (Cohen & Sherman, 2014). Studies have shown how the physiological response to threat differ for affirmed and non-affirmed students (e.g., Sherman et al., 2009). College students identified their most stressful midterm exam and were asked to provide urine samples to assess catecholamine levels, an

indicator of sympathetic nervous system activation (Sherman et al., 2009). Students in the control condition experienced an increase in epinephrine levels but there was no change among students who completed values affirming exercises throughout the weeks of studying and preparing for the exam.

Additionally, because self-affirmation allows the threat to be seen in the context of a more expansive view of the self, the threat has less impact on psychological well-being (Cohen et al., 2009). The results of two longitudinal field experiments in middle school suggested that values affirmation insulates people's sense of belonging in the face of environmental threat (Cook et al., 2012). Affirmation led perceptions of felt belonging to be decoupled from academic performance. In other words, the intervention decoupled the self and the threat so that African American students' feelings of belonging became independent of academic performance. Additionally, affirmations enable people to view a threat in a more constructive manner. Non-affirmed minority students may interpret a bad grade as an indicator of lack of intelligence while affirmed minority students may view the same bad grade from a broader perspective, allowing them to see future negative feedback in a more constructive and less defensive light. The effects of self-affirmation persist in non-educational settings as well. For example, affirmation has increased participants' openness to information about the detriments of smoking. A study presented smokers with graphic antismoking cigarette advertisements (Harris et al., 2007). Participants in the experimental condition who self-affirmed expressed greater confidence in their ability to stop smoking and had stronger motivation to quit than those who did not self-affirm.

Additionally, affirmed individuals tend to take on a promotion orientation to a threat as opposed to an avoidance approach. Instead of devoting mental energy to avoidance, suppression,

and rationalization, affirmed people can navigate threats in a more constructive way. In academic settings, affirmation allows students to focus on the academic task at hand instead of the self-evaluative and social-evaluative implications of success or failure (Sherman, 2013). Ultimately, affirmations are so beneficial because they help people maintain a reassuring narrative of personal adequacy (Cohen & Sherman, 2014). The effects of self-affirmation can be summarized using Sherman's (2013) proposed framework: 1) self-affirmation boosts self-resources, 2) self-affirmation broadens the perspective with which people view information and events in their lives, and 3) self-affirmation leads to the uncoupling of the self and the threat, reducing the threat's impact in affecting the self.

Lasting Impact of Self-Affirmation

Just as stereotype threat can initiate long-term effects that negatively impact students' trajectories in school, a well-timed and well-situated affirmation intervention can set off instead, what Cohen and Sherman (2014) refer to as a "cycle of adaptive potential" that can lead to long-term success in school. The cycle of adaptive potential has reciprocally reinforcing interactions between the self-system and the social system so that the actor's potential to achieve adaptive outcomes increases (see Figure 3). As an example of how the self-system interacts with the social system, following an affirmation intervention that increases a student's performance on one exam, a student's performance may be further enhanced in the future because of higher teacher expectations (as part of their social system) and the teacher may place the student in a higher track where students have more resources and greater expectations. Alternatively, an underperforming student may be viewed by the teacher as less able, encouraging teachers to assign them to a lower academic track. This assignment may then lead students to affiliate with lower-performing peers and then they may come to not care as much about school. The latter

example is common for students who are subjected to a threat that lowers their performance and then further heightens their sense of threat, thereby lowering performance in a repeating cycle (Cohen & Garcia, 2008). Affirmation disrupts this process so that an individual is more likely to resemble the former example of a student experiencing heightened performance. Additionally, children who have been affirmed tend to exhibit approach rather than avoidance orientation and thus become more confident in their abilities to overcome adversity. Students with an approach orientation who do poorly on one examination are more likely to see it as isolated event rather than a threat to the self (Cook et al., 2012). It is clear that students benefit from the cycle of adaptive potential set off by self-affirmation. As such, the current paper focuses on how self-affirmation disrupts the negative recursive processes coming from stereotype threat and instead incites more positive recursive processes.

How Does Self-Affirmation Mitigate the Effects of Stereotype Threat?

As the previous sections of this paper have conveyed, there is extensive research on both stereotype threat and self-affirmation. We know that stereotype threat is triggered by situations that threaten self-integrity and create a cognitive imbalance between one's concept of self and one's expectation for success. Immediate responses to stereotype threat include physiological stress responses, negative emotion regulation, and monitoring processes, and these responses consume the executive resources needed to perform well on cognitive and social tasks. Self-affirmation, on the other hand, allows the threat to be seen in the context of a more expansive view of the self, thereby freeing up the cognitive resources students need to successfully complete academic tasks. A self-affirmation intervention may even reduce the cognitive availability of the stereotype itself (e.g., Cohen et al., 2006). When stereotypes are less cognitively available and thus less salient to the student, the students' perception of bias in their

school environment changes. This is crucial for Black and Latino students who face the extra burden in school of knowing that their skills, and those of others in their group, could be viewed through the lens of a negative stereotype about their groups' intellectual abilities. Self-affirmation also increases the likelihood that a student will take on a promotion focus in which the student envisions success in school and works to achieve it. When people reflect on important values that transcend a stressful situation, like their relationships or religion, they are better equipped psychologically to deal with threatening situations (Purdie-Vaughns, Cohen, Garcia, Sumner, Cook, & Apfel, 2009). Altogether, self-affirmation interventions buffer stress so that cognitive resources are not depleted and students can focus on the task at hand.

Figure 4 demonstrates the short-term impacts of both stereotype threat and self-affirmation and more importantly shows how self-affirmation disrupts the process that stereotype threat invokes. Without self-affirmation, stereotype threat leads to heightened arousal, restricted capacity, and ultimately underperformance. However, self-affirmation changes the trajectory such that people take on more expansive views of the self, thereby boosting self-resources, and ultimately leading to heightened performance. Unlike the Schmader et al. (2008) model of stereotype threat, shown earlier in the paper, this model also accounts for the processes that trigger stereotype threat. Students must be exposed to a stereotype-relevant situation and then experience stereotype activation in order to be impacted by stereotype threat. In fact, some students find themselves in stereotype-relevant situations, such as school, and do not experience stereotype activation because they may be unaware of negative stereotypes (Wasserberg, 2014). In a study with fourth and fifth grade African American students, only those who were aware of the negative stereotypes performed worse in the threat/diagnostic condition. Also, as Steele (1997) suggests, students who have already de-identified with academics may not be susceptible

to stereotype threat because not being identified with a domain means one's experience of stereotype threat in that domain is less-threatening. Given the relevance of this information, it is necessary that the present model incorporates its first two steps to convey the importance of processes prior to stereotype threat that determine if people are even effected by stereotype threat.

Many studies have demonstrated how self-affirmation interventions have been successfully implemented to reduce the impact of stereotype threat (e.g., Cohen et al., 2006; Good, Aronson, & Inzlicht, 2003). In fact, until recently, the values affirmation writing exercise has appeared to be some form of magic in altering the course of the achievement gap in the schools where it was implemented. The seminal studies conducted by Cohen and colleagues (2006, 2009) as mentioned in the Introduction were especially exciting because they found a 40% reduction in the achievement gap. Since then, the benefits of the intervention remained across other measures of achievement including standardized test scores (Good et al., 2003) and statewide achievement scores (Purdie-Vaughns et al., 2009). Another study found that self-affirmation increased feelings of school belongingness (Cook et al., 2012), a construct that contributes to higher achievement (Connell et al., 1995). In the Cook et al. study, low classroom grades had less influence on the long-term sense of belonging in schools for affirmed students than for their non-affirmed peers.

The results were also replicated among Latino American students, who after engaging in the same values affirmation writing exercise, earned higher grades than their peers who were not in the affirmation condition (Sherman et al., 2013). The effect persisted even three years later when the students transitioned to high school. Students wrote in daily diaries to examine how the affirmation affected their psychology under identity threat. The results showed that affirmed

Latino American students not only earned higher grades than non-affirmed students, but also construed events at more abstract than concrete levels and were less likely to have their daily feelings of academic fit and motivation undermined by identity threat.

Furthermore, Brady et al. (2016), made a significant contribution to the research by showing that a values affirmation exercise, performed once in a laboratory, increased the likelihood that Latino college students would spontaneously self-affirm when faced with new stressors two years later. At Time 1, Latino and White first-year college students were randomly assigned to complete a values affirmation exercise or to be in the control condition. Two years later they returned to the lab to complete a task designed to increase stress levels about academics. They were asked to write an open-ended essay about anything on their minds, and researchers coded the writing to examine who engaged in self-affirmation by, for example, writing about valued parts of their lives like family or religion. They found that the Latino students who completed the values affirmation not only had higher grades two years later, but also spontaneously generated more self-affirming thoughts. As in the original Cohen et al. (2006, 2009) studies, White students did not benefit because they do not face significant stereotype threat. However, there was a study conducted earlier that demonstrated how White students can benefit from self-affirmation interventions. Creswell, Dutcher, Klein, Harris, and Levine (2013) found that self-affirmation helped the performance of a predominantly White sample of college students who were chronically underperforming and stressed. In this case the affirmation intervention worked, not because it buffered students from the effects of stereotype threat, but because it decreased the stress levels of students. Thus, self-affirmation can conceivably benefit any individuals who are psychologically threatened, not just those who experience stereotype threat.

Most studies have been small-scale experiments as opposed to district-wide or state-wide interventions that could assess whether the intervention could make a difference at scale and whether different school settings may moderate effects of the treatment. However, Borman and colleagues (2015) conducted the values affirmation intervention in an entire district in Wisconsin with a population including both African American and Latino students. Students completed four writing exercises throughout the course of the school year; those in the experimental condition completed self-affirming writing exercises while those in the control condition completed other writing exercises that were not self-affirming. The researchers looked at GPA as well as standardized achievement tests given at the beginning and the end of the school year. The results suggested that, similar to other studies, self-affirmation positively affects the academic performance of students who may be vulnerable to stereotype threat, especially measured by GPA. They also found evidence of impact on African American and Latino students' standardized mathematics scores. This study is important because it showed that there is, in fact, potential to scale up the intervention.

After reading through studies and learning that a 15-minute writing exercise that has no negative consequences has great potential to significantly lessen the achievement gap, it is hard to not think that it sounds like magic. However, there is a problem with viewing social-psychological interventions as forms of magic. The interventions are not silver bullets that operate in isolation (Yeager & Walton, 2011). It would be incorrect to say that when a student is taking a math test a year and a half after completing a values affirmation writing exercise that the student is thinking about that particular exercise and as a result performing better. What does happen, however, is that social-psychological interventions, in this case values affirmation interventions, rearrange forces in a complex system, and as such make long-term changes. If

interventions are well-timed and well-targeted, they can tap into recursive processes and change the trajectory of student outcomes (Yeager & Walton, 2011). For example, after affirming themselves and performing better on one examination, students study and learn better, making them better prepared to learn and perform well in the future. Then students become more secure in their belonging in school and form better relationships with their peers and teachers, who become sources of support and promote greater feelings of belonging and academic success in the future. Initial success encourages students to exhibit more optimistic beliefs about their potential, thereby making them more invested in school. They continue to perform better and are subsequently placed in higher level classes, are exposed to high-achieving peers, and have high expectations, leading to long-term academic success.

The lasting effect of self-affirmation interventions stems from the fact that the affirmation intervention disrupts a negative recursive cycle and replaces it with a positive one. Figure 2b demonstrates an example of a recursive process stemming from self-affirmation. Notice how this recursive cycle differs from one stemming from stereotype threat, as shown in Figure 2a. In this, more adaptive recursive process, students who self-affirm are better able to learn so they perform better, instilling in them greater confidence and feelings of belongingness in school, thereby motivating them to continue to work harder, and ultimately making them continually successful in school.

Psychological threat and poor performance feed off each other, working in a feedback loop that leads to worsening performance (Cohen et al., 2009). However, a small reduction in psychological threat can trigger an alternative recursive cycle by resulting in a small change in performance on the subsequent measure, thus improving a student's confidence, decreasing their susceptibility to threats that would be detrimental to performance, and then leading to

improvements on the next measures. In this way, an early interruption of a negative recursive cycle can change the cycle entirely to have more positive long-term effects (Cohen & Garcia, 2008). The alternative recursive cycle set off by self-affirmation was explained by Cohen and Sherman (2014) as a “cycle of adaptive potential” (see Figure 3) with reciprocally reinforcing interactions between the self-system and the social system that promotes adaptive outcomes. Within the self-system, for example, better performance may affirm the self, leading to better performance in the future, which would further affirm the self and so on. The paper previously refers to an example of a student who performs better and as a result is held to higher expectations by the teacher and is then placed in a higher track, further enhancing the student’s performance. In this way, an early advantage leads to subsequent experiences that perpetuate and enhance the advantage. Teacher influence is an important component of the social system in a school setting. A study conducted by Bowen, Wegmann, and Webber (2013) found that having teachers read students’ self-affirmation essays provided an additional boost to the intervention. Students were divided into either an affirmation condition or a non-affirmation condition and a teacher condition or a non-teacher condition. Students in the teacher condition had their essays read by their teachers. The results of the study showed that students in the affirmation + teacher condition had higher social studies grades than those in the non-teacher affirmation condition. Stereotyped students benefited when teachers read their self-affirming essays but not when teachers read neutral essays for students in the non-affirmation condition. All students in self-affirmation conditions benefited from the intervention, but those who got the extra boost of having teachers read their essays benefitted even more.

The timing of interventions is imperative in ensuring the cycle of adaptive potential. Cook and colleagues found that the earlier a values-affirmation intervention was delivered, the

more it improved students' grades (Cook et al., 2012). Additionally, timing was more important than frequency of interventions. Past studies typically conducted the intervention during 7th grade (e.g, Cohen et al., 2006). Seventh grade is a natural ecological transition in which a student's sense of identity and belonging is highly uncertain, so interventions that target identity at that point can be especially effective. It is crucial to conduct values affirmation interventions in the early stages of adolescence in order to break recursive cycles and diminish the impact of early setbacks that could incite downward spirals in both psychological and performance outcomes. Ideally, the intervention is conducted before the downward cycle even begins. Since early outcomes are most important in recursive processes, previous interventions were given early in the year, typically around the fourth week of school (Cohen & Sherman, 2014). For African American students, early failure may confirm that the stereotype is in play as a global stable indicator of their ability to thrive in school (Cohen et al., 2006). But small changes in their performance in the beginning can affect student's confidence as well as teacher perceptions, thus ensuring a long-term effect.

All successful studies have been grounded in research and nuanced psychological understanding. Additionally, students must be actively involved in the intervention process. The values affirmation intervention is successful because students are actively engaged in writing personalized responses about values that are important to them. For this reason, it is pivotal that the writing exercise includes a variety of values that will suit diverse populations of children. Self-affirmation interventions are better than using rewards or praise because they give students the opportunity to manifest their own integrity through their own actions and thoughts. Lastly, it is important to note that systemic and structural inequalities contribute significantly to the

achievement gap and in no way does this intervention eliminate those. Social-psychological interventions should complement, not replace, other educational reforms.

Unsuccessful Studies

While the results of most related studies have been quite positive, not all of them have been entirely so. A recent multi-site replication of Cohen et al.'s original 2006 study found significant effects on self-affirmation in only some of their experimental groups (Hanselman, Rozek, Grigg, & Borman, 2014). Researchers examined differences in benefits of a self-affirmation intervention in all 11 middle schools in Madison, Wisconsin. They found that students benefited more from self-affirmation in schools with fewer and more academically marginalized African American and Hispanic students, than in schools with more marginalized students. The researchers argued that school contexts with a limited number of marginalized students and racialized achievement patterns were likely more threatening environments that could ultimately harm the performance of Black and Hispanic students, and thus labeled them as high-threat conditions. Self-affirmation reduced the achievement gap and overall GPA by 12.5% in high threat school conditions but had essentially no effect in low threat conditions. Therefore, school context does moderate the benefits of self-affirmation interventions for Black and Hispanic students' grades. The researchers theorized that self-affirmation had a less significant impact in low-potential threat schools because greater representation of marginalized students reduced the potential for social identity threat. They also noted that it was possible that the fidelity of the intervention could have been compromised in some of the schools where the intervention was conducted. Another possibility is that in low-threat schools, some Black and Hispanic students may have been already disengaged from school and thus the affirmation

intervention would not be helpful (Steele, 1997). Students may have already de-identified with school, had no motivation to work hard, and had given up so they would underperform on exams regardless of whether they were experiencing stereotype threat.

Protzko and Aronson (2016) also examined how demographics might moderate the role of affirmation effects. While in previous studies, teachers presented the values affirmation writing exercise, due to limitations from the New York Department of Education, the research had to be presented as coming from the research team and not teachers. Additionally, Protzko and Aronson purposefully conducted their study in school populations they thought would be more representative of schools across the United States. Most schools today are de facto segregated so the half White/half minority populations studied in other schools are not actually representative of typical school populations in the United States. Therefore, they intentionally conducted the study in a suburban school comprised of more wealthy and White children as well as an inner-city school comprised of more poor minority children. Aside from these two key differences the researchers used the same materials as previous studies and found no effect of the affirmation on academic performance. One possible explanation is that the psychological impact of stereotypes may depend on whether the group has a “critical mass” in the environment. Another possible explanation is that in other studies when teachers conducted the affirmation exercise, students assumed that their teachers were interested in knowing the content of their affirmations (Cohen et al., 2006), suggesting that such affirmation effects may be potent because students think that teachers care about their values. It is also possible that students who have already de-identified with school might not even experience stereotype threat and thereby may not benefit from the intervention (Steele, 1997). This may explain why the intervention was not effective in the school comprised of predominantly minority students where achievement levels

are more uniformly low and de-identification may be widespread. Finally, it is possible that the intervention is not as effective as previous interventions have demonstrated. Nevertheless, due to the widespread success of the intervention in previous studies it is important to conduct further research on the moderators of self-affirmation that might diminish or change its effectiveness. Future studies should also examine school populations that are not equally divided between White and minority students.

Future Study Directions

Given the significant potential for self-affirmation interventions to successfully mitigate the effect of stereotype threat and diminish the achievement gap in schools across the country, it is important that researchers continue to study and improve the intervention so that it can ultimately be accessible to all schools and policymakers. Most of the previous research has been conducted on fairly small samples, testing the intervention in one particular setting. Future research should try scaling up the interventions. Future studies should also further explore the idea that different contexts moderate the effectiveness of the self-affirmation intervention. Given the results of the Protzko and Aronson (2016) study, it is important to conduct more studies in de facto segregated schools that are representative of schools in the United States. If the results continue to be negligible, studies should look at why the intervention is not as successful in schools that are not evenly split between White and minority students. Studies should also seek better understanding of the various cultural and economic groups who might experience stereotype threat. There are a variety of groups who are negatively affected by stereotype threat in schools (e.g., females in quantitative fields and students for whom English is not their first language) and studies should ultimately target all of those groups.

One of the greatest barriers to research in schools is that schools are protective of instructional time. Even though the values affirmation exercise takes only 15 minutes, those minutes are taken away from learning material deemed important for high-stakes tests. Future studies could test the effectiveness of an online intervention as opposed to the written intervention. Students could complete the exact same exercise, in which they chose from a list of values that are most important to them and write about those values, but they would type it on an online platform. It is possible that online interventions may not be successful because it is the act of writing itself that makes the intervention effective. It is also possible that the intervention will not be effective if it is not administered in an evaluative setting like a classroom that makes for a stereotype-relevant situation. However, if students completing an online intervention show the same positive results as those who complete the written intervention, then schools could use online mediums for the intervention during homeroom or study hours, for example, so they do not sacrifice class time.

Future studies should further examine intervention timing. Would the intervention be effective with younger students? Can it be altered in such a way that it would be better suited for younger students? If the intervention is so effective it would make sense to try to execute it earlier. Studies should also track how the effects of the intervention persist and change over time. Longitudinal studies should examine outcomes beyond just a few years.

It is also important to explore the mediating variables between self-affirmation and achievement other than just reduced stereotype threat. To date, only a few mediators other than stereotype activation have been assessed, including school belongingness (Cook et al., 2012) and identity threat (Sherman et al., 2013). Self-affirmation likely impacts a variety of construals that are known to predict school achievement, such as locus of control, implicit beliefs about

academic ability, self-efficacy, and future orientation (Blackwell, Trzesniewski, & Dweck, 2007; Brown & Jones, 2004; Dweck & Leggett, 1988; Findley & Cooper, 1983; Good et al., 2003; Schunk, 1991). A more comprehensive understanding of psychological processes impacted by self-affirmation, and the interactive effect of those processes on achievement, will inform the development of more successful future interventions.

Finally, given the practical and enticing nature of subtle but powerful social-psychological interventions, future research should explore other interventions that could help address the achievement gap. Can multiple interventions work together to create a better outcome? For example, many schools use interventions to encourage Dweck's growth mindset so perhaps such an intervention could be combined with a self-affirmation intervention. What processes other than stereotype threat can interventions target? What are other potential outcomes of self-affirmation interventions? It is likely that other well-designed and well-timed interventions grounded in research can have significant impacts on students.

Recommendations for Schools

The current paper focuses on the achievement gap, but there is another important and detrimental gap in this country that is relevant – the research to policy gap. Researchers, policymakers, and professionals who actually work in schools or with children rarely work together to promote the best outcomes for children (e.g., Greenwood & Abbott, 2001). Given the plethora of research that has been conducted on the effectiveness of subtle yet powerful self-affirmation interventions, there is little reason to believe that the intervention does anything other than help students. Not only does it have the potential to protect students from the effects of stereotype threat, but it also can decrease stress levels for students subject to other forms of

psychological threat, i.e. White students underperforming due to chronic stress (Creswell et al., 2013). There is an opportunity here to bridge the research to policy gap by creating policies that suggest the use of values affirmation interventions in schools that research has found to be effective.

It is not likely that schools are *choosing* to avoid the use of the self-affirmation intervention; more likely, they simply do not know about it. It would ultimately be best if all middle schools, and perhaps even upper-elementary schools, throughout the country conducted the intervention. In order to reach that goal, the intervention must first attract attention on local levels. Universities could conduct outreach and teacher in-service programs to make current educators aware of the intervention's potential. Non-profits and advocacy organizations could also use their connections to inform schools of the intervention. Additionally, because class time is so valuable and curriculum is so packed with content that students must learn to do well on high stakes exams, curriculum developers could incorporate self-affirmation activities into curricula. It would be best if self-affirmation were incorporated into content-area curriculum for different subjects and tailored to be developmentally appropriate for different ages. Additionally, it would be prudent to include information about self-affirmation in teacher and administrator training programs. If affirmation could be incorporated into students' every day learning, it is likely that it would be even more effective.

On a smaller scale, there are various things teachers can do that will benefit their students in similar ways to the self-affirmation intervention. For example, it would be beneficial for teachers to explicitly counter and debunk stereotypes in the classroom (Bowen et al., 2012). Students value the opinions of their teachers and if they see that adult figures do not believe the stereotypes that assert intellectual inferiority of groups of people, then the students will be more

inclined to think similarly. It is helpful for teachers to foster self-efficacy in their students, i.e., help them build their sense of competence in school domains. Teachers can do this by stressing challenge over remediation because giving students challenging work conveys that teachers respect their potential (Steele, 1997). Carol Dweck's theory (1986) on the incremental nature of human intelligence can be emphasized in all classrooms. Schools today commonly incorporate Dweck's theory in their classrooms and work to promote a growth mindset of students. When students make statements such as "I am stupid" or "I'm bad at math," teachers can explain to them that their abilities are not fixed and if they work to understand the material then they will get better at it. It is also imperative that teachers build supportive relationships with their students (Bowen et al., 2012). That does not mean that teachers cannot provide critical feedback. Instead, when teachers give critical feedback to students they can be simultaneously explicitly conveying optimism about their potential (Steele, 1997). Additionally, the results of the Johns et al., (2008) study suggest that it would be beneficial to tell students that it is perfectly normal to feel a little worried about exams and that it is even possible that a bit of anxiety surrounding an exam can help people do better on it. The researchers found that telling targets of stereotype threat that anxiety would not affect their performance on the problems they would be doing, and that in fact it might even facilitate their performance, resulted in less suppression for students and thereby freed up executive resources that could improve test performance. Lastly, it is best for teachers to be consistently affirming self-integrity, competence, and belonging of each student in class (Bowen et al., 2012). When students express doubt about their abilities or belongingness in the classroom, teachers can remind them of their value and remind them that they make important contributions to the class. Teachers can remind students of certain activities that they are good at and afford students opportunities to talk about their passions and their values in the classroom

daily. There are many strategies teachers can use in the classroom to support their students; however, it is important that such strategies as well as information about self-affirmation and other social-psychological phenomena are embedded in teacher training programs so that teachers are not simply expected to come up with these strategies and understand the importance themselves.

Most importantly, it is crucial that psychological interventions complement, but do not replace traditional educational reforms. This paper is in no way suggesting that social psychological subtle yet powerful interventions are the panacea that will eradicate the achievement gap and fix America's broken education system. However, the academic gains resulting from the values affirmation exercise are significant for students who are currently systemically stymied from succeeding in school. In order to make up for the pervasive and systemic educational inequities that Black and Latino students face, the least we can do is devote 15 minutes of class time to even marginally increase their opportunities for success.

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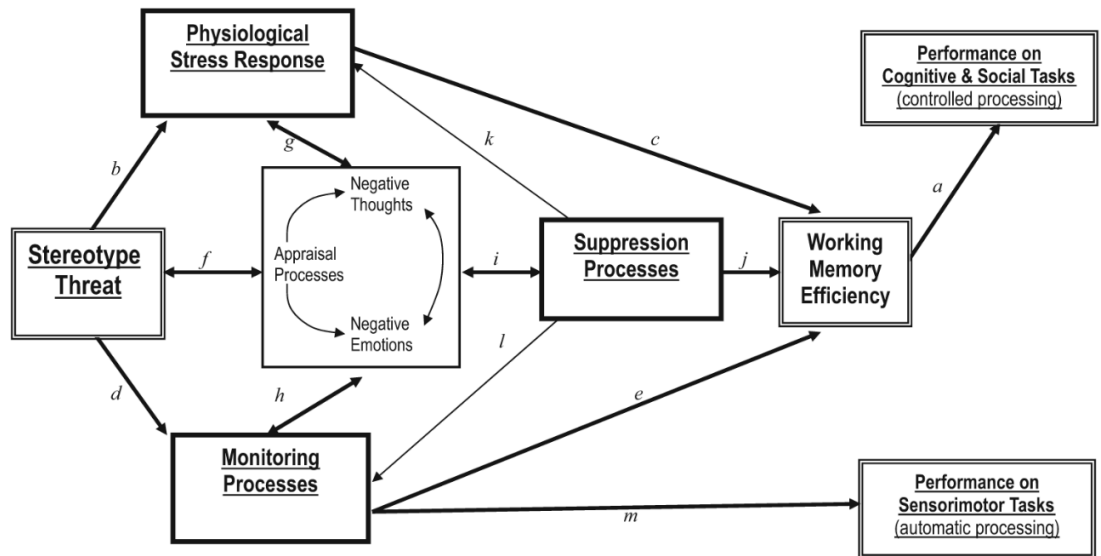


Figure 1. An integrated process model of stereotype threat effects on performance. Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review*, 115(2), 336-356.

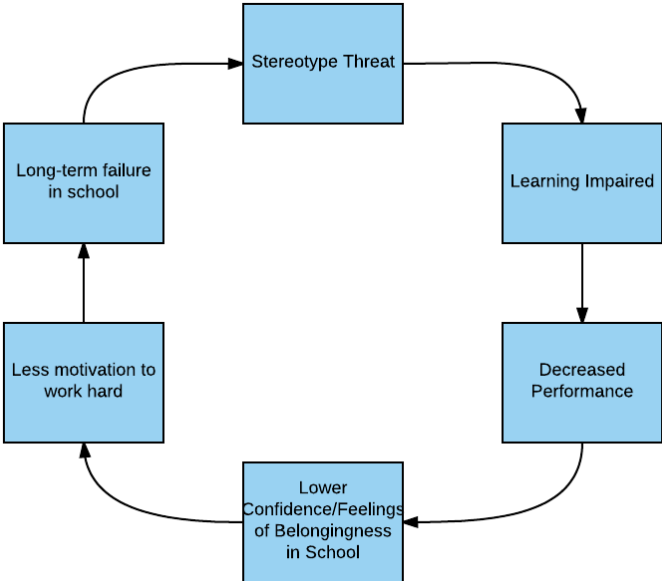


Figure 2a. Recursive process stemming from stereotype threat

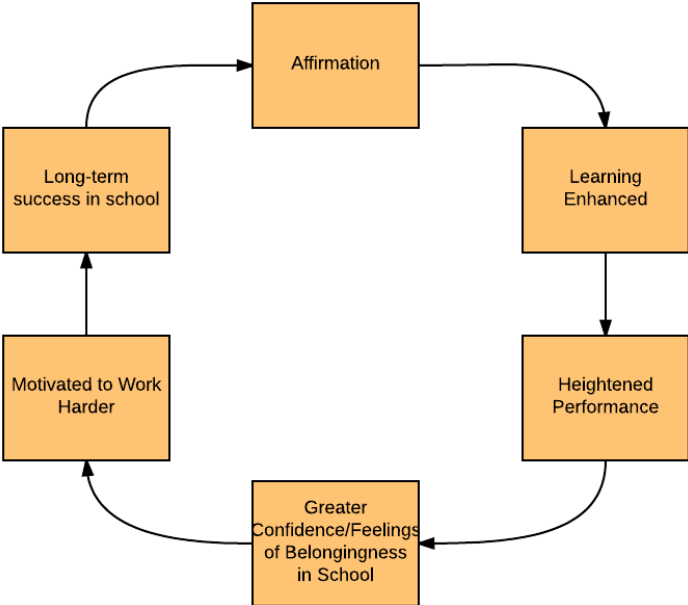


Figure 2b. Recursive process stemming from self-affirmation

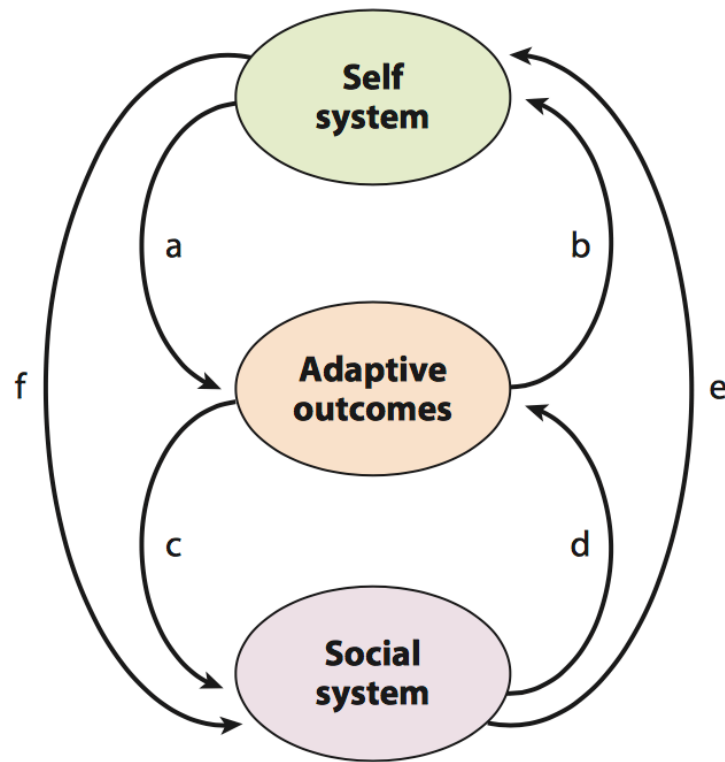


Figure 3. Cycle of adaptive potential

Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology*, 65, 333-371.

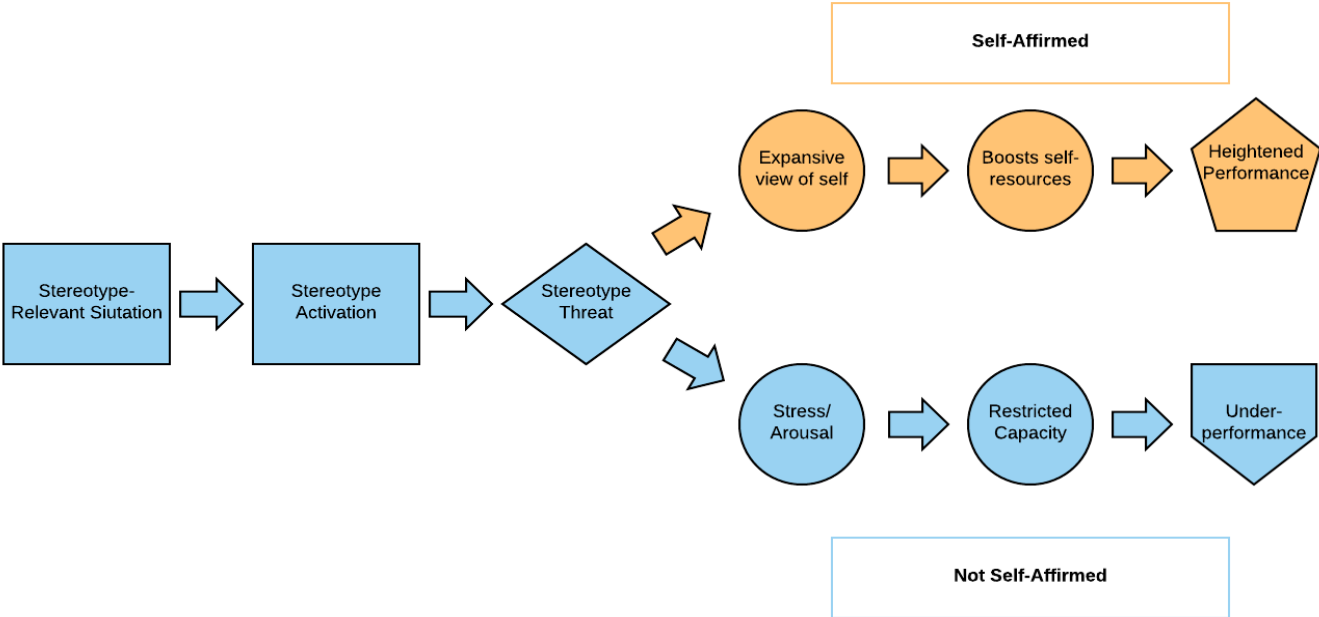


Figure 4. Impact of stereotype threat with and without self-affirmation