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I am not your Student-Athlete: An Investigation of Social Identity Complexity as a Stereotype Threat Mitigation Strategy and Individual Differences that may moderate the effect

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ACCEPTANCE

This dissertation, I AM NOT YOUR STUDENT-ATHLETE: AN INVESTIGATION OF SOCIAL IDENTITY COMPLEXITY AS A STEREOTYPE THREAT MITIGATION STRATEGY AND INDIVIDUAL DIFFERENCES THAT MAY MODERATE THE EFFECT, by JACOB ALAN ENGLISH, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education & Human Development, Georgia State University.

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I AM NOT YOUR STUDENT-ATHLETE: AN INVESTIGATION OF SOCIAL IDENTITY COMPLEXITY AS A STEREOTYPE THREAT MITIGATION STRATEGY AND INDIVIDUAL DIFFERENCES THAT MAY MODERATE THE EFFECT

by

Jacob Alan English

Under the Direction of Ann C. Kruger, Ph.D.

ABSTRACT

Collegiate athletes must contend with negative stereotypes during their academic career (Comeaux, 2012). Such stereotypes depict student-athletes as unintelligent (Yopyk & Prentice, 2005) and overlook the benefits and variability of the collegiate athletic experience. Student-athletes are multifaceted and more than their sport. Unfair depictions can influence student-athletes' behavior, especially in the classroom. Research shows that student-athletes' academic performance is affected by stereotype threat (Riciputi & Erdal, 2017); which is the apprehension of confirming a negative stereotype about one's social group (Steele & Aronson, 1995). Currently, there is no published evidence-based research on stereotype threat mitigation strategies tailored to student-athletes. Expanding the work of Gresky et al. (2005), this study explored a self-concept map activity, based on the social identity complexity theory, as one

potential strategy for collegiate athletes (exploring multiple social identities). Division I student-athletes (N = 70) were randomly assigned to one of three experimental conditions: 1) threat-no mitigation, 2) threat-mitigation, and 3) no threat-no mitigation (control). Factorial ANOVA was employed to assess differences in participants' scores on an SAT-style examination (writing/language and mathematics) across conditions. Academic self-concept, gender identity, and race/ethnicity served as grouping variables and potential moderators. Results showed no significant differences in overall test performance across experimental conditions, or between gender identity (female and male). Results revealed several main effects of academic self-concept and race/ethnicity on components of performance, especially on difficult test items. Specific to the main hypothesis, a marginally significant (p = .052) interaction effect of condition by race/ethnicity was observed on the difficult math items. Post-hoc analyses showed that African American student-athletes had significantly poorer scores in the control condition than Caucasian student-athletes (p = .010), and in the threat condition than did Caucasian (p = .001) and Hispanic (p = .004) student-athletes. There was no difference between these groups in the mitigation condition. African American participants' performance on difficult math items in the mitigation condition was significantly better than their performance in the threat condition (p = .02). These results suggest that stereotype threat mitigations may work, but strategies should be culturally-specific and tailored to the challenge of the academic tasks.

INDEX WORDS: Stereotypes, Stereotype Threat, Social Identity Complexity, Mitigation Strategy, Moderators, Student-Athlete

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DEDICATION

I dedicate this work to my nephews - Zion and Pablo. Remember, you two - no goal is too big, and no challenge is too mighty. When you live *your* life with intention, authenticity, love, empathy, confidence, and an abundance mentality, anything is possible.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 THE DEVELOPMENT OF STEREOTYPE THREAT THEORY, AND THE PHENOMENON'S IMPACT ON STUDENT-ATHLETES' ACADEMIC PERFORMANCE

It may be easy for privileged groups to dismiss stereotypes as fallacies and make claims that labels are only as powerful as the attention paid to them. However, words such as African American, Jewish, gay, northerner, student-athlete, feminist, disabled, and Democrat have the potential to provoke negative thoughts and beliefs about an entire social group. Stereotypes are not harmless and can produce environments inundated with prejudice and discriminatory practices. Stereotypes are promoted from simple labels to dangerous categorizations when they disparage and eliminate opportunities for a person or a total group. In addition to external consequences, stereotypes have the potential to cause internal conflict and threats. Claude Steele, Steven Spencer, Joshua Aronson, and Diane Quinn (Steele and Aronson, 1995; Steele, 1997; Spencer, Steele, & Quinn., 1999) coined the term stereotype threat and tested the stereotype threat theory to explain the apprehension of confirming a negative stereotype about one's social group. The researchers established the theory as a possible explanation for the achievement differences in both standardized test and academic performance between Caucasian and African American college students (Steele and Aronson, 1995) and mathematics performance between men and women (Spencer, Steele, & Quinn, 1999). The theory was a refreshing and less stigmatizing alternative to studies citing genetic differences in intelligence among racial and gender groups (Benbow & Stanley, 1980; Herrnstein & Murray, 1994; Steele, 2010).

Since that time, hundreds of studies have been published on the social-psychological phenomenon to address the deleterious effects of stereotypes on a wide array of social groups.

For example, stereotype threat has shown to negatively affect the intellectual ability of university students with physical disabilities (Desombre, Anegmar, & Delelis, 2017), immigrant students' educational trajectories (Weber, Kronberger, & Appel, 2018), undergraduate female's science identity and subsequent academic motivation (Deemer, Lin, & Soto, 2016) and knowledge acquisition and organizational effectiveness (Grand, 2017), mind-wandering among older adults (Jordano & Touron, 2017a), cognitive test performance of preservice teachers (Ihme & Moller, 2015) and African American men's encounters with the police (Najdowski, Bottoms, & Goff, 2015).

Stereotype threat research is prominently featured in collegiate settings to address causes and barriers to student success with the goal of improving graduation and retention rates and academic performance. Application of the theory is demonstrated at universities and colleges nationwide in the form of online resources and on-campus workshops to support academic persistence. For example, the American Physic Society's webpage titled *Effective Practices for Recruitment and Retention of Graduate Women* presents strategies to recruit and retain women in graduate Physics programs. Number five in the list of twelve strategies states: "Have a department diversity & inclusion committee that can provide a venue to discuss and educate people about behaviors that can prevent students from underrepresented groups from persisting or thriving in physics – topics could include stereotype threat, imposter syndrome, implicit bias, and harassment" (American Physical Society, 2019, p. 1). Other universities and colleges have taken similar approaches like the University of Michigan (Graduate Student Workshop on Stereotype Threat and Impostor Syndrome; University of Michigan, 2018), the University of California, Berkeley (Advisor Resources; University of California Berkeley, 2019), and Washington State University (Faculty and Staff Workshop on Stereotype Threat and First-

Generation Students, Washington State University; 2015). Stereotype threat research is vast in discipline, studied domain, and demographic, yet most of the research focuses on the impact of stereotype threat on academic performance.

Collegiate athletes are one group in higher education whose academic performance is affected by stereotype threat (Stone, Harrison, & Mottley, 2012). The threat affects academic achievement and stems from negative stereotypes focusing on student-athletes' intellectual abilities — the most common stereotype labels student-athletes as dumb jocks. Division I student-athletes in revenue sports (i.e., football and basketball) are most vulnerable to these stereotypes because they receive the most negative media attention (Simons, Bosworth, Fujita, & Jensen, 2007). Stories of academic fraud, when they occur at these institutions, are often the number one trending news story. For example, in 2009, the National Collegiate Athletics Association (NCAA) found the Florida State athletics department guilty of major violations in an academic fraud case involving 61 student-athletes. The fraud included a learning specialist, an academic advisor, and a tutor who completed tests and papers for student-athletes (Zinser, 2009). In 2016, a former tutor at the University of Missouri-Columbia came forward stating that she took courses for student-athletes and shared the story on Facebook (Sports Illustrated Wire, 2016). Most recently, the NCAA found the University of North Carolina-Chapel Hill guilty of involving about 3,100 at-risk student-athletes, over two decades, in fake classes to maintain academic eligibility (Tracy, 2017). The actions have a domino effect. The academic scandals damage their universities' reputation, increase the probability of negative perceptions of student-athletes in academic settings, and lead to the most troubling potential consequence in this cycle – identity-threatening situations in the classroom.

The academic underperformance of student-athletes is well researched (Levine, Etchison, & Oppenheimer, 2014), and a steady amount of data has been collected about stereotype threat as a possible explanation for it. However, no published research has tested viable strategies to reduce the effects of stereotype threat among this group. Strategies exist to buffer stereotype threat in classroom settings, yet none of those approaches specifically focus on student-athletes. It cannot be assumed that everyone experiences stereotype threat in the same manner, and as such, it cannot be assumed that mitigation strategies are equally effective (Shapiro, Williams, & Hambarchyan, 2013). The purpose of this literature review is to answer the following questions:

1. What are the effects of stereotypes and stereotype threat on the academic performance of collegiate athletes?
2. How does the duality of a student-athlete's identity (academic self-concept and athletic identity) interact with stereotype threat?
3. What are the empirically-based mitigation strategies available for modeling for student-athletes in learning environments?

The literature review will start by thoroughly defining stereotype threat, providing a comprehensive history of the development of the stereotype threat theory for context. The section will create a strong foundation for the review of research on the impact of stereotype threat on the academic performance of student-athletes. Then, the review will focus on research about the collegiate-athlete population, specifically discussing academic self-concept and athletic identity. Bong and Skaalvik's (2003) and Shavelson, Hubner, and Stanton's (1976) definitions of academic self-concept, and James Marcia's Identity Status Theory (1966) will serve as the framework for this segment of the discussion to understand academic self-concept, athletic identity, and identity foreclosure, three crucial concepts to explore when studying stereotype

threat and student-athletes. The complementary theories bolster research on the impact of identity development on academic achievement and educational attainment (Hejazi, Shahraray, Farsinejad, & Asgary, 2009; Sica, Sestito, & Ragozini, 2014). An examination of stereotypes about student-athletes' intellectual abilities and research describing their response to stereotype threat in academic settings will be presented. Last, an examination of potential mitigation strategies tailored to fit the needs of student-athletes will be presented. In this section, evidence will be introduced regarding moderators and psychological mediators between stereotype threat and academic performance. Although moderators and mediators are not the primary focus of this literature review, a discussion about those mechanisms will be presented for a thorough understanding of the theory and to promote an intentional process for selecting possible mitigation strategies.

Due to the experimental nature of stereotype threat research, heavy emphasis will be placed on research designs and methodology to provide a stronger understanding of the phenomenon in multiple domains. The ancillary goal is to present a historical account of the stereotype threat theory in one document to contribute to the field of study. The literature review could be of interest to, athletic administrators (especially academic advisors and coaches), sports psychologists, diversity and inclusion practitioners, graduation and retention specialist, professors, academic advisors, and student affairs professionals.

Back to the Basics: Foundational Research on Stereotype Threat

> Stereotypes (noun): Standardized mental pictures that are held in common by members of a group and that represents an oversimplified opinion, prejudiced attitude, or uncritical judgment" (Merriam-Webster).

Claude Steele, Steven Spencer, and Joshua Aronson are best known for introducing the stereotype threat theory, but Irwin Katz conducted initial research on the concept in the 1960s. Katz and his colleagues conducted experiments during the advent of educational desegregation. The purpose of the studies was to understand the learning experiences of African American students in a new academic environment. As history accounts, Katz's research did not associate his findings to what we define today as stereotype threat, but even Steele and Aronson (1995) acknowledge Katz's contributions to research about the potential limiting effects of stereotypes. In addition to Katz's work, Steele's research design for his 1995 and 1999 studies was primarily inspired by the work of Jane Elliott, a school teacher from Riceville, Iowa, who designed a simulation to demonstrate the effects of discrimination. In the next sections, a review of the relevant research of Irwin Katz and the contributions of Jane Elliott will be presented before thoroughly summarizing the work of Claude Steele, Steven Spencer, and Joshua Aronson. Dissecting these founding documents will increase understanding of the theory, current models, research designs and methodology, data analysis, and interventions to address stereotype threat among student-athletes.

Irwin Katz. Katz and Greenbaum (1963) evaluated the effects of stress on the performance of 115 African American male college students from Fisk University. Study participants were threatened with non-avoidance electric shocks and placed in either a high voltage group (Strong Threat) or low voltage group (Mild Threat) and asked to complete a digit-letter substitution task in the presence of either a Caucasian or African American test administrator. No shocks were administered. Also, researchers included an individual pretending to be a study participant of the same race as the test administrator in the study (respective of the condition). The results show that African American students in the Caucasian-Strong Threat

condition performed worse than any other condition on the task. The researchers suggest that the data confirmed their hypothesis that African American students would underperform in a high-stress situation in which they felt that a Caucasian person judged their intellectual ability. However, no direct measure was incorporated into the study to correlate the racial elements of the test environment and task performance. It is important to note that the task was articulated to the study participants as non-evaluative. Non-evaluative, in this context, refers to the task presented as not evaluating intellectual ability.

In 1964, Katz continued his studies and directed his attention to the intellectual performance of African American students when placed in a comparison condition. Katz, Epps, and Axelson (1964) included 116 African American male undergraduates from Florida Agricultural and Mechanical University and 96 Caucasian male undergraduates from Florida State University in the study. The African American students were divided into either a control, local, or national condition and asked to complete either an easy or hard digit-symbol task. The researchers presented the task in the control condition as non-evaluative of scholastic ability, the local condition as evaluative of mental ability with results compared to other African American students, and the national condition as evaluative of mental ability with results compared to students at other universities. Caucasian students received the same information (consistent with race) before completing the task, but they were only administered the hard digit-symbol task. Results indicated that African American students performed significantly better on the task when competing with other African American students or not competing at all. The data suggest that African American students' academic performance could suffer (specifically threatening their motivation) on a standardized test when "Caucasian standards" are implicit in the testing situation. The results provided insight into the possible effects of stress in mixed-race

environments. However, again, there was no measure to demonstrate that the performance of African American students was impaired by the fear of being compared to a Caucasian peer. Integrating an identity threat manipulation would have strengthened the research design.

Additionally, Katz, Roberts, and Robinson (1965) explored how the domain of evaluation affected African American student's performance on a task. Katz incorporated methods from his previous studies to support past findings and hypothesis about the performance of African American students in the presence of elevated stress levels, Caucasian administrators and students, and evaluation. Katz and his colleagues selected 184 African American male undergraduates from Fisk University. The study was divided into three sessions including 1) a pretest session where research assistants administered a non- evaluative hard, medium, or easy version of the digit-symbol task; 2) a session where either an African American or Caucasian assistant administered the digit-symbol task evaluating eye-hand coordination, and 3) a session where either an African American or Caucasian assistant administered the digit-symbol task evaluating intelligence (new matched groups were created for this session). Results show that African American students performed better on the hard task when the research assistant presented the task as a test of hand-eye coordination. Qualitative data showed that the students reported greater stress when the test administrator was Caucasian than when the test administrator was African American. The results suggest students conformed to the stereotype that African American people are superior in activities requiring physical talent and are intellectually inferior. Furthermore, the study suggests that the manipulation of stereotype threat can elicit poor academic performance.

The research of Katz and his colleagues was insightful but scientifically problematic and not generalizable. Overall, his research very seldom used a Caucasian control group, and when

they were used they were not equally involved in each condition (see Katz, Epps, and Axelson, 1964). Aronson and Steele (1995) discussed the lack of the control group prevents clear attribution of study results due to race or some other mediating factor experienced by all students. Furthermore, as discussed, Katz and his colleagues did not assess identity threat through either threat manipulation or self-report measures to support a hypothesis about potential mediators affecting performance in the experimental setting.

Additionally, the racial climate during the time of Katz's research was different in significant ways than the climate several decades later. A fact that is very obviously indicated by using the word "Negro" to describe African American study participants. Broadly, Katz's experiments were instrumental in acknowledging the role that segregation played in the development of negative stereotypes that depict students of color as intellectually inferior and possible consequences for learning and demonstrating knowledge. His studies influenced research about achievement gaps between disenfranchised and stigmatized groups in the United States and those who are part of the mainstream.

Jane Elliott. On April 4, 1968, Dr. Martin Luther King, Jr. was assassinated at the Lorraine Motel in Memphis, Tennessee. On April 5, 1968, Jane Elliott, a third-grade school teacher in Riceville, Iowa, involved her students in the now famous Blue Eyes - Brown Eyes Exercise. In a two-day exercise, Elliot wanted to demonstrate the experiences of stigmatized groups in the United States. By her accounts, Elliott stated that her class recently named Dr. King their "Hero of the Month" and after his murder, they were hurt and confused (PBS Frontline, 2003). Elliott wanted to explain to her students the consequences of racism in hopes of offering insight into King's assassination.

On the first day of the exercise, Elliott's students were divided by eye color. Elliott told the blue-eyed students that they were smarter, nicer, and better than their classmates with brown eyes. The blue-eyed students were told not to engage with the brown-eyed students. Elliott showered the blue-eyed students with compliments throughout the day. She also gave them privileges such as a first position in the lunch line and extended recess.

Conversely, the brown-eyed students had to wear collars around their necks, and the other group of students ridiculed them throughout the day because of their eye color. On the second day, Elliott reversed the roles, and now the brown-eyed students were treated with privilege. Each day Elliott observed the behavior of both the superior and inferior groups transform.

Children who were normally well-mannered and kind were vicious and discriminating in the superior group. Children who were normally confident and happy were dejected in the inferior group. Elliott also noted that the "inferior" students performed poorly on tests and other assignments. In most cases, these were tests and assignments that the students had shown mastery during previous class sessions. Elliott said that she realized that she had "created a microcosm of society in a third-grade classroom" (PBS Frontline, 2003).

The Blue Eyes - Brown Eyes Exercise did more than provide an opportunity for the third-grade students to experience discrimination; it provided evidence of its immediate psychological and cognitive dangers. In addition to temporary personality changes, the exercise appeared to undermine academic performance, an effect that would influence the research of Claude Steele and Steven Spencer as they sought to understand the underperformance phenomenon. The exercise also contributed to the rich body of stereotype threat literature in two ways that Katz did not. First, Elliot provided a model to test stereotype threat in a real-world setting. Secondly,

Elliott manipulated identity threat through explicit discriminatory statements about other's differences. Fortunately, Institutional Review Boards would never approve such a study in today's research community due to the possibility of psychological harm. The research community is aware of the need for natural observations of stereotype threat in real-world settings and strive to incorporate these elements into their studies.

Claude Steele, Steven Spencer, and Diane Quinn: Women and Mathematics Performance.

Although operating in separate domains (experimental and applied respectively), the work of Katz and Elliott provide context for the formation of the stereotype threat theory. Claude Steele attributes his identity threat research on the achievement gap between Caucasian and African American students to his position as a professor of Psychology and appointment to a university-wide committee on minority student retention and recruitment at the University of Michigan in 1987. Steele details his research path in Chapter 2 ("A Mysterious Link Between Identity and Intellectual Performance") of his book *Whistling Vivaldi* published in 2010. The University of Michigan appointed Steele to the committee on minority student retention and recruitment. During that time, the University of Michigan had collected data that showed a large disparity between the academic performance of their African American students and their peers. University administrators tasked the committee with collecting data to help them understand and resolve the issues of underperformance by African American students. Through observation, informal surveys, and reviewing institutional data, Steele discovered that underperformance by African American students was prevalent across all disciplines, which was not shocking since national data supported this finding in multiple industries. At the time, explanations often featured deficit frameworks to explain the achievement gap including lack of motivation or cultural knowledge, low self-expectations, or low self- esteem.

Steele's appointment led to multiple conversations with African American students at colleges and university across the nation. He learned that African American students felt general unhappiness and a lack of sense of belonging and struggles to find friends and strong social networks. Many students admitted that they went home on the weekends to escape a campus culture dominated by Caucasian students and organized by race. They often wondered if they were valued on campus, which is a belief that was reinforced by the lack of African American administrators and faculty. Overall, the students felt distressed, misunderstood, and marginalized.

Steele wanted to explore group stigmatization as a cause for underperformance. It appeared that the impact of stereotypes, microaggressions, and macroaggressions could explain the apparent underachievement of African American students. However, before conducting a study on the African American student population, Steele wanted to find a natural occurrence of identity threat to pilot his theory. He and Steven Spencer (a University of Michigan graduate student at the time) designed a study comparable to the Blue Eyes - Brown Eyes exercise. Steele and Spencer wanted to address the underperformance of women in advanced mathematics courses by bringing awareness to stereotypes about women and math in a test environment. Today, there is a wealth of research discussing the underrepresentation and underperformance of women in math and STEM fields (Kianian, 1996; Brown & Josephs, 1999; Lesko & Corpus, 2006; Ceci, Williams, & Barnett, 2009; Good, Rattan, & Dweck, 2012; Chambers, Walpole, & Outlaw, 2016). As a pilot study, Steele and Spencer analyzed women's grades in advanced Mathematics (stigmatized environment) and advanced English (not a stigmatized environment) courses to measure a difference in performance. Data suggest that women did underperform in advanced Mathematics courses, but the findings did not offer reasoning for what caused

underperformance. Also, Steele and Spencer could not obtain SAT scores for most study participants, and there was a low number of women enrolled in the advanced Mathematics courses.

The small sample size, lack of information about domain identification, and absence of measures to explore possible mediators did not support what would become the stereotype threat theory. The researchers turned to clinical trials to address these issues in their 1999 study. It must be noted that the first study published about stereotype threat was in 1995 by Steele and Aronson. However, according to Steele in his book *Whistling Vivaldi*, the studies he conducted with Steven Spencer were the first on stereotype threat. Steele did not provide any explanation for the order of studies. Steele's 1999 study will be discussed before his 1995 study to provide a more accurate historical account.

Study 1. Spencer, Steele, and Quinn (1999) conducted three clinical studies to test whether stigmatization would affect women's ability in math. Thirty-eight men and 28 women, enrolled at the University of Michigan, served as participants in the first study. Study participants had taken at least one semester of calculus (earning a B or higher), scored above the 85th percentile on the math subsection of the Scholastic Aptitude Test or American College Test, and acknowledged that they were both good at math and that the subject was important to them. The researchers assessed the latter participant characteristic on an 11-point Likert scale to ensure that the student had a strong identity in the tested domain. The test was administered on a computer and took record of correct responses and the amount of time spent on a question.

A male experimenter divided the students into several mixed gender groups. He informed the students that they would have 30 minutes to complete the exam and that they would receive their scores at the end of the exam. The students took either an easy math test (questions taken

from the GRE general exam) or a difficult math test (questions taken from the math subsection of the GRE). The independent variables for the study were gender and test difficulty, and the dependent variables were test performance and the amount of time spent on the test. Duration was measured to assess effort (i.e., more time = more effort). Results showed that women in the difficult test condition scored significantly lower than women and men in any other condition, while men in the difficult test condition scored lower than women and men in the easy test condition. Women performed almost equally to men on the easy test. Also, results reveal a marginal significance in test difficulty, with participants spending more time on the easier exam. The results are consistent with literature about performance differences between women and men on math exams. However, the study did not offer information about what causes the differences.

Study 2. The researchers hypothesized that the level of difficulty of the exam would mediate stereotype threat and poor test performance. Thirty women and 24 men, enrolled at the University of Michigan, were selected to participate. The researchers used the same difficult test from Study 1 but divided it in half. The male experimenter told the participants that they would take two tests and have 15 minutes to complete each test. Half of the participants were told that gender differences existed in the first test but not in the second test. The other half were told that gender differences did not exist in the first test but did exist in the second test. Students were randomly assigned to either condition. Spencer, Steele, and Quinn constructed these conditions to test the elicitation of poor performance by making the negative stereotype about math ability relevant. The independent variables for the study were gender and test characterization (gender differences relevant/not relevant), and the dependent variables were test performance and the amount of time spent on the test.

Participants test scores supported the study hypothesis. When the women were told that the test yielded gender differences, then they performed worse than men, and when they were told that the test did not yield gender differences, their performance was equal to men. Women in the gender relevant condition scored lower than all other groups. Also, women spent less time on the exam in the gender relevant condition than women in the other condition.

Study 3. The last experiment sought to provide more clear evidence about stereotype threat and its impact on women's math performance. Although supportive of the impact of stereotype threat on women's math performance, Study 2 failed in some important respects. The second test did not yield mean differences which could mean that stereotype threat might be limited to a small number of questions. The experiment only included high ability math students, which limits generalizability. Lastly, the experiment explicitly stated the existence of gender differences which may suggest that stereotype threat is only elicited when the stereotype is purported. Study 3 addressed these issues by selecting participants with moderate math ability from another university, choosing a wider range of exam items, and including a control group in the experiment where no gender differences are explicitly stated. Additionally, the study sought to explore the mediation of the impact of stereotype threat on women's math performance by assessing evaluation apprehension, test anxiety, and self-efficacy.

Thirty-six women and 31 men, enrolled at the University of New York at Buffalo, participated in Study 3. The SAT criteria used for Study 3 participants were less than those used for Study 1 and 2 participants. The test was taken on paper and students were given 20 minutes to complete the exam. The exam was easier than the exam used in Studies 1 and 2 and taken from the Graduate Management Test. Study participants were placed in mixed-gender groups and assigned to either the no-gender difference condition (explicitly stated that there were no

gender differences) or the control condition (nothing about gender mentioned). After the exam instructions including an example test problem to highlight the difficulty of the test were read aloud by a female experimenter, participants completed a questionnaire that would measure that proposed mediators. The independent variables were sex and test characterization, and the dependent variable was test performance.

Results showed that women performed worse than men in the control condition, but performed at the same level in the no-gender difference condition. The mean performance of women in the control condition was lower than any other group. Also, the data collected about possible mediators of stereotype threat on women's math performance revealed that evaluation apprehension and self-efficacy are not likely mediators. Test anxiety did not emerge as a strong mediator, but Spencer, Steele, and Quinn suggest that others should further test the mediator.

The overall results from the three clinical studies conducted by Steele, Spencer, and Quinn suggest that negative stereotypes about women and math performance can disrupt performance. The studies provide evidence to support the idea that stereotype threat can cause women to underperform when a task exceeds their knowledge base in mathematics. It is not clear from the data to what extent the strength of identity in a certain domain affects susceptibility to stereotype threat. The studies found underperformance in both highly skilled and moderately skilled females in the experimental conditions. Additionally, the studies did allude to interventions to mitigate stereotype threat by explicitly making gender differences in the test environment irrelevant. Further research is needed on the specific mediators between stereotype threat and academic performance because the data offered in the studies did not lead to a viable mechanism.

Claude Steele and Joshua Aronson: African Americans and Academic Performance.

Steele and Aronson (1995) conducted a series of four pioneering clinical studies to explore the effects of stereotype threat on the intellectual test performance of African American college students at Stanford University (see Table 1). The goal of the experiments was to introduce the stereotype threat theory as a possible explanation for the achievement gap between African American and Caucasian students, specifically addressing the underperformance of African American students in higher education. I will present a thorough summary of the study to set the foundation for my discussion on stereotype threat.

Table 1

Summary of Steele and Aronson Stereotype Threat Experiments (1995)

Purpose	**Research Design**	**Measures**	**Main Findings**
[1]To test the impact of an explicit and difficult evaluation of intellectual ability on African American undergraduate's susceptibility to stereotype threat	2 x 3 factorial analysis; Race (African American and Caucasian) by Test Condition (diagnostic of intellectual ability, non-diagnostic, non-diagnostic but framed as challenge)	• Performance on verbal ability test • Self-report on thoughts about academic ability • Self-report on cognitive interference • Self-report on test difficulty and bias • Self-report on test performance • Check of evaluative manipulation	• African American students in the diagnostic condition performed significantly worse than any other condition • No significant race-by-diagnostic interaction • No significant differences on self-reports on academic ability and cognitive interference • Evaluative manipulation was effective

[2]To test the apprehension of confirming a negative group stereotype as a mediator between stereotype threat and adverse academic performance among African American undergraduates	2 x 2 factorial analysis; Race (African American and Caucasian) by Test Condition (diagnostic of intellectual ability or non-diagnostic)	• Performance on verbal ability test • Spielberger State Anxiety Inventory (STAI) • Self-report on cognitive interference from Study 1 • Self-report questions about guessing on test items, expended effort, persistence on test items, actions to limit time on problems, reading problems more than once, frustration leading to giving up, and test bias	• African American students in the diagnostic condition performed significantly worse than any other condition • A significant race-by- diagnostic interaction was found • No significant difference on STAI or any self-report measure
[3]To test stereotype activation, stereotype disassociation, and apprehension in an evaluative situation among stereotype threatened African American undergraduates	2 x 3 factorial design; Race (African American and Caucasian) by Test Condition (diagnostic of intellectual ability, non-diagnostic, or control)	• Stereotype activation: Word fragment completion task • Self-doubt activation; Word fragment completion task • Self-report on stereotype avoidance • Self-report on self-handicapping • Indicating Race	• African American students in the diagnostic condition completed significantly more race-related fragments and self-doubt-related fragments than any other condition; • African American students displayed a more significant effort to avoid stereotypic preferences and made significantly more excuses about performance than any other

			condition • Only 25% of African American students in the diagnostic condition reported their race compared to 100% of students indicating their race in any other condition
[4]To test the effect of stereotype threat when a test is not explicitly diagnostic of ability and then if the threat acts as a performance mediator among American undergraduates	2 x 2 factorial design; Race (African American and Caucasian) by Race prime (Recorded ethnicity or did not record ethnicity)	• Performance on verbal ability test • Self-report questions about guessing on test items, expended effort, persistence on test items, actions to limit time on problems, reading problems more than once, frustration leading to giving up, and test bias • Self-report on stereotype threat • Self-report on academic identification	• African American students • racially primed performed significantly worse than any other condition • African American students not racially primed performed almost equally to Caucasian students • African American students felt more stereotype threat than Caucasian students

Note: Superscripts indicate study number.

Study 1. One-hundred and fourteen male and female, and African American and Caucasian undergraduates from Stanford were given a 30-minute test consisting of difficult items from the Graduate Record Examination (GRE). Participants were randomly assigned to one of three experimental conditions: 1) a diagnostic condition where students were told that the test

would evaluate their verbal and reasoning abilities; 2) a nondiagnostic-only condition where students were told that the test would help to understand better the psychological factors used to solve verbal problems; 3) and a non-diagnostic-challenge condition where students were given the same message as the other non-diagnostic group but labeled the test as a challenge. After the test, in addition to test performance, the researchers evaluated several dependent measures as shown in Table 1.

After controlling for the student's Standardized Aptitude Test (SAT), results revealed that African American participants performed worse than Caucasian participants when the test was presented as an evaluation of their verbal ability; and their performance improved when the test was presented as less reflective of their verbal ability, and more so when the test was framed as a challenge. However, race-by-condition interaction was absent. Also, the self-report measures did not support the hypothesis that stereotype threat affects performance by increasing distracting thoughts during the test. Due to these findings, the researchers conducted a second study to further explore the predicted relationship between stereotype threat and academic performance among African American students and possible mediators.

Study 2. The second study sought to test the argument that the apprehension of confirming a negative stereotype influences the impact of stereotype threat on academic performance. Study participants consisted of 20 African American and 20 Caucasian Stanford female undergraduates. Participants were randomly assigned to either the diagnostic or nondiagnostic groups presented in Study 1. The participants were given the same test administered in Study 1; except the time was changed from 30 to 25 minutes, three anagrams problems were deleted, the test was presented on a computer to track the time spent on each question, and more difficult questions were moved to the beginning of the exam. The researchers

used a computer for Study 2 to measure the time spent on each question to determine if anxiety influenced the speed of the participants' response. After the test, participants completed the Spielberger State Anxiety Inventory to measure test anxiety. Also, participants answered questions about their testing behavior (guessing, expended effort, persistence, limited time, rereading, frustration, and bias).

Results showed that the evaluative nature of the test affected performance significantly, which was only marginally significant in Study 1. African American students in the diagnostic condition scored significantly worse than any other condition. The researchers acknowledged that although the test from Study 1 was identical to Study 2 that the subtle differences in the test; which were computer use, reduction of time, and harder answers, in the beginning, could have changed these results. However, the researchers had yet to show how the specific apprehension about fulfilling a negative group stereotype impairs intellectual performance, and thus Steele and Aronson conducted a third experiment.

Study 3. Thirty-five African American (9 male, 26 female) and 33 Caucasian (20 male, 13 female) undergraduate students from Stanford, were randomly assigned to either a diagnostic, non-diagnostic, or control condition. Upon their arrival, a Caucasian male experimenter informed the students in the diagnostic and non-diagnostic conditions that the study would examine the relationship between the cognitive processes of lexical access processing (LAP) and higher verbal reasoning (HVR). Students in the diagnostic group were told that the test would measure LAP and HVR separately to measure their ability in each domain. Students in the nondiagnostic group were told that they would not measure ability on the tasks. Once the students in both groups received the study instructions, they were shown a simple fragment completion sample item from the LAP and three difficult items from the HVR measures. The researchers used the

HVR items to highlight the difficulty of the test and elicit poor performance in the diagnostic group. Conversely, the participants assigned to the control condition arrived at the study site to find a note on the door instructing them to complete the LAP and HVR tasks mentioned above. The instructions did not mention that their ability would be evaluated.

Steele and Aronson designed the study to measure stereotype activation, self-doubt activation, stereotype avoidance, and self-handicapping. The stereotype activation measure consisted of a word- fragment completion task (LAP task), which asked the participants to complete word fragments created to prime their racial identity. Items included fragments such as _ _ CE (RACE), _ _ ACK (BLACK), WEL _ _ _ _ (WELFARE), and TO_ _ _ (TOKEN). The self-doubt measure consisted of a word-fragment completion task to arouse self-doubt about competence and ability. Items included fragments such as LO_ _ _ (LOSER), _ _ FERIOR (INFERIOR), and FL _ _ _ (FLUNK). Filler items were used in the fragment task to prevent participants from understanding the racial nature of the task.

The stereotype avoidance measure asked participants to rate their preference on a list of activities and self-identification with a list of personality traits. The measure consisted of multiple items, some of which were stereotypic of African American culture, asking about the enjoyment of specific activities and self- perception in certain personality domains. For example, participants were asked about their favorite sport and music genre. The stereotypic option for African Americans was basketball and rap. Participants were asked whether they identified with certain personality domains such as extroverted, lazy, or humorous to address personality traits. The stereotypic option for African Americans was lazy, aggressive, and belligerent. Stereotypic activities and traits were selected during a pretest in which 40 Caucasian participants selected

these items as stereotypic of African Americans. Sixty-five percent of participants had to include a specific activity or trait on the pretest for inclusion on the measure.

Additionally, demographic questions were incorporated in this measure (age, gender, race, and major). The self- handicapping measure rated the participant's perceived preparedness for the exam including questions about sufficient hours of sleep, ability to focus, current stress, and tests bias. The stereotype activation results showed that the diagnostic condition yielded an increase in race-related fragment completion among African American students, which is an outcome not viewed in the diagnostic condition for Caucasian students. The self-doubt activation, stereotype avoidance, and the indication of race results showed significant difference among racial groups. For the latter measure, only 25% of the African American students in the diagnostic condition indicated their race. Finally, the self- handicapping results showed significant differences among race and condition for the measures on hours of sleep, ability to focus, and tests bias. Study 3 supports the idea that the diagnostic condition evaluating intellectual ability caused apprehension among African American participants in the form of stereotype threat. However, the previous studies did not address whether African American students would perform at lower levels than Caucasian students if the diagnostic condition was not explicitly stated; or whether the diagnostic condition mediated stereotype threat.

Study 4. Twenty-four African American (6 male, 18 female) and 23 Caucasian (11 male, 12 female) Stanford undergraduate students participated in Study 4. The students were randomly assigned to either a race-prime or no-race-prime condition by a Caucasian male experimenter. The researchers primed participants by race by asking them to respond to demographic questions before taking the exam. Students listed their age, year in school, major, number of siblings, and parents' education. In the race-prime condition the next demographic question asked the

participants to list their race, and in the no-prime- condition, that question about race did not appear on the questionnaire. Students had 25 minutes to complete the exam.

At the end of the exam, the experimenter collected the exam and disseminated several questionnaires of dependent measures. The first questionnaire was the same one used in Study 2 and asked participants about their testing behavior (guessing, expended effort, persistence, limited time, rereading, frustration, and bias). Also, the researchers used a 7-point Likert scale to measure stereotype threat (Example question: “Some people feel that I have less verbal ability because of my race”). Lastly, the researchers asked participants to respond to a questionnaire measuring academic identification (Example questions: “I am a verbally-oriented person;” “Sports are important to me”). As predicted, data showed that African American participants in the race-prime condition performed worse than all other groups, but, their performance was almost equal to Caucasian participants in the no-race- prime condition. African American students in the race-prime condition performed significantly worse than African American students in the no-race-prime condition and Caucasian students in the race-prime condition. Although African American students in the no-race-prime condition performed worse than Caucasian students in the no-race-prime condition, it was not a significant difference.

Dependent measures revealed that African American students in the prime condition reported fewer guesses than Caucasian students in the prime condition. African American students significantly reported, more than Caucasian students, that they read a question more than once. African American students felt more stereotype threat than Caucasian participants. Additionally, African American participants reported valuing sports less than Caucasian participants. Correlations for this measure revealed that the worse African American students felt they performed, then the more they disidentified with sports.

Critical Features of Stereotype Threat Theory

The studies completed by Steele and Aronson (1995) and Spencer, Steele, and Quinn (1999) produced underperformance, offered ideas about potential moderators and mediators of the stereotype threat-performance relationship, and offered ideas for possible strategies that can improve success among marginalized groups. Additionally, the original studies showed that stereotype threat is situational, and an individual does not need to necessarily believe a negative stereotype about their social group is true for the threat to be activated. The group member simply needs to know that a stereotype exists for their social group. It is the apprehension that others may label them with a negative stereotype that could cause the threat. The stereotype threat theory states that individuals are most susceptible to stereotype threat when 1) they are being evaluated, 2) they strongly identify with the stereotyped group being evaluated, 3) the stereotype is directly associated with performance 4) they highly value the domain being tested, and 5) the difficulty of the task exceeds their mental or physical limits. Furthermore, negative stereotyping can be implicit or explicit to elicit stereotype threat.

Theory Confusion

The most common theories used interchangeably and incorrectly when discussing stereotype threat are the theories of Inferiority Complex, Self-Fulfilling Prophecy, Choking under pressure, and Metastereotypes. Inferiority Complex, a term coined by Alfred Adler, describes a chronic cognitive state in which individuals view the self, or their social group, as inadequate compared to another person or group. The perception of inferiority, whether fabricated or real, can elicit both positive (Strano & Petrocelli, 2005) and negative (Shi & Zhao, 2014) results when in the presence of the perceived superior group. A self-fulfilling prophecy, coined by Robert Merton, describes expectations that become true through the beliefs affecting

actions and inactions. For example, if a student believes that they are not good at math, then they will subconsciously (or consciously) involve themselves (or not involve themselves) in behaviors that confirm their beliefs about their abilities. Alternatively, a self-fulfilling prophecy can lead to positive results as well (Stinson, Logel, Shepherd, & Zanna, 2011). Choking under pressure, coined by Roy Baumeister, defines adverse performance when an individual encounters a situation where an expectation of optimal performance increases. Choking under pressure is most often used in sports (Hill & Shaw, 2014; Jordet, 2009), but researchers have linked the phenomenon to academic achievement (Smeding, Darnon, & Van Yperen, 2015; Tagler, 2012). Metastereotypes describe an ingroups' perception of an outgroups' beliefs about the characteristics of their social group. The study of metastereotypes can be traced back to the work of Lee Sigelman and Steven Tuch (Sigelman & Tuch, 1997) where they researched African American perceptions of Caucasian views about their racial group. In this work, the researchers discovered that African Americans believed that Caucasians viewed them as lazy, less intelligent, and have low moral standards.

Inferiority complex, self-fulfilling prophecy, choking under pressure, and metastereotypes are wholly different from stereotype threat. Stereotype threat is a situational predicament, whereas inferiority complex and self-fulfilling prophecy define a fixed mindset on how an individual perceives the world and their abilities. Choking under pressure describes a situation where high expectation lead to underperformance, whereas low expectations or negative stereotypes lead to a decrease in performance in stereotype threatening situations. Metastereotypes could serve as a catalyst for stereotype threat, especially if a person's thoughts about how other's view them results in cognitive interference from a task, but a metastereotype does not always conclude in a threatening situation. It is easy to confuse these theories because

societal perceptions, self-perception, and stereotypes are the foundation of each theory. However, each social-psychological situation is activated differently. The threat of being stereotyped alone does not undermine performance. Individual differences can make a person more susceptible to the negative effects of stereotype threat and disrupt cognitive functioning.

Student-Athletes and their Collegiate Experience

Student-athletes represent a unique population on college campuses. Collegiate athletes often receive the attention and adoration that is not received by a typical college student. They are revered as campus heroes and celebrated for their athletic accomplishments. Valentine and Taub (2009) reported that student-athletes are among a privileged group on college campuses. The induction into this "celebrity- like" lifestyle starts early. Before stepping foot on a campus, some student-athletes are recruited by collegiate athletics programs as early as elementary school. For example, in 2013, 14-year old Haley Berg was weighing offers for a full scholarship from three Division I women's soccer programs (Popper, 2014). In 2017, Havon Finney, Jr. (9-years old) and Bunchie Young (10-years old) received a verbal offer to play football at the University of Nevada and Illinois University, respectively (USA Today High School Sports, 2017). Also, some student-athletes are admitted to a college or university as special talent, or special admits (Hendricks & Johnson, 2016). Students in this group do not meet the admissions standards of a college or university but are considered for admission due to the value that their talent can bring to the university. Music students often are included in this group.

Regardless of the method or timing of recruitment, most collegiate athletes are introduced to their sport and competitive culture at a young age and are forced to negotiate their academic and athletic selves. Role negotiations can lead to adverse effects such as academic underperformance (Scott, Paskus, Miranda, Petr, & McArdle, 2008), negative stress (Kimball &

Freysinger, 2003), poor sleep quality (Mah, Kezirian, Marcello, & Dement, 2017), and emotional stress due to transition out of their sport (Park, Lavallee, & Todd, 2013). Fortunately, the negotiations also result in positive outcomes such as physiological, psychological, educational, social, and financial benefits, and former student-athletes are often appealing to employers because of their strong leadership and teamwork skills and their ability to overcome adversity (Chen, Snyder, & Magner, 2010; NCAA, 2014; see After the Game Career Network: NCAA, 2017a).

Rubin and Moses (2017) discuss an athletic academic subculture, separate and distinct from the college or university, where collegiate athletes may feel isolated from other students because of the time demands as a student and athlete. Student-athletes must manage external and internal pressures to perform well in the classroom and in their respective sport. Collegiate athletes dedicate an average of forty hours per week to their sports (Wolverton, 2008), which includes practice, play, time away from class due to competition, and time needed to attend to physical ailments (i.e., physical therapy/rehabilitation, fatigue) (Gayles & Hu, 2009). The strategies employed by student-athletes to manage constructs associated with their dual identities impact their responses to negative stressors, such as stereotypes and stereotype threat.

Academic Self-Concept. Self-concept is a person's beliefs about themselves. Self-concept is not one single unit; rather it is a multidimensional complex system (Jones, 2015). Identities and self-concept determine our behaviors. Academic self-concept is a person's perception of themselves in learning situations (Bong & Skaalvik, 2003; Shavelson, Hubner, & Stanton, 1976). Research suggests that academic self-concept is positively connected to academic achievement (Khalaila, 2015; Marsh et al., 2018) and that academic self-concept, learning strategies, and academic achievement have reciprocal relationships (McInerney, Cheng,

Mok, & Lam, 2012). Figure 1 displays one model offered by Shavelson, Hubner, and Stanton (1976) that visually explains a hierarchical perspective of the self-concept framework. At the top of the hierarchy is general self-concept, and at the base of the hierarchy, self-concept becomes more specific and dependent on circumstances. For example, the model subdivides general self-concept into two categories academic self-concept and nonacademic self-concept. Then, based on the subject area, academic self-concept is further divided into specific subareas and can be divided even further into related categories. The model conceptualizes self-concept and provides an understanding of the situation and person-specific nature of the construct, and reasoning for its connection with academic achievement. Shavelson, Hubner, and Stanton state that: "These perceptions [perception of self] are through his experience with his environment, perhaps in the manner suggested by Kelly (1973), and are influenced especially by environmental reinforcements and significant others" (Shavelson, Hubner, & Stanton, 1976, p. 411). In the case of student-athletes, academic self-concept may preclude and interfere with development in that area due to the general self-concept overwhelmed by an athletic identity.

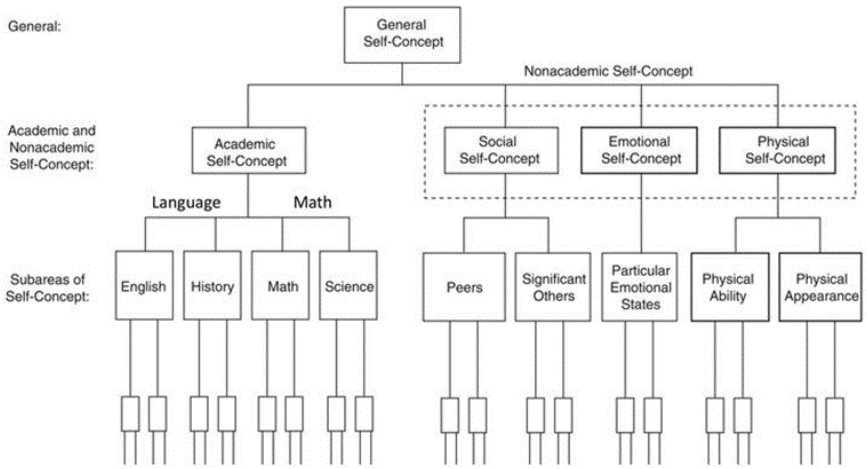

Figure 1. Hierarchical Self-Concept Model (Shavelson, Hubner, & Stanton, 1976)

There is a dearth of research on collegiate athletes and academic identity, which is a missed opportunity considering the substantial amount of literature produced about collegiate athletes and academic underperformance. However, the existing literature discusses grade point average (Beron & Pquero, 2016), academic clustering (Houston & Baber, 2017), major selection (Foster & Huml, 2017), academic services within athletic departments (Hazzaa, Sonkeng, & Yoh, 2018), athletic identity (Rankin, Merson, Garvey, Sorgen, Menon, Loya, & Oseguera, 2016), in-Season vs. out-of-Season academic performance (Scott, Paskus, Miranda, Petr, & McArdle, 2008) and the federal government and NCAA dissatisfaction with academic standards for student-athletes (Castle, Ammon, & Barnes, 2015; LaForge & Hodge, 2011). Most research approaches the topic of student-athlete academic identity from a deficit framework. Also, a substantial amount of the literature focuses on African American male student-athletes (Cooper & Cooper, 2015; Harris, Hines, Kelly, Williams, & Bagley, 2014; Johnson & Migliaccio, 2009), because the group is overrepresented in the collegiate athlete population. For example, in 2016, research showed that African American men at Auburn University represented 3.2% of the undergraduate population yet comprised 77.9% of the football and basketball teams (Harper, 2016). From the limited research, one cannot construct a complete narrative of the climate of academic self-concept among student-athletes. Scholars must rely on data from NCAA academic initiatives to assess the state of collegiate athletes and academic identity.

Due to its renewed focus on the academic achievement of its member institutions, the NCAA has created the infrastructure to increase academic identification among collegiate athletes. The NCAA governs academic policies that reward and penalize teams for their academic performance through the Academic Performance Program (APP). The NCAA initiatives seek to nurture student-athletes' socio-psychological well-being when balancing their

dual social identities to achieve high academic and athletic standards. The NCAA has a mission to develop young adults into productive citizens who excel in their post-graduation pursuits.

"More than a decade into academic reform, Division I student-athletes continue to improve academically. More student-athletes than ever are graduating, due in large part to enhanced eligibility standards and the success of the Division I Academic Performance Program. Division I is committed to an intercollegiate athletics model which recognizes and supports the importance of the academic mission of its member schools" (NCAA, 2018a, para. 1). The APP covers the Academic Progress Rate (APR) and the Graduate Success Rate (GSR). The APR accounts for the eligibility (grade point average and credit hours towards degree completion) and retention of each student-athlete per academic term. The overall score is a team-based average out of 1000 points. The Graduation Success Rate differs from the Federal Graduate Rate because it accounts for student-athletes who transfer to another university in good academic standing (removes them from their GSR cohort) and for those student-athletes who transfer into a university (adds them to their GSR cohort).

Data show that these initiatives have increased the scholastic success of student-athletes. Contrary to the negative stereotype about student-athletes' intellectual ability, graduation rates for student-athletes are higher than the national average of the general student population (NCAA, 2018b). However, the NCAA reported differences in APR and GSR scores between participants on male and female intercollegiate teams. According to multi-year national data collected by the NCAA (2016), Division I student-athletes in male sports had a lower average Academic Progress Rate (APR) than student-athletes participating in female sports (male sports: 978; female sports: 987) across 19 varsity sports. Also, based on information collected from the 2014-2017 graduating classes (NCAA, 2017b), student-athletes participating in male sports had a

lower average Graduation Success Rate (GSR) than student-athletes participating in female sports across 18 male sports and 17 female sports (males: 85%; females: 93%). The total number of teams differ between APR and GSR because cross country and track and field were combined in the GSR data, and beach volleyball (female sport) was not included in this data for reasons undisclosed. The differences were not tested for statistical significance, but they are of interest in the narrative about student-athlete academic success. Although there are no empirically-based data that discuss academic self-concept among student-athletes specifically, APR and GSR data combined with tangential literature of academic-related topics could serve as a marker for student identity development and beliefs in this domain. Further research is needed in this area.

Athletic Identity. Brewer, Van Raalte, and Linder (1993) define athletic identity as the degree to which an athlete incorporates their athletic identity into their self-concept. Beamon (2012) states that one's identity consists of how an individual views him or herself and how others view an individual. Beamon states that elite athletes receive "elevated levels of social reinforcement for their physical abilities," and consequently, elite athletes may have an exclusive athletic identity, and others view may them solely as an athlete. The athletic identity is established during the early development stages of a student-athlete's life, and actions nurture the identity. A stronger athletic identity can lead collegiate athletes to academically less rigorous majors (Foster & Huml, 2017), participation in sports with higher cultural significance (Rasquinha & Cardinal, 2017), decreased career maturity (Houle & Kluck, 2015), lower career optimism (Tyrance, Harris, & Post, 2013), and emotional distress and negative effects to well-being upon athletic disengagement (Heird & Steinfeldt, 2011; Van Lone, Siembor, Mistler, & Mapstone, 2017).

Also, Antshel, VanderDrift, and Pauline (2016) conducted a study to explore the effect of athletic identity on student-athlete concentration or difficulty thinking. The results show that students with higher levels of athletic identity had the most issues with concentration. Demographically, it was discovered that females student-athletes had more difficulty thinking than male student-athletes; students who listed their race as "other" ranked highest in difficulty thinking (followed by African Americans and then Caucasians); sophomores ranked highest in inattention (followed by juniors, freshmen, seniors, and then graduate students); students receiving full scholarships ranked highest in inattention (followed by students receiving partial scholarships and then students who receive no scholarship); and student-athletes who stated that they would compete professionally were more likely to have difficulty thinking. Findings also suggest that the student-athletes with higher levels of inattention had lower grade point averages and were less likely to use academic support services.

Athletic Identity Foreclosure. Identity foreclosure is one of four identity statuses (identity diffusion, identity moratorium, identity foreclosure, and identity achievement) in James Marcia's Identity Status Theory. According to Marcia, the requirements to attain a mature identity are based on crisis and commitment (Dembo & Seli, 2016, p. 99). Identity foreclosure occurs when an individual commits to specific beliefs or goals without considering other options (see Figure 2). For example, student-athletes may commit to becoming a professional athlete without considering other skills, passions, and career options to avoid potential anxiety caused by thinking about a future outside of competition. A foreclosed identity is extremely problematic for student-athletes because it breeds unrealistic expectations. Out of the 480,000 NCAA student-athletes that compete nationally, only 2% continue their respective sports professionally. The probability of the continuation of sport past college is less likely for female collegiate

athletes because there are fewer opportunities to play professionally. Discussing alternative career paths is a logical plan for student-athlete development and success. It is often these shortsighted goals and underdeveloped plans that lead to monolithic views of student-athletes. The goal of becoming a professional athlete is not by itself shortsighted, but the lack of exploration of parallel plans is irresponsible. An even more troubling realization is that student-athletes are perpetuating their own negative stereotypes through their actions and inactions in creating multiple identities. It is expected that a student-athlete possess an athletic identity just as one would expect anyone to identify with a domain they care about; however, overidentification often perpetuates the view of an academically inferior student-athlete. Lastly and consistent with the emphasis on individualization, differences among in athletic identity and identity foreclosure have been shown between across race, gender, sport, and major selection (Beamon, 2012; Daltry, 2012; Foster & Huml, 2017; Harrison, Sailes, Rotich, & Bimper, 2011; Lupo, Mosso, Guidotti, Cugliari, Pizzigalli, & Rainoldi, 2017; Mignano, Brewer, Winter, & Van Raalte, 2006; Rasquinha & Cardinal, 2017).

	No Crisis	***Crisis***
No Commitment	Diffusion	Moratorium
Commitment	Foreclosure	Achieved

Figure 2. Identity Status Theory Model (Marcia, 1966*)*

Stereotypes. During matriculation, there is a myriad of services offered to student-athletes while in the care of collegiate athletic programs. Student-athletes have designated academic advisors (Curtis, 2006; National Association for Academic Advisors for Athletics, 2017), tutoring services (Banbel & Chen, 2014), and writing support (Rifenburg, 2016). These services often take place in separate athletic learning labs. The recruitment and admission

processes and services offered to student-athletes is not mentioned to contribute to the deficit framework often used to discuss this unique student population. Contrarily, these factors are mentioned as contributors to the salience of the athletic identity and provide insight on identity foreclosure prevalent in the athletic community.

Collegiate athletes operate under high demands to excel academically and athletically. Student-athletes must work to balance their studies, extra-curricular academic activities, multi-day practices, and team meetings and appearances. Tailored resources are necessary. Additionally, sports participation can produce positive physiological, psychological, educational, social, and financial benefits (Chen, Snyder, & Magner, 2010; NCAA, 2014).

English and Kruger (2016) compiled data about student-athlete stereotypes in empirically-based studies (see Table 2 with the addition of Comeaux studies). Stereotypes depict student-athletes as less intelligent, less motivated, less prepared for class than non-athletes, and receivers of special attention (Baucom & Lantz, 2001; Comeaux, 2010; Comeaux, 2012; Engstrom & Sedlacek, 1991; Sailes, 1993; Sherman, Weber, & Tegano, 1988; Simons, Bosworth, Fujita, & Jensen, 2007).

Table 2

Student-Athlete (SA) Stereotypes in Empirically-Based Studies

Study	**Year**	**Author(s)**	**Findings**
An Investigation of Faculty Perceptions of Athletics at Division IA Universities	1988	Thomas M. Sherman, Larry J. Weber, and Carmen Tegano	Faculty members' perceptions were collected from 104 universities about athletics on their campus. Sixty-five percent of faculty believed that SAs were not as academically successful as other students.

A Study of Prejudice Toward University Student-Athletes	1991	Catherine McHugh Engstrom and William E. Sedlacek	The Situational Attitude Scale Student-Athlete was used to survey perceptions of SAs by 293 incoming first-year students. Students held negative attitudes about SA academic competence.
An Investigation of Campus Stereotypes: The Myth of African American Athletic Superiority and Dumb Jock Stereotype	1993	Gary A. Sailes	Undergraduates' and graduates' perceptions were collected from 869 students about SAs and African American student-athletes. The findings revealed that 45% and 44% of the participants felt that SAs were not as smart and took easier classes than other students, respectively.
Faculty Attitudes Toward Male Division II Student-Athletes	2001	Chris Baucom and Christopher D. Lantz	A revised Situation Attitude Scale Student-Athlete was used to survey perceptions of 409 faculty members about student-athletes on campus. Data suggest that faculty held prejudicial views about revenue and non-revenue athletes.
The Athlete Stigma in Higher Education	2007	Herber D. Simons, Corey Bosworth, Scott Fujita, and Mark Jensen	Five-hundred and thirty-eight SAs completed a survey about how they were treated by faculty, TAs, and nonstudent-athletes. Only 15% reported positive perceptions. Comments affirmed the dumb jock stereotype (low academic motivation and undeserved privileges).
Racial Differences in Faculty Perceptions of Collegiate Student-Athletes' Academic and Post-Undergraduate Achievements	2010	Eddie Comeaux	Photo-elicitation was used to survey the perceptions of 464 teaching and research faculty members about student-athlete success based on gender and race. Qualitative data revealed that the faculty members held more favorable opinions about Caucasian student-athletes' accomplishments than African American student-athletes' accomplishments.

Unmasking Athlete Microaggressions: Division I Student-Athletes' Engagement with Members of the Campus Community	2012	Eddie Comeaux	The Simons and colleagues (2007) survey was completed by 122 student-athletes to explore how they perceive their experiences with professors and other students in classroom settings. Most student-athletes cited positive or neutral interactions with faculty and non-athlete peers. Those who did mention negative interactions stated that they were viewed as less intelligent, lacked academic motivation, and received unwarranted special treatment.

Negative stereotypes about student-athletes are ubiquitous in society. Most recently, a dialogue meme about student-athletes appeared on Twitter, satirically depicting an excessively motivated, self-centered, and overstimulated student-athlete focused on their athletic goals exclusively (see Figure 3). In the meme, someone says something harmless and the student-athlete responds defensively and reorients the conversation to discuss their athletic prowess.

Figure 3. Student-Athlete Dialogue Meme Examples 1

Thoughts about student-athletes are portrayed on this medium for entertainment; however, its presence and popularity are indicative of a view of the one-dimensional student-athlete. Subsequently, student-athletes may be susceptible to the negative effects that stereotypes can have on academic performance.

Stereotype Threat and Academic Performance. Studies show that stereotype threat impedes the academic performance of student-athletes in situations where they are primed for their athletic identity (Dee, 2014; Yopyk & Prentice, 2005) and in some situation where they are primed for their dual identities as both a student and athlete (Harrison, Stone, Shapiro, Yee, Boyd, & Rullan, 2009; Stone, Harrison, & Mottley, 2012). Yopyk and Prentice (2005) conducted two studies to explore the impact of stereotype threat on the test performance and self-regard of the football team, men's ice hockey team, and three all-male *a capella* singing groups at Princeton University. Study 1 included 37 student-athletes and 30 a capella group members. Study 2 included 19 student-athletes. The *a capella* groups were added to the study as a comparison group to prevent outcomes explained by the manipulation and not the phenomenon itself. Three to five students were randomly assigned to either a group priming the extracurricular identity, student identity, or no identity. Students in the extracurricular identity group were asked to describe their last athletic or singing performance. The experimenters asked the student group to describe their last academic accomplishment. The students in the control group (no identity group) wrote specific directions from the library to their dorm. After each writing task, the students completed the Self-Rating Scale questionnaire and a ten-question mathematics exam. Student-athletes in the extracurricular identity group performed worse on the math test and self-rating scale than any other group. The researchers designed Study 2 much like the Steele and Aronson (1995) study, which included a word fragment completion task. Experimenters primed students from the football team, men's hockey team, and baseball teams at Princeton University for their athlete identity by asking them to complete the self-rating inventory and for their student identity by asking them to complete the ten questions mathematics exam from Study 1.

Immediately following the completion of the inventory or math test, the students completed a task that asked them to fill in the letters of 20-word fragments. The fragments included words related to either the student or athletic identity (i.e., A_ _ _ _ _ IC; ATHLETIC. ACADEMIC). Student-athletes in the self-rating group (or athlete prime group) completed more word fragments with athletic-related words, and student-athletes in the math group (student prime group) completed more word fragment with student-related words. These results highlight the negative effects of implicit stereotype priming on both relevant and seemingly irrelevant (word fragment completion) task performance. The salience of the identity, once activated, elicited a negative stereotype among the student-athletes which led to a decrease in performance across multiple domains.

Harrison, Stone, and colleagues (2009) evaluated the intersection of gender, athletic identity, and student-athlete identity (dual identity) on stereotype threat. The researchers hypothesized that female collegiate athletes would have poorer academic performance than male collegiate athletes because female student-athletes are more engaged in academics; and thus, would be more threatened by a negative stereotype. The study included 45 female male student-athletes and 43 female student-athletes. Before taking a 40-item GRE-style test of verbal analogies, male and female student-athletes were asked if they were a Division I athlete (athletic identity prime), a student-athlete (dual identity prime), or a research participant (no prime). The reported data confirmed that female collegiate athletes posted poorer performance on the GRE-style test than their male counterparts, especially when they were primed with their dual identities. The negative stereotypes associated with an athletic identity proved a more overwhelming factor in performance than the positive stereotypes associated with a student identity. The study supports a feature of the stereotype threat theory which asserts that stereotype

threat is activated when an individual identifies with the group being stereotyped and the domain being tested.

In 2012, Stone, Harrison, and Mottley expanded their research on stereotype threat to explore the differences in race on the experiences of stereotype threat among student-athletes (Stone, Harrison, & Mottley, 2012). Specifically, the researchers wanted to evaluate the effects of stereotype threat on academically-engaged African American collegiate athletes. The group of students is stigmatized due to their race and their status as an athlete. After a three-year recruitment period, the study included 75 African American and 76 Caucasian collegiate athletes representing nine varsity sports. The experimenters disseminated a pretest asking students to answer demographic questions and complete a measure of academic engagement. Student-athletes and nonathletes were invited to participate in the study to simulate a classroom in the lab. Once in the classroom, students were presented with envelopes on their desk with a 55-minute verbal analogy test inside. Before starting the exam, students were asked to place a check next to the following statements on the cover page of their exam depending on their identity prime group: 1) I am an athlete (athlete prime group); 2) I am a scholar-athlete; (scholar-athlete prime group) or 3) I am a research participant (no prime group). Only one statement was listed depending on group assignment. The cover page also indicated that their scores would be compared to other students on campus. The results show that academically-engaged African American collegiate athletes performed significantly worse on difficult test items than Caucasian collegiate athletes when primed for their athletic identity and their scholar-athlete identity and on easy items when primed for their scholar-athlete identity. The study further supports the theoretical assertion that group and domain identifications elevate susceptibility to stereotype

threat. Additionally, the study highlights the extra burden of racial stereotypes on the effects of stereotype threat among student-athletes.

From 2005 to 2012, the research on stereotype threat and student-athletes examined whether the student population was affected by devaluing stereotypes in academic settings. It was not until 2013, when Feltz, Schneider, Hwang, and Skogsberg sought to understand factors that made student-athletes susceptible to stereotype threat. The researchers recruited student-athletes from all divisions to participate in a study seeking to explore the effects of athletic identity, academic ability, and a coach's regard of an athlete's academic ability on their experiences with stereotype threat. The study included 318 student-athletes. Feltz et al. (2013) used the Athlete Identity Measurement Scale to measure athletic identity (Brewer et al., 1993), the Michigan State Self- Concept of Ability Scale-General to measure academic identity (Brookover, LePere, Hamachek, Thomas, & Erickson, 1965), the question "My coach has a high opinion of my academic ability" to measure a coach's regard for an athlete's academic ability, and the College Academic Beliefs scale to evaluate individual differences in perceived stereotype threat (Ployhart, Ziegert, & McFarland, 2003). Ployhart et al.'s study is unique because they did not experimentally manipulate stereotype threat; rather they measured self-perceptions of stereotype threat directly. When determining the relationships between those measures the researchers controlled for gender, race/ethnicity, type of sport, and division level. Data revealed that academic and athletic identification were negatively correlated, while coach's regard was positively correlated with academic identification and negatively correlated with athletic identification. Furthermore, Division I athletes in high-profile sports (i.e., basketball and football) were more susceptible to stereotype threat and believed that their coach had a more negative view of their academic ability. The study was significant because it used Ployhart et

al.'s study design to observe stereotype threat in a real-world context, and it explored multiple variables unique to student-athletes to test susceptibility to stereotype threat.

Dee (2014) presented an economist perspective on the effects of stereotype threat in the student-athlete population. He argues that social identities (athletic identity) and views of social norms can lead to negative educational and economic outcomes. The study was designed like most other stereotype threat experiments. Student-athletes (N = 37) and nonathletes (N = 47) were placed in a group where they were either primed or not primed for their athletic identity. Students in both groups completed a one-page questionnaire before answering thirty quantitative questions and nine verbal questions taken from the Graduate Records Examination (GRE). The control group (no prime) completed a questionnaire asking about living arrangements. The threat group (prime) answered questions about their status as NCAA athletes. If the student was a student-athlete, then they listed the sport they played and provided information about the prevalence of conflict between their athletic and academic commitments. Results show that student-athletes in the threat group performed worse on the test than nonathletes, and male student-athletes performed worse than female student-athletes in the threat condition. The study's findings are consistent with the stereotype threat theory. Dee contributed to the literature by highlighting the educational and economic impairments caused by stereotype threat and introducing a priming technique that resembles a more realistic student-athlete encounter with a threat of a negative stereotype (i.e., asking students about scheduling conflicts with academic activities).

Most recently journals have published studies evaluating stereotype threat and student-athletes in a specific academic domain and qualitatively. A study by Riciputi and Erdal (2017) divided 60 student-athletes into a stereotype threat condition or control condition to assess the

effects of stereotype threat on math performance. Results showed that student-athletes in the threat condition attempted fewer math problems and performed worse than student-athletes in the control condition. The researchers did not find gender differences in effort or performance. The findings on gender and stereotype threat are contrary to previous findings about women and math performance. However, the study included Division III student-athletes, which is a group of students often recognized for their academic accomplishments. Division III athletes are not awarded athletic scholarships. Thus, the assumption is that less pressure from the university leads to a decrease in athletic identity.

Griffin (2017) explored how ten collegiate African American football players engage with stereotype threat. Outcomes from Dee's (2014) student found that male student-athletes are more susceptible to stereotype threat and subsequently more at risk for academic underperformance. Also, there is an abundance of data discussing stereotypes about and the effects of stereotype threat on African American students (Massey & Owens, 2014; McClain & Cokley, 2017; McKay, Doverspike, Bowen- Hilton, & McKay, 2003; Sailes, 1993; Steele and Aronson, 1995; Von Robertson & Chaney, 2015). As discussed in previous sections, the stigmatization of dual identities can compound the effects of stereotype threat in educational settings. Griffin sought to capture the first-person narrative from the study participants through individual interviews. Interview questions asked about the length of play, the recruitment process, academic difficulties, self-identities, and how others perceived them. The researchers analyzed the student-athletes' responses to understand how they experience stereotype threat. Findings revealed that participants responded to stereotype threat by exacerbating the negative stereotype by appearing disinterested in learning, habituating or hiding their athletic identity, or mitigating the threat of a negative stereotype by being engaged while in academic settings. The

qualitative data revealed that student-athletes are aware of negative stereotypes about their group and provided information about how the group manages stereotype threat. The study is a refreshing alternative to how stereotype threat is traditionally studied. Additionally, it complements the previous stereotype threat data collected by giving a voice to the quantitative data.

Collectively, the studies provide critical insight on student-athlete experiences with stereotype threat in academic environments. Each study, set in academic spaces, compliments each other by progressing the previous research; offering a more comprehensive perspective on a complex social and psychological phenomenon within the student population. Yopyk and Prentice (2005) set the foundation for research in the area of stereotype threat and student-athletes; suggesting that the population is affected by negative stereotypes in academic settings. Harrison et al. (2009) followed the research by focusing on the impact of priming methods (i.e., athlete vs. scholar-athlete) on collegiate athletes' interaction with negative stereotypes in the classroom. Then, Stone, Harrison, and Mottley (2012) coupled their research on priming methods with intersectional scholarship focusing on the influence of race (African American and Caucasian) on student-athlete experiences.

Feltz (2013) elevated the research by transitioning the conversation to moderators that influence stereotype threat susceptibility. In 2014, Dee supported the findings of Yopyk and Prentice (2005) yet contributed to the literature differently by offering an economist perspective on the issue and expanding the type of sports represented in stereotype threat research. Additionally, Dee mimicked a more realistic priming method in his study. Riciputi and Erdal (2017) focused their interest on the impact of stereotype threat on mathematics performance. Lastly, Griffin (2017) contributed to the conversation by presenting qualitative research on the

experiences of Division I African American football players, who are among one of the most well-known groups in American society. It is important to briefly discuss the selected statistical analysis for these studies to place the results in context. Each study used analysis of variance or a combination of analysis of variance and covariance to analyze data, with the exceptions of Feltz and his colleagues (structural equation modeling), Dee (regression), and Griffin (semi-structured interviews). Each study yielded less than one hundred study participants except for Feltz and his colleagues' (non-experimental study) and Stone and his colleagues (three-year recruitment period).

The results of these studies present substantial evidence on the impeded academic performance of student-athletes when faced with identity threatening situations and provide insight on strategies to buffer these effects. Student-athletes are a stigmatized group on college campuses, and a greater understanding of moderators and mediators is necessary to address stereotype reduction strategies comprehensively. The current published work moves the conversation forward, and more rigorous analysis (experimental and natural) could enhance the quality of the student-athlete community.

Mechanism of an Effective Strategy: Effects, Moderators, and Mediators

Effects. Stereotype threat is known to undermine competence in multiple domains. Specifically, the perceived risk of confirming a negative stereotype about one's social group can affect academic performance, motor skill performance, disidentification and career selection, sense of belonging, and psychological and physical well-being. Rodriguez (2014) found that stereotype threatened Hispanic undergraduates in a summer bridge program performed worse on an SAT verbal exam said to measure their academic ability compared to Hispanic undergraduates in the non-threat condition. When women perceived themselves to be

overweight, they performed worse on a balancing task when made aware of a stereotype about balancing and weight than women who were not made aware of that stereotype (Lopes Cardozo & Chiviacowsky, 2015). Woodstock, Hernandez, Estrada, and Schulz (2012) discovered the chronic effects of stereotype threat on science disidentification and subsequent career selection among Hispanic/Latino postgraduates. A study involving high school students reported a significant difference among marginalized (African American, American Indian, and Latino) and non-marginalized (European American and Asian American) groups regarding sense of belonging dependent on them listing their race before answering a question about sense of belonging (Mello, Mallett, Andretta, & Worrell, 2012).

Female surgical residents with higher degrees of stereotype perception (more likely to be negatively impacted by stereotype threat) had poorer psychological health compared to females with lower degrees of stereotype perception, and male surgical residents (Salles, Mueller, & Cohen, 2015). Additionally, Blascovich, Spencer, Quinn, & Steele (2001) discovered a link between stereotype threat and high blood pressure among African American collegiate students.

Research spans multiple domains, and the majority of stereotype threat research is conducted in educational settings and tested experimentally. Most recently stereotype threat was shown to reduce the reading performance among elementary school boys (Pansu, Regner, Max, Cole, Nezlek, & Huguet, 2016), perpetuate a negative self-assessment of management skills among female business students (Flanagan, 2015), act as a barrier to undergraduate women entering engineering careers (Caderet, Hartung, Subich, & Wigold, 2017), negatively affect social adjustment and academic success of African American males attending a predominantly Caucasian institution (Von Robertson & Chaney, 2015); and junior faculty in the field of medicine were shown to be more susceptible to stereotype threat and more likely to choose

careers outside of academia (Fassiotto et. al., 2016). Stereotype threat is counterintuitive to learning environments especially if teachers, administrators, and students are perpetuating stereotypes that could potentially prevent learning. However, stereotype threat is not activated by the mere existence of a negative stereotype; the effect relies heavily on individual differences.

Moderators. The literature describes several studied moderators of the stereotype threat-performance relationship and suggests that individual differences determine susceptibility to stereotype threat. Differences in working memory, self-esteem, locus of control, and stigma consciousness have been found to moderate stereotype threat (Cadinu, Maass, Lombardo, & Frigerio, 2006; Régner, Smeding, Gimmig, Thinus-Blanc, Monteil, & Huguet, 2010; Rydell & Boucher, 2010; Silverman & Cohen, 2014). The bulk of the research has shown that the extent to which a person identifies with a social group (i.e., race) and domain (i.e., math) moderates stereotype threat. However, research shows that domain identification is not always a factor in stereotype threat activation (Keller & Dauenheimer, 2003). This section will focus on social identity.

Most research on social identities focuses on the influence of gender identification (Beasley & Fischer, 2012; Gresky, Eyck, Lord, & McIntyre, 2005; Hermann & Vollmeyer, 2016; Hively & El-Alayli, 2014; Koenig & Eagly, 2005; Luong & Knobloch, 2017; Schmader, 2001) and race identification (Craemer & Orey, 2017; Fischer, 2010; Jaramillo, Mello, & Worrell, 2016; Johnson-Ahorlu, 2013; Von Robertson & Chaney, 2015) on the impact of stereotype threat. Specifically, research focuses mostly on women and African Americans. For example, Schmader (2001) reported that women had significantly lower math performance than men when researchers made their gender identity relevant to their math performance. The study showed that gender identification could be a moderator for math performance among women. Additionally,

and in another domain, female soccer players had adverse reactions to stereotype threat on a dribbling task (Hermann & Vollmeyer, 2016). The soccer players completed two dribbling tasks while being timed. The first dribbling task was followed by either reading an article about the incompetence of female soccer players (threat condition) or the popularity of soccer (non-threat condition). After reading the article, the athletes performed their second dribbling task. Soccer players in the threat condition were shown to need more time on the dribbling task than the soccer players in the non-threat condition.

African American students have been a population of interest in stereotype threat research. As noted earlier, the prevailing stereotype about African Americans is that they are intellectually inferior to other racial groups, and more specifically, stereotypes claim that African American students are academically inferior to other racial groups. For example, qualitative data showed that African American college students attending four-year institutions cited stereotype and stereotype threat as a barrier to academic success (Johnson-Ahorlu, 2013). During focus groups, African American students detailed situations in which professors and other students questioned their academic preparedness without cause and discussed the added pressure they feel from their racial identity in the classroom. Two African American students from the study stated that,

> ". . . one particular professor . . . there have been situations where he keeps coming or asking other students about me, about whether or not they think I can do my job as a student, whether I'm pulling my weight in my class and whatever, things like that... the fact that this one professor has repeatedly asked one of my friends . . . if I can do it or if I'm contributing to the classroom as I should be, that makes me really mad" (Johnson-Ahorlu, 2013, p. 387).

> "It's really sad that I think African Americans and a lot of other cultures . . . we think about so much. It's not just go to school, sit in class, do well. It's like things are going on and you're thinking about things. Like . . . we gotta prove that we deserve to be here . . . there's too much going on" (Johnson-Ahorlu, 2013, p. 388).

Fischer's (2010) study exploring performance burden and stereotype threat on college outcomes supports the above student experiences and expounds upon the experiences of students of color on college campuses with longitudinal data. According to Fisher, performance burden is defined as "the degree to which students feel that out-group members judge their group on the basis of their own personal academic successes and struggles" (Fischer, 2010, p. 23). Data for the study came from the National Longitudinal Survey of Freshmen and examined cumulative grade point average, satisfaction with campus life, and on- time graduation (graduating in four years) as college outcomes. Fischer used data collected in the students' freshman and sophomore years. Findings suggest that students who experience a higher level of performance burden and stereotype threat have lower grade point averages, have less satisfaction with campus life, and are at risk of disidentifying with school by studying less, thus negatively impacting on-time graduation. Minority populations on college campuses represent students in these categories. The study was one of the first to examine the effects of stereotype threat over time.

Although research on gender and racial identification is most prevalent, researchers have provided data on the impact of stereotype threat on other social identities. Researchers have collected data on stereotype threat and age (Kang & Chasteen, 2009; Lamont, Swift, & Abrams, 2015), religion (Christians: Rios, Chen, Totton, & Shariff, 2015), sexuality (Gay men: Bosson, Haymovitz, & Pinel, 2004), socioeconomic status (Low socioeconomic status: Desert, Preaux, &

Jund; 2009; Leyens, Desert, Croizet, & Darcis, 2000), vocation (Men as nurturers: Kalokerinos, Leuven, Kjelsaas, Bennetts, & Hippel, 2017), and stigmatized groups (Recovering drug addicts: Hippel, Henry, Terrett, Mercuri, McAlear, & Rendell). Furthermore, the effects of stereotype threat are not limited to women, African Americans, and other marginalized groups. Stereotype threat can affect any social group that has a negative stereotype.

Caucasian male college students underperformed on a math exam when they were told that their performance would be compared to Asian students (Aronson, Lustina, Good, & Keough, 1999), and on a golf task when told that the task was framed as diagnostic of their natural athletic ability (Stone, Lynch, Sjomeling, & Darley, 1999). University males from multiple racial backgrounds performed worse on a social sensitivity task when told that women typically perform better on the task than men (Koenig & Eagly, 2005). Stereotypes do exist about Caucasian men and men in general, but the claims made by the stereotypes often work to the group's advantage and, in most cases, place them in a position of power. However, Koenig and Eagly's findings are consistent with the literature in showing that stereotype threat is situational.

The research above highlights an array of studied instances where the nature of an individual's social identity moderates their risk of stereotype threat. A higher risk emerges when multiple identities are threatened within a single person or social group. The construct of intersectionality can be used to describe this relationship. Intersectionality is a term used to describe the interaction between overlapping social identities and systems of oppression and discrimination. Sparks (2016) offers a supporting example with the following scenario:

> "Imagine a student starting the first day at a new school. She is an African American female whose mother had to transfer because of a new job. Her last school was 50%

> African American, 30% Hispanic, 20% Caucasian, and a mix of students from other countries. At her old school, she was near the top of her class and enrolled in Advanced Placement (AP) science and mathematics courses. As she walks into her AP Physics course, she is struck with the fact that, out of 18 students in the class, she is one of only five females and only the third African American student. She is the only African American female. It does not take long for her to feel out of place, as though she does not belong. Her new school is a suburban school with 70% Caucasian, 15% Hispanic, 10% African American, and only a few other nationalities. She worries it is going to be a long year. She meets her teacher, a Caucasian male with many years of experience, and he greets her with a smile. She has no idea what the year has in store" (Sparks, 2017, p. 4).

In this fictitious example, the student may have to contend with the reality or risk that negative stereotypes surrounding her intersectional identity as an African American woman may cause in a domain that she cares about and has excelled in previously. These moderators do not directly cause cognitive disruption but reveal who may be susceptible to such threats and what personal characteristics could create vulnerability. Further, psychological factors, like the sense of belonging described in Spark's example, mediate between stereotype threat and performance decrements.

Mediators. Although not the focus of this paper, mediators are essential for a well-rounded discussion about stereotype threat. Individual differences can predict susceptibility to stereotype threat, and psychological mediators explain the direct link between stereotype threat and performance. Mediators explain the affective, cognitive, and motivational factors that impede performance when faced with the threat of a negative stereotype. In the last two years, two literature reviews have been published discussing potential mediators of stereotype threat.

The reviews are comprehensive, provide a critical analysis of published studies, and identify the current trends in stereotype threat research and implications for future research.

Spencer, Logel, and Davies (2016) cited five possible mediators of stereotype threat including mere effort, working memory depletion, conscious attention to automated processes, self-handicapping, and priming the stereotype. The researchers label mere effort, working memory depletion, and conscious attention to automated process as underperformance due to extra pressure to succeed. Pressure to succeed is a byproduct of a stereotyped group's motivation to disconfirm or avoid confirming a negative stereotype about their social group, which, as Spencer, Logel, and Davies notes, is a pressure to succeed that nonstereotyped individuals do not have to experience. The mere effort account argues that the pressure caused by stereotype threat motivates stigmatized groups to expend energy or effort on disconfirming the stereotype instead on focusing on the task at hand (Harkins, 2006; Jamieson & Harkins, 2007; Jamieson & Harkins, 2009; Seitchik & Harkins, 2015).

Working memory depletion occurs when stereotype threat causes an individual to use memory resources to actively suppress negative thoughts and feelings triggered by a negative stereotype (see Schmader, Johns, and Forbes' Integrated Process Model of Stereotype Threat Effects, 2008). Conscious attention to automated processes mediates stereotype threat when an individual places effort on skills that are normally performed automatically and independently of working memory. Essentially, under stereotype threat, an automatic skill may become a monitored skill, and the unusual attention placed on performing the skill can reduce attention needed for less automated components of the task and can lead to performance anxiety and subsequent failure. The concept is often used in studies about stereotype threat and choking

under pressure (Hodge & Smith, 2014; Knowles, Lucas, Baumeister, & Gardner, 2015; Tagler, 2012).

Stereotype-threatened individuals might also use self-handicapping as a tactic to protect the self from feelings of inadequacy and can provide the self with an explanation for failure (Keller, 2002; Stone, 2002; Tyler et al., 2016). In evaluative and performance situations, self-handicapping may lead to failure to practice, attempting fewer questions on an examination, or an overall lack of effort on a task, acting as a barrier to successful performance. Last, the researchers address underperformance due to priming the stereotype. Several studies have discussed the critical role of priming a negative stereotype and its effects on performance (Craemer & Orey, 2017; Fresson, Dardenne, & Meulemans, 2018; Jordano & Touron, 2017b; Smith & Martiny, 2018). Although some contend that merely activating a negative stereotype cannot equally threaten performance (Armenta, 2010; Grand, Ryan, Schmitt, & Hmurovic, 2011; Kaye, Pennington, & McCann, 2018; Kray, Reb, Galinsky, & Thompson, 2004; Smith & Johnson, 2006), most results point to the critical role that a self-relevant negative stereotype plays on decrements in performance.

In a review of psychological mediators of stereotype threat from 1995-2015, Pennington et al. (2016) summarized research citing anxiety (Brodish & Devine, 2009), negative thinking (Cadinu, Maass, Rosabianca, & Kiesner, 2005), mind-wandering (Mrazek, Chin, Schmader, Hartson, Smallwood, & Schooler, 2011) compromising of working memory (Rydell, McConnell, & Beilock, 2009), and self- handicapping rendered by an unfair assessment of ability (Stone, Lynch, Sjomeling, & Darley, 1999) as possible reasons for the disruption of cognitive performance (see Pennington study for complete list).

Both bodies of work by Spencer et al. and Pennington et al. overlap in their assessments of the direct links between stereotype threat and performance impediments. There is a general understanding that the increase in individual cognitive load caused by a negative stereotype can create a diversion of thought, effort, or intellectual or physical ability from the dominant task. There is agreement that no one mediator can completely explain what leads to a stereotype-threatened individual's altered performance or even that only one mediator is at work in a given situation. Many social psychologists understand that stereotype threat is "multiply mediated" (Spencer, Logel, & Davies, 2016). The difference between the papers (and one of the strengths) is that the emerging topic of the multi-threat framework underpins Pennington et al.'s review.

The multi-threat framework (Shapiro and Neuber, 2007) offers an alternative perspective on how differences in the target and sources of stereotype threat affect moderators, mediators, consequences, and interventions. The framework offers six qualitatively distinct stereotype threats that emerge from the intersection of the target of stereotype threat and the source of stereotype threat. The topic is gaining quite a bit of attention in stereotype threat literature. The framework will not be discussed at length to avoid moving this paper in a different direction. However, acknowledgment of the framework is included to highlight an understanding that the proposed moderators and mediators of stereotype threat must be viewed differently based on the population of interest to develop effective interventions. This understanding will serve the athletic community well in understanding and mitigating this phenomenon among collegiate athletes.

Mitigation Strategies

Student-athletes' experiences with stereotype threat depend greatly on the strength of their academic and athletic identities, which is consistent with the stereotype threat theory. As

discussed, individuals are more susceptible to stereotype threat if they identify with the stereotyped group and, in most cases, when they identify with the tested domain. Thus, it is logical to focus on social identity as a moderator of stereotype threat and the academic performance of student-athletes. Mitigation strategies used to positively prime identity could positively affect student-athlete performance in academic settings. The strategies to mitigate this threat could benefit from a focus on social interventions to yield academic gains. Empirically-based studies on reducing stereotype threat have focused on student's thoughts, feelings, and beliefs about self (English & Kruger, 2016). Specifically, and most relevant to student-athletes, research discusses the implementation of strategies focused on individuation (Ambady, Paik, Steele, Owen-Smith, & Mitchell, 2004; Gresky, Ten Eyck, Lord, & McIntyre, 2005), self-affirmation (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Sherman, Hartson, Binning, Purdie-Vaughns, Garcia, Taborsky-Barba, Tomassetti, Nussbaum, & Cohen; 2013), sense of belonging (Walton & Cohen, 2007; Walton & Cohen, 2011), and growth mindset (Froehlich, Martiny, Deaux, Goetz, & Mok, 2016; Good, Aronson, & Inzlicht, 2003) to mitigate stereotype threat.

Ambady et al. (2004) proposed using individuation to combat stereotype threat. The goal of the mitigation strategy is to prompt a person to reflect on their unique qualities while identifying with their social group. Individuation does not view the uniqueness and group membership as mutually exclusive. An individual can connect with their in-group based on similar characteristics and have an awareness of their differences. Ambady and his colleagues conducted two experiments where they tested an individuation manipulation on the math performance of female college students. In the first experiment, participants joined a gender stereotype prime or neutral prime condition, and then researchers subdivided the students into an

individuated or non-individuated condition. Researchers primed students for their gender identity by showing participants a group of gender-specific words (i.e., aunt, doll, dress, lady, lipstick). The individuation manipulation consisted of a questionnaire asking students to list their interest and favorite hobbies, listing three positive traits and then three negative traits, and finally asking participants to provide examples of instances where they demonstrated those traits. Students in the no prime and non-individuated conditions were shown neutral words (i.e., animal, before, example) followed by a questionnaire about lions.

After priming and individuation, students completed a 12-question mathematics test. Results show that students in the gender-primed and individuated condition performed better on the exam than gender-primed and non-individuated condition, and almost equal to the unprimed, non-individuated group. The researchers conducted a second study to confirm that their findings were a result of individuation and not self-affirmation caused by answering questions about interests and favorite hobbies before completing the exam. Self-affirmation differs from individuation because self-affirmation consciously validates one's ability, whereas individuation describes a realization of the variation of qualities that coincide to render one's personality. Results from the second experiment were identical to the original experiment. The overall findings suggest that a negative stereotype can become less potent when an individual activates different aspects of their identity not associated with a devaluing assessment of ability based on said stereotype.

Cohen et al. (2006) conducted an experiment to explore the impact of self-affirmation exercises on the academic performance of African American students in the seventh grade. A racial achievement gap was present in the studied classroom, which, as discussed in previous sections, is a common disparity in the American education system. The experimenters assigned

students to a self-affirmation group or control group. Students in the self-affirmation group identified their most important values based on a list of values drafted by the researchers and wrote why the chosen values were important or unimportant. Students in the control group identified their least important values and responded to the question about importance. During the term, African American students in the treatment group received higher grades than African American students in the control group. Cohen et al. (2009) conducted a follow-up study to evaluate the longitudinal effects after two years of the intervention and found that, with limited self-affirmation exercises, the students' grade point averages continued to increase.

Sherman et al. (2013) explored the influence of self-affirmation interventions on the academic performance of Latino American students in middle school. Sherman and his colleagues were interested in the ability of value affirmation in decreasing the achievement gap between Latino American and European American students. Latino American students, like African American students, have been subjected to negative stereotypes about their academic abilities. The researchers conducted two longitudinal studies using different implementation methods. In the first study, students were assigned to a self-affirming or non-self-affirming condition, and teachers integrated self-affirmation exercises into classroom activities based on group membership. Results showed that self-affirmed Latino American students earned higher grades than non-self-affirmed Latino American students in the control condition. The intervention had no impact on European American students. Also, the effects of the exercises showed positive impacts on student's grade point averages over three years. In the second study, students completed daily entries in an affirmation diary.

Like the first study, the researchers assigned students to a self-affirming or non-self-affirming condition. The difference between the studies is that Study 2 sought to explore the

impact of the intervention on academic performance and daily adversity, identity threat, and academic fit. Results showed that self-affirmed Latino American students earned higher grades than non-self-affirmed Latino American students in the control condition. Furthermore, self-affirmed students demonstrated an enhanced ability to counteract identity threat by constructing a positive narrative about daily adversity. Once again, the intervention did not impact Caucasian students. Sherman and his colleagues alluded to the sense of belonging in their curiosity about the relationship between academic fit, identity threat, and academic performance. A sense of belonging in an educational environment can motivate a student towards success and buffer stereotype threat.

Walton and Cohen (2007) conducted two experiments to observe how belonging uncertainty impacts the achievement of groups viewed as academically limited. In the first experiment, African American and European American undergraduate students were placed in three different groups to manipulate the level of threat to the student's sense of belonging. Researchers asked two of the groups to list either one friend or eight friends who would fit well in the computer science department. Walton and Cohen assumed listing one friend (an easy task) would elicit a low level or no threat to the student's sense of belonging and listing eight friends (a harder task) would elicit a high threat to the student's sense of belonging. Students in the control group did not make a list. After creating the lists, students completed measures assessing their own sense of belonging in the computer science department. Also, they were given other students profiles with pictures to determine their fit in the program. Findings showed that the African American students who found difficulty listing eight friends did not feel that they belonged in the computer science department and did not think that other African American students belonged in the department. Caucasian students were not affected by the threat

manipulation. Experiment 2 aimed to reduce the stereotype threat discovered in the first experiment by telling students that all students have feelings of belonging uncertainty regardless of race and that those feelings are transient. Students used daily diaries, as one activity, to report their achievement behaviors for one week. Results showed that the grade point averages of African American students who used the daily diaries increased from sophomore to senior year and their sense of belonging improved. Walton and Cohen (2011) completed another study on belonging that replicated Experiment 2 from their 2007 study. The new three-year study found the same results from the intervention. Additionally, students reported improved physical health and happiness and reduced doctor visits up to three years after the intervention.

Students athletes may benefit from stereotype threat reduction strategies that focus on nurturing a growth mindset. Individuals with a growth mindset view intelligence as pliable rather than fixed. Individuals with fixed mindsets do not believe that their abilities can be altered regardless of learning or practice. Good, Aronson and Inzlicht (2003) tested the possibility of using a growth mindset intervention to combat stereotype threat among Hispanic, African American, and female junior high school students. Hispanic, African American and Caucasian students served as study participants. The researchers paired each student with a college mentor and assigned students to one of the four experimental conditions (incremental, attribution, combination, and antidrug). In the incremental condition, the mentors taught the students about the malleability of intelligence. Mentors assigned to the attribution condition taught students about the ephemeral nature of academic difficulties faced in school. Mentors in the combination condition taught students the same lessons discussed in the incremental and attribution conditions. In the antidrug condition (control condition), mentors discussed the dangers of drug use. The researchers analyzed the students' math and reading scores on a standardized test at the

end of the year and compared performance by condition. The analysis showed that males outperformed females on the math portion of the exam only in the control condition. Females performed equally to males in the intervention groups.

Also, females in the treatment conditions significantly outperformed females in the control conditions. Marginalized students (for this study: Hispanic and African American students) and low-incoming students in both intervention groups scored higher on the reading portion of the standardized test than students in the control condition. These results are consistent with stereotype threat literature about women and math performance and stigmatized groups and verbal aptitude.

Froehlich and his colleagues (2016) supported the findings above in their study on the implicit theory of intelligence as a moderator of stereotype activation among Turkish-origin migrants ("stereotyped as low in verbal ability") in Germany on a diagnostic verbal test. Specifically, the study sought to understand the relationship between a fixed and malleable view of intelligence on stereotype threat and stereotype lift. "Stereotype lift is the performance boost caused by the awareness that an outgroup is negatively stereotyped" (Walton & Cohen, 2003, p. 456). Study participants were Turkish- origin and German middle-track high school students. After determining structural equivalence based on the factors of the theory of intelligence, goal orientation, and effort beliefs across ethnic groups, two studies were conducted to assess views of intelligence on stereotype threat (Turkish-origin students) and stereotype lift (German students). Researchers manipulated stereotype activation by describing the test as diagnostic (high threat) or non-diagnostic (low threat) of verbal ability. Results of Study 2 and 3 showed that higher fixed mindset endorsement predicted stereotype threat among Turkish-origin students in the diagnostic condition and stereotype lift in Study 3 among German students.

Social Identity Complexity Theory

As discussed, a gap in the literature exists for stereotype threat and mitigation strategies specific to student-athletes. However, existing mitigation research in general favors a stereotype threat mitigation strategy that focuses on highlighting and valuing multiple identities. A collegiate athlete's identity as student and as athlete, together and independently, correlate with performance in academic domains. Student-athletes may have additional social identities that are available to buffer against negative stereotypes, identities that do not carry a burden of a stereotype of intellectual inferiority. It is because of this empirical knowledge (Gresky, Eyck, Lord, & McIntyre, 2005; Shih, Pittinsky, & Ambady, 1999) that I will discuss social identity complexity theory as a possible framework to construct a stereotype threat mitigation strategy for student-athletes.

Social identities or group identities are defined as a person's sense of self, based on their group memberships. Social identities impact how people perceive themselves in their environment. These perceptions contribute to goal-setting and goal attainment. All people have social identities, such as one's race, ethnicity, gender identity, sexual orientation, or student status (i.e., classification, major, club, sport). The social identity complexity theory posits that the complexity of one's social identity determines the ability to manage stressful situations.

Roccas and Brewer (2002) established the theory of social identity complexity to describe "an individual's subjective representation of the interrelationships among his or her multiple group identities" (p. 88). The researchers suggest the complexity of an individual's identity structure depends on how the person views the overlap of their multiple social identities (i.e., less overlap = greater inclusivity and complexity). Roccas and Brewer presented a model (Figure 4) that highlights four possible identity structures: (a) Intersection, (b) Dominance, (c)

Compartmentalization, and (c) Merger that serve as a representation of a person's negotiation of multiple ingroups (in this case two ingroup identities). Using the social identities of African American and doctor, Table 3 elaborates on the identity structure.

Table 3

Summary of Roccas and Brewer's Four Identity Structures (2002)

Identity Structure	**Social Identities**	**Ingroup**	**Outgroup**
Intersection *(Figure 5a)*	• African American • Doctor	• African American doctors	Anyone who is not an African American doctor
Dominance *(Figure 5b)*	• African American • Doctor	• Doctors (all other social identities are viewed as aspects of the self, based on the dominant identity of "doctor" (i.e., African American doctor, female doctor, Emory doctor)	Anyone who is not a doctor
Compartmentalization *(Figure 5c)*	• African American • Doctor	Dependent on which identity is activated • African Americans • Doctors • African American doctors	Anyone who shares multiple ingroup identities as opposed to one (i.e., African American doctor > doctor)

Merger *(Figure 5d)*	• African American • Doctor	• African Americans • Doctors • African American doctors	Not applicable; everyone evaluated equally

In the case of stereotype threat, achieving a merged identity is ideal in buffering ingroup threats. For example, an undergraduate student could identify as a woman, dancer, aunt, and physics major. In this instance, the researchers suggest that if the salience of the fictitious student's separate identities is high, then she will experience a more complex and inclusive identity structure that may lead to a higher ability to manage stress and buffer threats to a social identity. If the female undergraduate student has a complex identity structure and encounters a negative stereotype about her math ability as a female, she could have the ability to make salient her identity as a physics major to mitigate the adverse effects of stereotype threat.

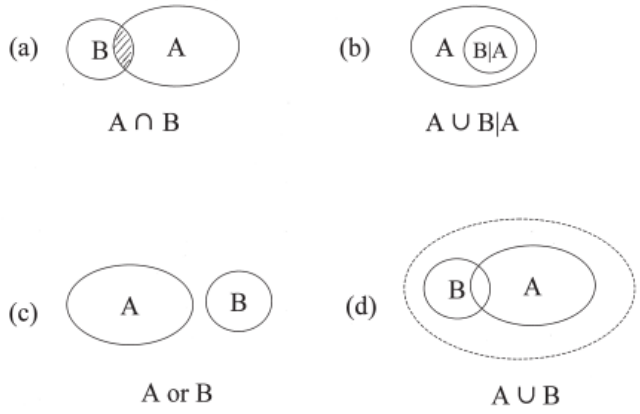

Figure 4. Alternate Structures of Multiple Ingroup Representations (Roccas & Brewer, 2002, p. 90)

Shih, Pittinsky, and Ambady (1999) conducted a two-part study to assess the effects of positive and negative stereotypes on the mathematics performance of female Asian-American undergraduate students, which is a population where dual identity may progress or hinder

success in an academic setting. The researcher's sought to understand the effects of an implicit prime of a positive stereotype about the group's social identity (Asians are good at math) or a negative stereotype about the group's social identity (Women are not good at math) on mathematics performance. The researchers randomly assigned the study participants to one of three conditions: 1) gender prime, 2) ethnicity prime, 3) or no prime (control condition). The study did not include a condition where both ethnicity and gender were primed because the focus was on the salience of one identity when threatened. Results showed that students in the ethnicity identity condition answered the most questions correctly, followed by the control condition, and then the gender identity condition. The results supported the social identity complexity identity by showing that individuals identify with multiple, in this case, dual social groups. Furthermore, the results support the researchers' hypothesis that an implicit prime of either a negative or positive stereotype, within the same domain, can enhance or hinder an individual's performance when different aspects of identity are activated. The study is of great interest to this current proposal because it too will focus on the dual identities of undergraduate students (i.e., collegiate student-athletes). Grounded in the affective extremity hypothesis and the social identity complexity theory, Gresky, Eyck, Lord, and McIntyre (2005) conducted a study to test the effectiveness of using a self-concept map to combat stereotype threat among female undergraduates when taking a mathematics exam. The affective extremity hypothesis suggests that an understanding of oneself across multiple dimensions increases the ability to manage daily stress effectively (Linville, 1987). Study participants included both men and women, who after being tested for high or low mathematics identification using the Domain Identification Measure (Smith & White, 2001), were randomly assigned to one of three experimental conditions: 1) self-concept maps with few nodes, 2) self-concept maps with many nodes, or 3) no self-concept

maps. The researchers used self-concept maps to allow study participants to create a visual representation of their multiple social identities.

Students in each condition were explicitly made aware of the negative stereotype about women and mathematics performance. The researchers introduced two activities to students in the two self-concept maps conditions and one activity in the no self-concept map condition. Researchers instructed study participants in the few nodes group to construct individual self-concept maps with a limited number of social identities and instructed participants in the multiple nodes group to construct individual self-concept maps with many social identities. At the end of the self-concept map activity, students took a GRE-style mathematics exam. Students in the no self-concept maps group did not draw self-concept maps and only took the mathematics exam. Results showed that women with high identification in mathematics in the no self-concept maps and few self-concept maps conditions scored worse than men high in mathematics identification in all conditions. Additionally, for men, performance only differed between identification level; men in the high mathematics identification group outperformed men in the low mathematics identification group. Women in the high mathematics identification groups who drew self-concept maps with multiple nodes performed significantly better than or equal to men. The results are consistent with stereotype threat and social identity complexity literature regarding domain identification and awareness of multiple social identities, respectively.

The research suggests the positive effects of complex social identities. The complexity of one's self-concept or self-schemas has shown to improve psychological well-being. The diversity of self-perception can serve as a buffer to stressful situations, including stereotype threat, and protect an individual by focusing them on the richness of their life through multiple social identities rather than on a singular identity. Further research is needed to expand this work to

other populations with dual identities on college campuses. Student-athletes are a suitable group to test the social identity complexity theory due to their prominence at colleges and universities and the negative stereotypes used to describe the population (negative categorizations that may impede holistic development). Stereotype threat research has yet to offer mitigation strategies for this unique population. The social identity complexity theory addresses the protective functioning of more than a single identity and should be tested for its ability to buffer threat among student-athletes.

Discussion and Future Directions

Identity - a concept that is in direct opposition to the construct of stereotypes. Identity is fluid as a person evolves and discovers different aspects of themselves. Various identities emerge, and it should be encouraged, as individuals encounter challenges, opportunities, and new environments. Stereotypes do not allow self-exploration. Stereotypes categorize and place individuals in a proverbial box without empathy for the human experience. Stereotypes are not simply private thoughts, even if they are not communicated. Individuals convey stereotypic thoughts through nonverbal behaviors, decisions, and actions. Groups who are the target of a negative stereotype can perceive messages through those nonverbal behaviors, decisions, and actions, and subsequently, impair performance in multiple domains. Stereotypes create systems of oppression and disenfranchisement.

Stereotype threat research focuses most of its attention on stigmatized groups. Most people would not view student-athletes as a marginalized group. It is quite the opposite thought. Student-athletes are viewed as the campus elite or even local celebrities. However, when student-athletes and academics are mentioned in the same

sentence then the dumb jock stereotype emerges., and instantly stigmatization occurs. The unfair assessment of this unique populations' intellectual ability has shown to have detrimental effects in educational settings. I propose two methods to address this issue. Firstly, researchers and practitioners can educate their community about stereotype threat and the harmful effects in hopes of positively affecting opinions and subsequent actions. Secondly, researchers and practitioners could spend more time and energy investigating and developing stereotype threat reduction strategies to help student-athletes decrease or eliminate the negative effects of stereotype threat. It is no surprise that I am in favor of the latter. Stereotyping is a part of the human condition. I do not think that it would be efficient to try to deconstruct an individual's schema about a social group. Stereotypes are deeply rooted and associated with past experiences. I am not suggesting that researchers and practitioners halt efforts in this area. However, I recommend that more energy is redirected towards the target of the threat. This topic and work could add value to student-athlete development offices. More is at stake than grades in a class. If a student-athlete fails to achieve in one class, that one class becomes two, then those two classes become an entire year, and then school completion could be jeopardized, or there are negative longitudinal consequences post-graduation. The National Collegiate Athletic Association should be at the forefront of this initiative.

The purpose of this literature review was to introduce plausible stereotype threat mitigation strategies for collegiate athletes by exploring the athletic subculture on college campuses to understand the effects of stereotype threat within the population. To this end, I defined stereotype threat, offered a historical account of the

theory, presented effects of stereotype threat, and presented studied moderators and mediators. Then, I discussed the specific experiences of student-athletes in academic settings when faced with negative stereotypes. The constructs of athletic identity and identity foreclosure underpinned this section. I outlined empirically based mitigation strategies, specifically focusing on social identity complexity. Future studies could review a more varied list of moderators and mediators specific to student-athletes and their experiences with stereotype threat and academic performance. Broadly, more robust research is needed to continue the conversation and remedy stereotype threat in collegiate athletics.

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2 I AM NOT YOUR STUDENT-ATHLETE: AN INVESTIGATION OF SOCIAL IDENTITY COMPLEXITY AS A STEREOTYPE THREAT MITIGATION STRATEGY AND INDIVIDUAL DIFFERENCES THAT MAY MODERATE THE EFFECT

"I Am Not Your Negro says, 'You cannot define me. I define myself.' This was James Baldwin's attitude his whole life: I cannot let anyone define who I am, whether I'm gay, whether I'm black, whether I'm a writer, whether I'm this or that. This is my own responsibility—to define myself. And I am not a finished product: I am always in construction because I learn, I have experience, and I see the world."

- Raoul Peck (Director, "I Am Not Your Negro")

Sports are popular in American culture. In 2017, sports revenue equaled $69 billion across four key segments of the North American sports market: media rights, gate revenues, sponsorship, and merchandising (PricewaterhouseCoopers, 2018). A Gallup poll indicated that football is the most popular sport in the United States, followed by basketball and baseball, respectively (Norman, 2018). For example, according to CBS, 100.1 million viewers watched Super Bowl LIII (Stelter, 2019). College sports are a part of the American identity as well, creating a sense of pride among alumni and residents of the state or region. Since the first intercollegiate competition in 1854, a boat race between Yale and Harvard, collegiate sports have grown in popularity. For example, 25.2 million viewers watched the 2019 National Collegiate Athletic Association (NCAA) Division I college football national championship (USA Today, 2019). Comparatively, the 2018 NCAA Division I men's basketball championship received 16.4 million viewers (Otterson, 2018). In 2018, the NCAA earned $1.06 billion, with most of their revenue received from television deals (Bloomberg, 2018).

Despite sports, and in particular collegiate sports, being so popular in the United States, student-athletes are not always viewed in the most positive light. From news headlines to

research articles, student-athletes are often discussed from a deficit framework and perceived as one-dimensional characters whose actions are orchestrated by coaches, advisors, and governing bodies. There are news stories about academic scandal and misconduct, and research about academic underperformance and deficits in collegiate athletic culture. Most of the news is focused on Division I student-athletes, the group of interest for this study, who participate in revenue sports. The narrative perpetuates negative stereotypes about the student group (Haslerig, 2017). Writers, researchers, and sports enthusiasts should not ignore these negative aspects of sports culture, but the overrepresentation of bad news belies the complexity of collegiate athletics. Student-athletes are multifaceted and more than their sport. These young, developing, and talented individuals are not *your* student-athlete. They, like all college students, are exploring various opportunities to determine their academic, professional, and personal paths.

Unfortunately, student-athletes must manage negative stereotypes about their academic ability. Stereotype threat research has shown that negative stereotypes diminish student-athletes' academic performance (Yopyk & Prentice, 2005). However, to date, there is no published evidence-based strategy to reduce the effects of stereotype threat among this group. The current study seeks to investigate how a group of student-athletes view their academic abilities and the complexity of their social identities. Coupling the theories of stereotype threat and social identity complexity, the current study will use an experimental design to explore the effectiveness of a self-concept map activity among student-athletes when explicitly threatened by a negative stereotype about their academic ability. First, I will discuss the role of the National Collegiate Athletic Association in student-athlete development to provide context about the extent that the governing body nurtures both the academic and athletic identity of student-athletes, followed by an explanation of the stereotype threat theory and the social identity complexity theory. Last, I

will present study details, findings, and discussion.

The National Collegiate Athletics Association. Considering the prominence of collegiate athletics and its grand entertainment value, infrastructure is required to ensure that those providing the entertainment, the student-athletes, are receiving both a positive athletic and academic experience. The National Collegiate Athletics Association (NCAA) is the largest and most recognized governing body of intercollegiate athletics. Other intercollegiate athletics governing bodies include the National Association of Intercollegiate Athletics (NAIA), the National Junior College Athletic Association (NJCAA), the National Christian College Athletic Association (NCCAA), and the United State Collegiate Athletic Association (USCAA). The NCAA's mission "is to be an integral part of higher education and to focus on the development of our student-athletes" (NCAA, 2019, p.1). The NCAA was first called the Intercollegiate Athletics Association of the United States (IAAUS). The organization (IAAUS) was established in 1906 after President Theodore Roosevelt called a White House meeting in 1905 with coaches and athletic advisers from Harvard University, Yale University, and Princeton University to discuss the increase in injuries and deaths during college football games attributed to unsafe equipment and rules (Zezima, 2014). In 1910, IAAUS was renamed the National Collegiate Athletic Association or NCAA. Over the next few decades, as intercollegiate athletics became an integral part of American college life, NCAA member institutions continued to improve the quality of college sports while maintaining the academic integrity of each affiliated college and university. However, it was not until 1991 that the athletics governing body established the NCAA CHAMPS/Life Skills program (Challenging Athletes' Minds for Personal Success) to take a more holistic approach to student-athlete development. The student development program was modeled after the Georgia Institute of Technology's Total Person Program established by

Dr. Homer Rice, former athletic director at Georgia Institute of Technology. The project was motivated by Dr. Rice's belief that "excellence is a result of a balanced life including academic achievement, athletic success, and personal wellbeing" (NCAA, 2017).

The program has since been renamed the NCAA Life Skills program. The NCAA collaborates with the 1,200-member institutions, the affiliate organizations, and conference offices to implement the program. Although not mandatory, most NCAA member institutions maintain individual life skills programs, while the NCAA serves as the governing body of all programs. The Life Skills programs provide student-athletes with academic resources, career development, strategies to enhance personal well-being, and community service opportunities. The program is appropriate to address student-athlete needs, but rules are needed to hold member-institutions accountable for their oversight and implementation of academic initiatives for student-athletes.

In 2003, the NCAA established the Academic Performance Program (APP) to track the academic progress and graduation rates of Division I and Division II student-athletes. Division III athletic programs need not abide by these academic standards because they do not award athletic scholarships. Currently, there are 350 Division I colleges and universities that provide opportunities for approximately 170,000 student-athletes to compete. The goal of the APP was executed through two tracking mechanisms – the Academic Progress Rate (APR) and the Graduation Success Rate (GSR). The Academic Progress Rate is a score, out of 1000, that is calculated by the number of individuals on a team who remain academically eligible and are retained. Each player who receives athletic financial aid receives one point for being academically eligible and one point for remaining in school. APR is calculated annually, which means that each team member can receive two points each semester for a total of four points

annually. The overall team score is calculated by dividing actual points accumulated by the numbers of possible team points (equation: team actual total/possible team point x 1000). Each team must achieve a score of at least 930 to avoid penalties (e.g., scholarship reductions). Teams that meet the requirement are rewarded (e.g., public recognition). GSR, on the other hand, is determined solely on six-year graduation rates. GSR differs from the Federal Graduation Rates because it does not penalize athletic teams for students in good academic standing who transfer to another school (do not graduate from their current school). Therefore, the new athletic departments are responsible for ensuring that transfer student-athletes graduate; whereas before the students' former school would be penalized if transfer students did not graduate within six years.

Since the implementation of the Academic Performance Program, student-athletes have displayed an overall marked increase in graduation rates. In 2017, the NCAA reported an 87% graduation success rate (Hosick & Durham, 2017). Additionally, Division I student-athletes graduate at higher rates than the general student body. The federal graduation rate is used to compare these two groups, instead of GSR, as it is the only measure for true comparison. Figure 5 shows these comparisons across racial demographics.

Some concerns have been discussed regarding athletic programs with inadequate resources. The NCAA addressed concerns about these populations by adopting adjusted progression of APR benchmarks for teams from limited-resource institutions. The rule applies to teams in the bottom 15 percent of all Division I member institutions for resources (NCAA, 2019). Also, the NCAA provides grants through the Accelerating Academic Success Program to help limited-resource Division I athletic programs gain the academic assistance needed through initiatives and programs to lessen the achievement gap (Johnson, 2018).

Also, it must be noted that the NCAA has received criticism about the academic performance of African American student-athletes, especially those competing in revenue sports (Harrison, Miper, Smith, & Logan, 2017; Woods, McNiff, & Coleman, 2018). Collegiate athletes in revenue sports like football and basketball are disproportionately African American (Beamon, 2014; Harper, 2016). When a specific population of collegiate athletes is underperforming, there are speculations of exploitation (Fuller, Harrison, & Bukstein, 2017). The NCAA has acknowledged the achievement gap between African American and Caucasian student-athletes, yet the gap persists. Beginning with the 2019-2020 academic year, the NCAA will take a more aggressive approach to improve the academic outcomes of all student-athletes. The NCAA revenue shared with Division I schools will be determined by academic achievement (NCAA, 2019). The historical decision would mark the first time that the NCAA made funding decisions based on students' academic performance. The funding will be in addition to the average $2.9 million multi-year athletic scholarships that the NCAA offers Division I and II student-athletes annually. The NCAA sets the foundation for both athletic and academic development among collegiate athletes; however, experiences differ between programs to accommodate the unique culture and climate of the individual member institutions.

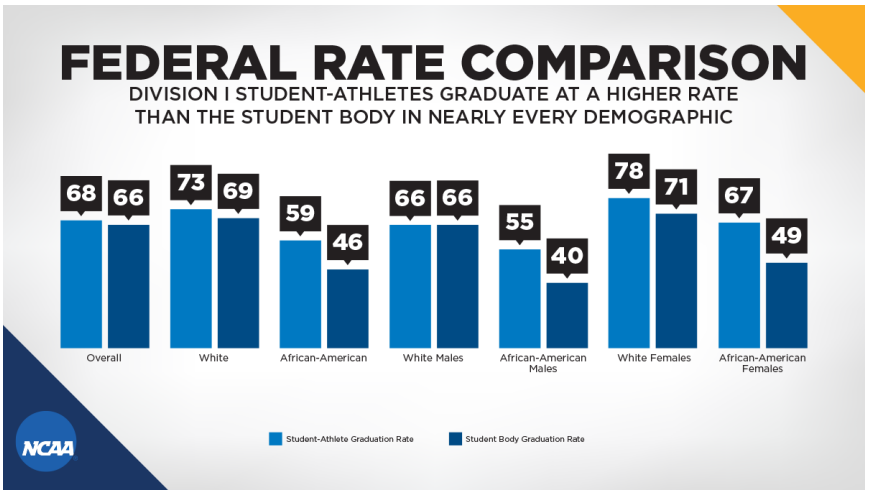
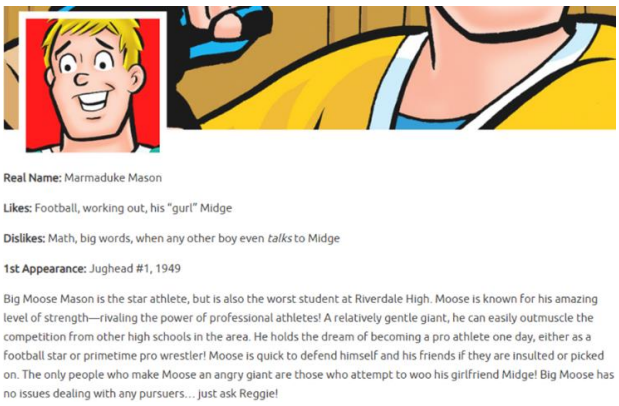


Figure 5. Federal Graduation Rate Comparison between Division I Student-Athletes and General Student Body (Hosick & Durham, 2017)

Stereotype Threat and Collegiate Athletes. Stereotypes allow people to explain and rationalize the position of social groups (Simon, 2011). Stereotypes about student-athletes' academic ability are pervasive on college campuses. Unfortunately, stereotypes unfairly characterize collegiate athletes as lazy, dumb, and entitled (Levine, Etchison, & Oppenheimer, 2014). These characterizations are not new, and the stereotype has roots in Ancient Greece, where Greek athletes spent considerably more time on athletic endeavors than learning opportunities (Wininger & White, 2008). In the 20th century, the depictions of the "dumb jock" stereotype persisted, including in popular culture. Figure 6 shows an example from the famous Archie Comics, in which one of the main characters, Marmaduke "Moose" Mason, is portrayed as a daft student-athlete. More recently, the rise of technology and social media has given individuals a platform, through meme culture, to portray student-athletes as overstimulated and insular figures (see Figure 7). The examples demonstrate the pointed nature and pervasiveness of stereotypes about student-athletes. While these social categorizations are not novel, they remain offensive, damaging, and unjustly circulated throughout the community.



Real Name: Marmaduke Mason

Likes: Football, working out, his "gurl" Midge

Dislikes: Math, big words, when any other boy even *talks* to Midge

1st Appearance: Jughead #1, 1949

Big Moose Mason is the star athlete, but is also the worst student at Riverdale High. Moose is known for his amazing level of strength—rivaling the power of professional athletes! A relatively gentle giant, he can easily outmuscle the competition from other high schools in the area. He holds the dream of becoming a pro athlete one day, either as a football star or primetime pro wrestler! Moose is quick to defend himself and his friends if they are insulted or picked on. The only people who make Moose an angry giant are those who attempt to woo his girlfriend Midge! Big Moose has no issues dealing with any pursuers… just ask Reggie!

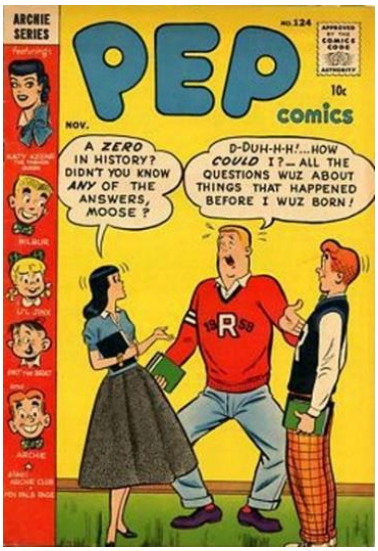


Figure 6. Archie Character Description and Comic Cover featuring Marmaduke “Moose” Mason (1949)

Figure 7. Student-Athlete Dialogue Meme Examples 2

Some student-athletes perform poorly in the classroom just as some nonstudent-athletes perform poorly, but student-athletes are the group whose failure frequently makes the headlines, perhaps due to our country’s obsession with sports. It is a rarity that good news about their intellectual ability makes the headlines. For example, it is a little-known fact that fourteen student-athletes have been awarded the Rhodes Scholarship within the last six years. The selected student-athletes represent 9% of the 192 scholars selected (32 selected annually) over the six years (2014-2019). The Rhodes Scholarship is the oldest and one of the most prestigious scholarships for postgraduate study, which provides full funding for attending the University of Oxford in England. Nonetheless, negative stereotypes about the academic prowess of collegiate athletes persist. Feltz noted that ‘they’re [student-athletes] kind of the last group of students who can be openly discriminated against” (MSU Today, 2013, p.1).

Research has found that sports participation is linked to positive physiological, psychological, educational, social, and financial benefits (Chen, Snyder, & Magner, 2010; NCAA, 2014; see After the Game Career Network: NCAA, 2017). Stereotypes have the potential to thwart these benefits because they can extend beyond simple labels to become dangerous

categorizations that create barriers to opportunities. In addition to external barriers, stereotypes have the potential to cause internal obstacles, such as anxiety, affecting student-athlete scholastic achievement. Research has identified stereotype threat as a contributor (a less stigmatizing explanation) to the academic underperformance of collegiate athletes.

Stereotype threat describes a social psychological phenomenon where the apprehension about conforming to a negative stereotype about one's social group can negatively affect performance (Steele & Aronson, 1995). Research has demonstrated that stereotype threat negatively affects the performance of members of stereotyped groups, including collegiate athletes. Before discussing the impact of stereotype threat on the academic performance of student-athletes, it is important to understand the critical features of the theory. Although each social group experiences stereotype threat differently, there are basic factors, that if present, enhance an individual's susceptibility to stereotype threat. First, stereotype threat is situational and should not be confused with the theories of Inferiority Complex and Self-fulfilling Prophecy, where a person harbors long-held beliefs about their abilities. Second, vulnerability to stereotype threat increases if a person is being evaluated and highly values the tested domain; if the person strongly identifies with the stereotyped group being evaluated, and the stereotype is directly linked to performance; and if the difficulty of the task exceeds the person's capabilities.

These features are demonstrated in the stereotype threat research among collegiate athletes. Yopyk and Prentice (2005) are credited with publishing the first studies on the effects of stereotype threat among student-athletes. In Study 1, the researchers tested the effects of a negative stereotype about academic performance in student-athletes. They found that when primed with their athletic identity, student-athletes performed worse on a math test than student-athletes primed with their student identity or those not primed for identity. Study 2 investigated

how priming influences participants' thinking. Researchers primed student-athletes from Amherst College with either their athlete identity (by completing a self-rating athletic scale) or student identity (by completing a math test) before they were presented with an 8-item exercise with word fragments. The research question was whether the different primes would influence how participants completed the fragments. The results showed that participants in the athlete prime condition responded with more athlete-related word completions than participants in the student prime condition, suggesting that subtle primes differentially influence thinking in a subsequent task.

Since that time, studies have shown stereotype threat to affect female student-athletes to a greater extent than male student-athletes, perhaps because of the females' higher level of academic engagement (Harrison et al., 2009). However, opposing findings suggest that male student-athletes who presumably have higher athletic identities have shown to be more vulnerable to stereotype threat than their female counterparts (Dee, 2014). Contradictory to these findings, some research suggests that gender does not impact the relationship between stereotype threat and academic performance among collegiate athletes (Ricipui & Erdal, 2017), but race/ethnicity may. Academically engaged African American collegiate athletes have displayed higher stereotype threat susceptibility in learning environments than Caucasians, perhaps due to intersectional stereotypes regarding race and athletic identity (Stone, Harrison, & Mottley, 2012). Qualitative evidence suggests that African American football players, specifically, have learned to employ coping mechanisms (e.g., hiding athletic identity) to manage potential harmful effects of negative stereotypes (Griffin, 2017).

Moreover, Feltz, Schneider, Hwang, and Skogsberg (2013) explored possible predictors of collegiate athletes' susceptibility to stereotype threat. Data revealed that student-athletes who

have higher levels of athletic identity perceive higher stereotype threat. Additionally, coaches regard for athletic and academic identity was observed in the study. Findings showed that student-athletes were less vulnerable to stereotype threat if their coach thought positively about their academic abilities. Another theme in the research is the concept of stereotype reactance. Stereotype reactance occurs when a person reacts against a negative stereotype about their social group by over-performing, perhaps to invalidate the connection between that negative stereotype and performance (Kray, Reb, Galinsky, & Thompson, 2004). Harrison and his colleagues (2009) found when male collegiate athletes were primed with their athlete-only identity, they answered more items correctly than male participants primed with their dual identity or with no identity prime.

The collection of stereotype threat research on collegiate athletes reaffirms the theories' tenets. All these studies used implicit priming, embedding the athlete identity prime in a survey or by asking students about some aspect of their athletic life. Studies to date have not tested the impact of an explicit priming technique on academic performance among student-athletes. However, the implicit primes used differed across studies. Some experiments use an athlete-only prime (Dee, 2014; Riciputi & Erdal, 2017; Yopyk & Prentice, 2005) while others use a scholar-athlete or student-athlete prime (Harrision et al., 2009; Stone et al., 2012), dual identity monikers that vary by region. Nevertheless, both single and dual primes have shown to exacerbate the effects of stereotype threat on collegiate athletes. The lack of a systematic study directly comparing the effect of single versus dual implicit primes on student-athletes reveals a gap in our understanding of how different identity roles may function to influence performance.

Athletic and Academic Identity. It can be argued that is important to attend to both athletic and academic identity to learn the potential effects of identity conflict among student-

athletes. Student-athletes are expected to perform at high levels in both the classroom and in their sport, and without the proper support systems or tools, identity salience and conflict may impact overall wellness (Adler & Adler, 1987; Lu, Heinz, & Soderstrom, 2018). Athletic identity is the extent to which a person identifies with their role as an athlete (Brewer, Van Raalte, and Linder, 1993). Academic identity, in its simplest terms, is the extent to which a person identifies with their role as a learner. Identity conflict may occur when external factors, such as athletic and educational commitments, are vying for a collegiate athlete's attention and time, and adding pressure to a possibly overextended young adult (Lu, Heinz, & Soderstrom, 2018).

Most Division I collegiate athletes begin participating in their sport at a young age. This is illustrated in popular culture in the Esquire docu-series "Friday Night Tikes," which follows the budding athletic careers of 4 to 13-year-old Pee Wee football players in San Antonio, Texas. The show chronicles the lives of the players as they prepare for high school football. Some critics describe the show as terrifying (Mandell, 2014), depressing (Fox Sports, 2014), and ridiculous (Seifert, 2014). However, the show highlights the development of the athletic identity and the strength of that identity when established during early and middle childhood. For example, on the show, some of the children are offered college scholarships, which could intensify athletic identity and possibly lead to stunted development in other areas (e.g. academics). Brewer and Petitpas stated that:

> "…athletes who believe that their primary means of gaining parental or societal approval is through athletic accomplishments, may avoid situations or people that they view as a threat to their athletic identity. In contrast, when athletes get enmeshed in the sport system, they may not engage in exploratory behavior because of the time commitment required for sport participation, the approval they receive from peers for participating in

> sport, and the intrinsic and extrinsic rewards accrued from athletic accomplishments. These individuals may not have a pressing need to engage in exploratory behavior because their needs for relatedness and competency are being met through sport participation. In addition, the sport system is often structured in a manner that promotes compliance with team norms rather than independent thinking" (Brewer & Petitpas, 2017, p.119).

A collegiate athlete may experience athletic identity foreclosure. Athletic identity foreclosure is based on James Marcia's four identity statuses (identity diffusion, identity moratorium, identity foreclosure, and identity achievement), where an individual establishes their identity or identities through stages of commitment and crisis (Marcia, 1966). Identity foreclosure is a stage in the theory's matrix where a person commits to an identity, belief, or goal (e.g., major, career, etc.) without exploring other options (e.g., the absence of crisis). Athletic identity foreclosure occurs when an athlete exclusively commits to their athletic identity without exploring or even acknowledging other social identities (Brewer & Petitpas, 2017). Athletic identity, by itself, is not a problem. However, when a student-athlete does not engage with academics, their athletic identity may foreclose identity development in educational environments.

Academic identity can be further defined in terms of academic self-concept (Wang & Neihart, 2015). Academic self-concept describes an individual's beliefs about their ability in academic situations (Raufelder & Ringeisen, 2016) and contributes to a learner's overall self-concept (Shavelson, Hubner, & Stanton, 1976). Research has shown academic self-concept to predict academic motivation and achievement (Marsh & Martin, 2011), specifically when academic achievement is assessed by grade point average (Reynolds, 1988). The positive impact

that academic self-concept has on both men's and women's grade point averages has been documented (Cokley et al., 2015). Also, research shows that academic self-concept predicts later academic success. Self-concept of ability in math and reading predicts future achievement in both domains (Susperreguy, Davis-Kean, Duckworth, & Chen, 2017). Academic self-concept has been studied among particular groups of students at colleges and universities. For example, academic self-concept influenced academic success among first-year college students in STEM programs (Van Soom & Donche, 2014). Latina/o college students had higher rates of positive change in academic self-concept when attending a Hispanic Serving Institution (HSI) as opposed to Latina/a college students attending an emerging HSI or non-HSI (Cuellar, 2014). Additionally, cultural identity affects the academic self-concept of African American college students at a predominately White institution (Williams & Chung, 2013), and racial identity impacts levels of academic self-concept among African American collegiate athletes (Fuller, Harrsion, & Bukstein, 2017). Further research is needed on academic self-concept among student-athletes.

Social Identity Complexity and Stereotype Threat. Research indicates that student-athletes may experience stress from balancing their roles as a student and an athlete (Lu, Heinz, & Soderstrom, 2018). The identity conflict may become especially stressful in learning environments because stereotypes categorize students as intelligent and athletes as unintelligent. Without the proper exposure to techniques to manage these situations, a collegiate athlete may experience stereotype threat that results in decreased academic performance. The social identity complexity theory suggests a technique to address stereotype threat. Roccas and Brewer (2002) introduced the social identity complexity theory to address people's perceptions of the interrelationship of their multiple in-group identities. The researchers posit that the degree to which a person views their social identities as convergent will determine one's identity structure

and the accompanying consequences.

Furthermore, the theory suggests that the perceived complexity and inclusiveness of an individual's social identity structure may determine how they manage negative stressors. They offer four identity structures; intersection, dominance, compartmentalization, and merger; which explain how a person may perceive their in-groups and out-groups. Coupling two or more social identities and only considering individuals within the same compounded social categories as ingroup members describes intersection (e.g., ingroup – female surgeon; outgroup – females who are not surgeons and male surgeons). Using the same example, if the female surgeon identifies strongly with being a surgeon from Harvard and all other ingroup identities are secondary to the primary identity of surgeon, then this describes dominance (e.g., ingroup – all Harvard surgeons; outgroup – females and Harvard graduates from other programs). Compartmentalization will occur if the above individual can isolate her social categories in a given situation (e.g., primary ingroup membership shifts depending on the situation). Lastly, a merged identity occurs when an individual maintains fluidity between their social identities. For example, the female surgeon will separately identify other females, surgeons, and Harvard graduates as ingroup members; and each is equally valued.

Research has shown that identity conflict may contribute to reduced cognitive functioning during academic tasks among student-athletes (Harrison et al., 2009). Therefore, engaging collegiate athletes in exercises that allow them to explore multiple social identities may reduce identity conflict and the negative consequences of stereotype threat. Gresky, Eyck, Lord, and McIntyre (2005) found such an activity, a self-concept map exercise, to be an effective mitigation strategy for undergraduate females primed with a negative stereotype about women and math performance (see Table 4). The current study will test a self-concept activity (listing

multiple social identities) as a stereotype threat mitigation strategy. The mitigation strategy seeks to provide Division I student-athletes with the opportunity to attend to multiple social identities rather than one single identity, with the goal of buffering stressful situations, in this case stereotype threat. The proposed mitigation strategy serves as a viable option, considering the stereotype threat theory tenets. The strategy attends to the malleability of identity and the power of identity saliency to combat threats to the self in evaluative situations, especially when an individual's sense of self is strongly connected to the evaluation.

Table 4

Summary of Gresky, Eyck, Lord, and McIntrye Study (2005)

Methodology	**Description**
Participants	129 college students (94 women and 35 men)
Variables	Independent Variable Concept Mapping Group: 1. Map with many nodes (35 women and 12 men) 2. Map with few nodes (36 women and 15 men) 3. No map (23 women and 8 men) Dependent Variable • Score on GRE-style mathematics test
Measures	• Mathematics Identification measure • 20-minute 30 GRE-style mathematics test (difficult)
Priming Technique	Explicit prime for all conditions: "I'm studying the GRE because of the well-known stereotype that men usually outperform women on math tests."
Data Analysis	1. 2 (map condition: few nodes, many nodes) × 2 (gender) × 2 (math identification: low, high): Manipulation check for significant difference between nodes 2. 3 (map condition: few nodes, many nodes, no maps) × 2 (gender) × 2 (math identification: low, high) ANOVA of the number of items correct, percent of attempted items correct, and adjusted scores 3. 2 (map condition) × 2 (gender) × 2 (math identification)

	ANOVA of the number of items that participants attempted 4. 2 (map condition) × 2 (gender) × 2 (math identification) × 5 (node type) ANOVA, with repeated measures on the node type factor
Main Findings	1. Students in the many nodes condition created significantly more nodes than participants in the few nodes condition. 2. Students high in math identification received a significantly higher score than students low in math identification. Men high in math identification scored significantly better than men low in math identification. Women in the many nodes condition performed significantly better than women in the few nodes and no nodes condition. Women high in math identification in the many nodes conditions answered significantly more items correct than women high in math identification in the other two conditions. 3. Students high in math identification attempted fewer items than students low in math identification (marginal significance). 4. Five node types were coded as academic, activities, friends, family, and other. Students in the many nodes condition included more family nodes than students in the few nodes condition, and a smaller percentage of "other" nodes. There was no significant difference between types of nodes and test performance.

Self-Concept Maps. Concept mapping is an effective activity to visualize complex systems and ideas, and the relationships between each concept (Roberts & Johnson, 2015). Concept maps are typically constructed using nodes that represent a concept and the links (or lines) represent the relationship between each concept (see Figure 8, Schroeder, Nesbit, Anguiano, & Adesope, 2018). Concept mapping has been shown to support learning in college classrooms (Mosley & Draper, 2014) and promote critical thinking among undergraduates (Harris & Zha, 2017). There is an abundance of research on concept mapping (Alfayoumi, 2019; Asiksoy, 2019; Sturgiss, 2019). Self-concept mapping is a type of identity development exercise. Identity development impacts learning (Robinson, Perez, Carmel, Linnenbrink-Garcia, 2019), yet self-concept mapping has received limited research attention.

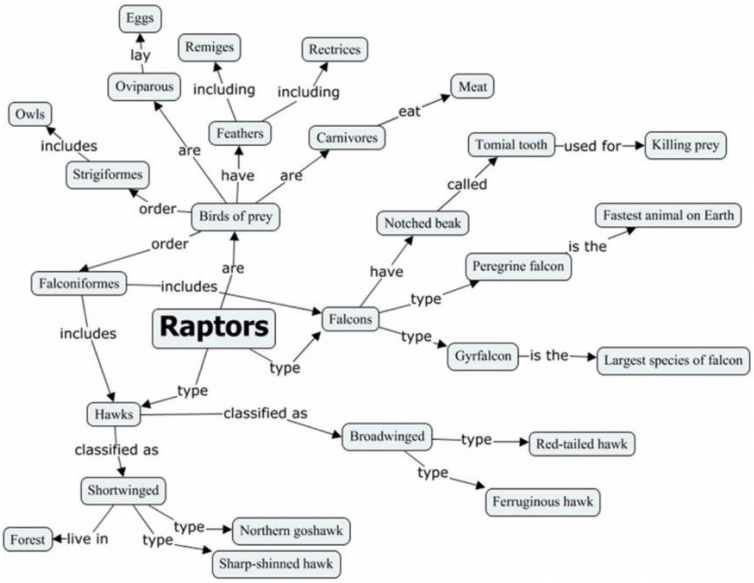


Figure 8. Concept Map Example about Raptors (Schroeder, Nesbit, Anguiano, & Adesope, 2018)

Research Questions. The present study will expand the work of Gresky, Eyck, Lord, and McInyre (2005) to student-athletes. This quantitative study is grounded in the theories of stereotype threat and social identity complexity and will answer the following questions:

1. Does an overt stereotype threat affect the performance of student-athletes on an academic task?
2. Does the identification of multiple social identities alleviate the effects of stereotype threat on student-athletes' academic performance?
3. Does gender identity affect academic performance among student-athletes?
4. Does gender identity moderate the relationship between the experimental conditions and academic performance among student-athletes?
5. Does the degree of academic self-concept affect academic performance among student-athletes?

6. Does academic self-concept moderate the relationship between the experimental conditions and academic performance among student-athletes?
7. Does race/ethnicity affect academic performance among student-athletes?
8. Does race/ethnicity moderate the relationship between the experimental conditions and academic performance among student-athletes?

Experimental Design. A three-group factorial experimental design was used as in Gresky et al. (2005) with a modification to include a stereotype threat only condition instead of a few nodes condition. The three-level independent variable included 1) an explicit stereotype threat condition with a self-concept map activity (mitigation condition), 2) an explicit stereotype threat condition without a self-concept map activity (threat condition), and 3) a condition without stereotype threat or a self-concept map activity (control condition). An independent measures design was used, and each study participant was randomly assigned to one condition. Gender identity (female and male) and race/ethnicity (African American, Caucasian, and Hispanic) served as grouping variables, and information was collected from a demographic survey taken by study participants in each experimental condition. Also, academic self-concept (lower and higher) served as another grouping variable, based on information collected from an academic self-concept scale before the experiment. Academic performance on an SAT-style examination was the dependent variable. The student-athlete stereotype threat studies reviewed above did not report rationales for the type of academic task used as the dependent variable. I decided to include both mathematics and verbal questions to simulate a more authentic standardized testing experience.

The present study will address the research questions and test the related hypotheses as outlined in Figure 9 below.

	Research Question	Hypothesis	Statistical Test
1	Does an overt stereotype threat affect the academic performance of student-athletes on an academic task?	Based on previous literature (e.g., Harrison et al., 2009 and Steel & Aronson, 1995), student-athletes in the control condition (no threat plus control activity) will have significantly higher scores on the academic task compared to student-athletes in the threat (threat plus control activity) condition and mitigation condition (threat plus identity activity).	To test Hypotheses 1 and 2, a 3-way (condition: mitigation, threat, control) ANOVA on academic task scores will be conducted. Post-hoc analyses will test two hypotheses: the participants in the control condition will have significantly higher scores on the academic task than participants in the threat and mitigation conditions (Hypothesis 1) and participants in the mitigation condition will have significantly higher scores than those in the threat condition (Hypothesis 2).
2	Does the identification of multiple social identities alleviate the effects of stereotype threat on student-athletes' academic performance?	Based on previous literature (e.g., Gresky, Eyck, Lord, & McIntrye, 2005), student-athletes in the mitigation condition (threat plus identity activity) will have significantly higher scores on the academic task compared to student-athletes in the threat (threat plus control activity) condition.	
3	Does gender identity affect academic performance among student-athletes?	Based on previous literature (e.g., Dee, 2014), student-athletes participating on female sports teams will have significantly higher scores on the academic task than student-athletes participating on male sports teams.	To test Hypotheses 3 and 4, a 3 (condition: mitigation, threat,

			control) x 2 (affiliation: female sports, male sports) ANOVA on academic task scores will be conducted. Post-hoc analyses will be conducted.
4	Does gender identity moderate the relationship between the experimental conditions and academic performance among student-athletes?	Based on previous literature (Harrison et al., 2009), student-athletes participating on a female sports team in the mitigation condition will yield significantly higher scores on the academic task than student-athletes participating on female and male sports teams in the threat condition. That is, the main effect of gender identity will be refined by an interaction effect of condition by gender identity.	
5	Does the degree of academic self-concept affect academic performance among student-athletes?	Based on previous literature (e.g., Feltz et al., 2013), student-athletes with higher academic self-concept will have significantly higher scores on the academic task than student-athletes with lower academic self-concept.	To test Hypotheses 5 and 6, a 3 (condition: mitigation, threat, control) x 2 (academic self-concept: higher, lower) ANOVA on academic task scores will be conducted. Post-hoc analyses will be conducted
6	Does academic self-concept moderate the relationship between the experimental conditions and academic performance among student-athletes?	Based on previous literature on academic self-concept and achievement (e.g., Reynolds, 2010), student-athletes higher in academic self-concept will have significantly higher scores on the academic task when in the	

		mitigation condition than student-athletes lower in academic self-concept who are in the threat condition. That is, the main effect of academic self-concept will be refined by an interaction effect of condition and academic self-concept	
7	Does the race/ethnicity affect academic performance among student-athletes?	Based on previous literature about the impact of racial discrimination on academic achievement among African American student-athletes (Carter-Francique, Hart, & Cheeks, 2015), African American student-athletes will yield significantly lower scores on the academic task than Caucasian student-athletes.	To test Hypothesis 7 and 8, a 3 (condition: mitigation, threat, control) x 3 (race/ethnicity: African American Caucasian, Hispanic,) ANOVA on academic task scores will be conducted. Post-hoc analyses will be conducted.
8	Does race/ethnicity moderate the relationship between the experimental conditions and academic performance among student-athletes?	Based on previous literature comparing academic performance of African American and Caucasian students when intentionally activating stereotype threat (Stone, Harrison, & Mottley, 2012), African American student-athletes in the mitigation condition will yield significantly higher scores on the academic tasks than African American students in the threat	

		condition. That is, the main effect of race/ethnicity will be refined by an interaction effect of condition and race/ethnicity.	

Figure 9. Research Questions, Hypotheses, and Statistical Tests

Methodology

Participants

Institutional Review Board. All procedures were approved by the Georgia State University Institutional Review Board.

Recruitment. Three hundred and eighty-nine Division I student-athletes who participate on male and female sports teams at a university in the Southeast region of the United States received emails at the end of the Fall 2018 semester, inviting them to contribute to a study exploring the experiences of students participating in extracurricular activities on college campuses. The student-athletes represented 6 male sports teams (baseball, basketball, football, golf, soccer, and tennis) and 9 female sports teams (basketball, cross country, golf, beach volleyball, soccer, softball, tennis, track and field, and volleyball). Recruitment was divided into two phases: 1) pre-experiment recruitment and 2) experiment recruitment. During August and September 2018, initial contact was made with an academic support professional in the university's Athletic Department to facilitate pre-experiment recruitment, provide basic information about the study, garner backing for the study, and receive approval to post flyers in Athletic facilities. The Athletics Department provided the names and emails of the student-athletes for recruitment purposes. The pre-experiment recruitment email explained that study participation was voluntary and would require completion of a 10-15-minute survey online about

academic self-concept and attendance at a 1-hour workshop on campus, which would include a brief survey and some cognitive tasks. Also, students were told that they would receive a $40 Amazon gift card after the workshop to demonstrate respect and appreciation for their time and effort to complete the study. The pre-recruitment period, which included reminder emails and flyers posted in Athletics facilities, occurred from mid-November 2018 to mid-January 2019 (three months). Recruitment materials did not provide any indication that the study focused on student-athletes exclusively.

Once the spring semester began, experiment recruitment occurred from mid-January to early- February. Students who signed up during the pre-experiment phase were emailed about participating in the study. In addition, to promote statistical power, repeat study invitations were sent to those student-athletes who had not yet responded. These new study participants were required to register for the experiment by completing a consent form and the Academic Self-Concept Scale-Short Form (Reynolds, 2010). After these items were completed, the students were sent an email requesting that they select one of six scheduled sessions being held in a classroom on campus. Recruitment yielded 83 student-athletes, and 73 students-athletes participated in the experiment. Due to the research study questions, an inclusion criterion is participation in an NCAA-sanctioned sport. However, the list of student-athletes generated by the Athletics Departments was broader and included other students, such as members of the dance and cheerleading teams, and ultimately three students from those teams participated in the study. Therefore, data from those three study participants were not included in the data analysis, producing a final sample size of 70. An *a priori* analysis suggested that a sample size of 61 was required with an alpha set at .05 and an effect size at .60 to achieve statistical power at .90.

Descriptive Statistics. The participants in this study were 70 (43 female and 27 male)

Division I student-athletes representing 14 NCAA-sponsored sports (see Table 5). Baseball was the only sport not represented in the study. Forty-seven students identified as Caucasian, 14 as African American, and 2 as biracial (African American and Caucasian). Three Caucasian students listed their ethnicity as Hispanic, Latino(a), or Spanish Origin. Seven students did not list their race, but listed their ethnicity as Hispanic, Latino(a), or Spanish Origin. The average age of participants was 20 with a minimum age of 18 and maximum age of 24. There was equal representation across classifications with 17 first-year students, 18 sophomores, 17 juniors, and 19 seniors participating in the study. Participants reported their grade point averages by selecting from a range (e.g., 3.00 – 3.19, 3.20 – 3.39). Studies show that there are strong correlations between self-reported grade point average and school-reported grade point average when students list both their GPA, and GPA by range (Citrus College Office of Institutional Research, Planning, and Effectiveness, 2017). Most students reported their grade point average in the ranges of 3.40 – 3.59 and 3.60 - 3.79. There was no significant difference of grade point average between female (M = 3.56, SD = .435) and male (M = 3.51, SD = 3.51) student-athletes, $F(1,68) = .224$, $p = .638$. Also, there was no significant difference of grade point average between racial/ethnic groups (African American: M = 3.38, SD = .389, Caucasian: M = 3.57, SD = .405, Hispanic: M = 3.68, SD = .253), $F(2,67) = 2.17$, $p = .123$. Information about student major was collected to observe any trends of academic clustering. Academic clustering, a term coined in 1987 by Case, Greer, and Brown, happens when a disproportionate number (compared to nonstudent-athletes at the same college or university) of student-athletes, usually 25% or more, select the same major or enroll in the same class (Case, Dey, Barry, & Rudolph, 2017). There was no indication of academic clustering, and the study participants represented disciplines across six of the seven academic colleges at the study site, with no more than three students in

one major. As discussed, the study included three grouping variables, and Table 6 displays frequencies of those variables by condition.

Table 5

Study Participants by Sport

Sport	Frequency	Percent
Football	7	10.0
Men's Basketball	1	1.4
Men's Golf	1	1.4
Men's Soccer	15	21.4
Men's Tennis	3	4.3
Women's Basketball	1	1.4
Women's Beach Volleyball	7	10.0
Women's Court Volleyball	7	10.0
Women's Cross Country (only)	1	1.4
Women's Cross Country and Track and Field	4	5.7
Women's Golf	1	1.4
Women's Soccer	6	8.6
Women's Softball	6	8.6
Women's Tennis	6	8.6
Women's Track and Field (only)	4	5.7

Table 6

Frequencies of Grouping Variables by Condition

Grouping Variables by Condition	N	Percent
Control		
Gender Identity		
Female	5	31.3%
Male	11	68.8%
Academic Self-Concept		
High ASC	8	50.0%
Low ASC	8	50.0%
Race/Ethnicity		
African American	4	25.0%
Caucasian	11	68.8%
Hispanic	1	6.3%
Threat		
Gender Identity		
Female	10	52.6%
Male	9	47.4%
Academic Self-Concept		
High ASC	8	42.1%
Low ASC	11	57.9%
Race/Ethnicity		
African American	4	21.1%
Caucasian	11	57.9%
Hispanic	4	21.1%
Mitigation		
Gender Identity		
Female	28	80.0%
Male	7	20.0%
Academic Self-Concept		
High ASC	20	57.1%
Low ASC	15	42.9%
Race/Ethnicity		
African American	8	22.9%
Caucasian	22	63.9%
Hispanic	5	14.3%

Measures

Academic Self-Concept Scale-Short Form. Before participating in the on-campus portion of the study, students completed the Academic Self-Concept Scale-Short Form (ASCS-SF) as a measure of perceived academic ability. Academic self-concept was selected to complement the self-concept map activity featured in this study as a global understanding of

student-athletes' perception of self and their abilities as a learner. The ASCS-SF developed by Dr. William Reynolds addressed the stereotype threat tenet concerning identification with a tested domain. The scale is an abbreviated version of the original Academic Self-Concept Scale (Reynolds, 1988). Academic self-concept refers to the student's perception of their abilities as a learner. The ACSC-SF, which is an 18-item questionnaire using a 4-point Likert scale, measures general academic self-concept with higher scores indicating stronger academic self-concept. The scale contains 8 items that are normally scored (items 4, 7, 9, 11, 12, 14, 16, and 18; strongly agree = 4, agree = 3, disagree = 2, strongly disagree = 1). The remaining 10 items require reverse scoring (items 1, 2, 3, 5, 6, 8, 10, 13, 15, and 17; strongly disagree = 4, disagree = 4, agree = 3, strongly agree = 1). Students are asked to rate how they feel most of the time concerning statements about school-related attitudes. Sample items include: "No matter how hard I try I don't do well in school; Most of my instructors think that I am a good student; and At times I feel college is too difficult for me." In 2010, Reynolds tested the ACSC-SF with 467 college students. The ACSC-SF reported an internal consistency reliability score of .90 and demonstrated convergent validity by relationships with GPA (r = .49), general self-concept (r = .47), procrastination (r = .46), and discriminant validity shown by a low relationship with social desirability (r = .21).

Concept Map Activities. A self-concept map is a visualization of the subjective representation of the self, including the interrelationships among an individual's different social identities. Two concept mapping activities were used in the experiment. In the mitigation condition, I used an adaptation of the self-concept map described in the 2005 Gresky, Eyck, Lord, and McIntrye study. As discussed previously, Gresky et al. (2005) were testing self-concept mapping as a stereotype threat mitigation for women completing a mathematics

examination. The researchers randomly assigned college students to a condition where they constructed a self-concept map with few nodes, many nodes, or did not construct a self-concept map at all to test the effects of the activity on the differences in academic performance between men and women on a mathematics test. The self-concept map with many nodes proved to be a viable stereotype threat mitigation strategy. For this study, I used an adaptation of the self-concept map with many nodes. The self-concept mapping activity serves as the mitigating factor for this experiment because it allowed students to reflect on their multiple social identities. I hypothesize that after creating a self-concept map from a complex perspective (using many nodes of identity), participants will be better able to defend against a threat to one of their social identities (introduction of stereotype threat) and thus would perform better than others on a subsequent SAT-type test. Students were given 20 minutes to complete the activity. The self-concept map activity was conducted as follows:

1. Dissemination of a blank 12 x 18 piece of paper and a pencil, and activity instructions to each student to construct a map. The students were informed that they should focus more on the information they provide and not creating a "perfect" map to limit unnecessary stress caused by the creation of the map. The students were asked to think about their interests and social identities and then instructed to select and write down categories from the list below that related to those social identities and interests.

    - Art
    - Dance
    - Ethnicity/Race/Nationality
    - Family
    - Gender identity
    - Music
    - Occupation
    - Organizations/Clubs/Affiliations
    - Politics
    - Relationships

- Religion
- School
- Sports
- Other (Specify)

2. Students were instructed to select as many categories as they could from the list above. Students were asked to separate the categories in their own areas on the paper.
3. Students were instructed to reflect and write down a list of their identities or roles under the categories they selected. The following examples were given: “For example, if you select Family as a category, you could list daughter, son, brother, uncle etc. as identities or roles that you highly value in your life; or if you select Relationships as a category, you could list friend, girlfriend/boyfriend, business partner, etc. as identities or roles that you highly value in your life.”
4. Students were instructed to draw a line between identities or roles that they felt were connected.
5. Students were instructed to place a star next to identities that they find most significant to their overall identity.
6. Students were instructed to write the word “Me” in the center of their map.
7. Students were asked to reflect on what they had written.

The activity can be subdivided into four actions: 1) list identity categories, 2) list exemplars for those categories, 3) make connections between exemplars, and 4) identify highly valued identities (categories or exemplars).

Participants in the remaining two conditions participated in an alternate mapping activity about food as a control for the effort and distraction of the other mapping task. The topic of food was unlikely to prime participants for either their student or athlete identity. Students were given 20 minutes to complete the activity. The alternate map activity was conducted as follows:

1. Dissemination of a blank 12 x 18 piece of paper and a pencil, and activity instructions to each student to construct a map. The students were informed that they should focus more on the information they provide and not creating a "perfect" map to limit unnecessary stress caused by the creation of the map. The students were asked to discuss, in list format, their favorite and most visited places to eat in their neighborhood using the categories below.
    - Coffee Shop
    - Delivery
    - Diner
    - Family member's house
    - Fast Food
    - Grocery Store
    - Health Food Store
    - Restaurant
    - Other (Specify)
2. Students were instructed to select as many options as they could from the list above.
3. Students were instructed to make a list of items that they recently purchased or ate under the options they selected. Students were asked to separate the list in their own areas on the paper.
4. Students were instructed to write down the best day and time to purchase or eat items they listed.
5. Students were instructed to place a star next to their favorite food items.

The activity can be subdivided into four actions: 1) list food categories, 2) list examples for those categories, 3) list the best day and time to purchase/eat, and 4) identify favorite food items.

Scholastic Aptitude Test (SAT) writing and language and mathematics questions. During the experiment, study participants completed a computerized academic test. The test consisted of 18 questions from the SAT writing and language and mathematics (no calculator

permitted) sections of the standardized test. The writing and language section was composed of 9 questions from the College Board website (CollegeBoard, 2019). The mathematics section was composed of 9 questions from SAT practice materials written by Hofstra University Mathematics professor, Steven Warner (Warner, 2012). Each section of the test included three items of easy, moderate, and difficult level of difficulty. The degree of difficulty increased throughout the exam to challenge the students but not exhaust their mental capacity on items that could cause them to disengage from the material (Steele & Aronson, 1995). The students had 25 minutes to complete the test. The presentation of the test material adhered to the guidelines of the SAT. Students completed the writing and language section before they completed the mathematics section. Also, students had 10 minutes to complete the writing and language section and 15 minutes to complete the mathematics section. Scores were determined by the number of items answered correctly out of the total items available on each section. Dependent measures for analysis included total items correct, writing and language items correct, math items correct, total difficult items correct, difficult writing and language items correct, and difficult math items correct.

Demographic Survey. The demographic survey included items to collect information about gender identity, race, ethnicity, age, classification, major, grade point average range, and sport.

Procedures

Pilot. A pilot study was conducted for the entire experiment with five undergraduate students. The pilot study was used to test the validity of the instructions, the mapping activities, and the SAT-style test. Additionally, the pilot study was critical in testing the functionality of the technology used in the study and the logistics (e.g., organization, timing, and materials needed)

of the experiment.

Experiment. After the study received IRB approval, participants were invited to volunteer for the study by submitting an electronic participation form using the link included in their invitation email. Those students who chose to participate in the study completed a consent form and the ASCS-SF. After these items were completed, the students were sent an email requesting that they select one of six scheduled sessions being held in a classroom on campus. The classroom held 20 people. After the study participant registration deadline, a graduate research assistant assigned student participant identification numbers to replace their names to ensure anonymity during the experiment. Additionally, the graduate assistant randomly assigned participants to one of three experimental groups: 1) an explicit stereotype threat condition with the self-concept mapping activity (mitigation condition), 2) an explicit stereotype threat condition with the food mapping activity (threat condition), or 3) a condition without stereotype threat, but with the food mapping activity (control condition). I facilitated the experiment, and I was blind to the student's academic self-concept scale scores. The students were blind to the condition in which they were randomly assigned. On the day of the sessions, another graduate research assistant greeted each student and provided them with their identification numbers to include on all their study materials instead of their names. I began the experiment, in all conditions, by telling the students that they would participate in three unrelated activities - a mapping activity, an academic test, and a demographic survey. Also, at the end of each session, I told the students that they would receive a study debriefing at the completion of the entire experiment. Additionally, students were asked not to share any information about the experiment with their peers to prevent crosstalk and to maintain the integrity of the study. Before leaving the classroom, each student received a $40 Amazon gift card.

In the mitigation condition (N = 35), students heard the explicit prime message about athletes and academic performance ("I'm exploring performance on the exam that you will take today. In the past, student-athletes have not performed as well as other students nationally. I will compare test performance of student-athletes and nonstudent-athletes"). Replicating the priming technique of Gresky and colleagues (2005), I chose an explicit priming method because the study is more focused on the mitigation to lessen stereotype threat than the factors that create the threat. The method was implemented to maximize the possibility of evoking the threat to test the mitigation. The same evocation rationale applies to the decision to use the "student-athlete" dual identity prime, as opposed to the "athlete" only identity prime. The published works on the effects of stereotype threat among student-athletes are split on the identity priming techniques. Therefore, I used the term most commonly used on-campus at the study site to identify a college student who participate on an NCAA-sponsored sports team. Following the prime, participants engaged in the self-concept mapping activity. The students were told that the mapping activity provided a visual tool to elaborate on a topic and was shown an example of a completed map. They were instructed not to replicate the map example but use it as a reference. The example map was only displayed for approximately 1 minute. I asked participants to reflect on their various social identities by making a list of them; participants could use a suggested list of social identity categories to begin. The list included an "Other" option for participants to use categories not represented in the list. Under each category, the student was asked to list more specific identities or roles related to each category. Students had 20 minutes to complete the task.

In the threat condition (N = 19), students heard the same explicit prime message about student-athletes and academic performance as participants heard in the mitigation condition. After the prime, participants engaged in the food mapping activity. The participants were also

told that the mapping activity provided a visual tool to elaborate on a topic and was shown an example of a completed map. They were instructed not to replicate the map example but use it as a reference. The example map was only displayed for approximately 1 minute. Students were instructed to create a map based on their favorite food items.

In the control condition (N = 16), students were not primed with the negative stereotype about student-athletes and academic performance. Instead, the participants received the following message: “I’m exploring test construction and test performance on an exam.” Students in the condition engaged in the same mapping activity as the threat condition group.

After the mapping activity in each condition, participants had 25 minutes to complete an 18-question SAT-style writing and language (10 minutes), and mathematics (15 minutes) exam. After the test, participants completed a survey requesting demographic information about their race/ethnicity, classification, age, major, grade point average, and sport.

Data analysis. As discussed earlier, a three-group factorial experimental design was used to explore the impact of a self-concept map activity on the academic performance of student-athletes when threatened with a negative stereotype. All analyses as outlined in Figure 9 were conducted using IBM SPSS 25. The dependent measure was performance on the academic task. Specifically, performance was analyzed separately by the number of items correct on components of the task: 1) total items, 2) writing and language items, 3) mathematics items, 4) difficult items, 5) difficult writing and language items, and 5) difficult mathematics items. Stereotype threat typically occurs when a person attempts a mentally taxing evaluative task, so it was appropriate to look at performance in these different ways. A reliability analysis of the ASCS-SF items was completed using IBM SPSS 25. Exploratory research questions were answered later by reporting multiple correlations.

Results

Manipulation Check

Conditions. The threat and control conditions served as comparison groups to test the impact of the self-concept mapping activity in the mitigation condition. The threat condition was included to understand whether the explicit threat was sufficient to create stereotype threat, as compared with the control condition as baseline.

Level of Engagement. Gresky and her colleagues hypothesized that making multiple social identities salient (e.g., listing many nodes) rather than few social identities (e.g., listing few nodes) would serve as a barrier to stereotype threat. It was necessary for them to check that the groups did in fact produce different numbers of nodes in their mapping activity before they could test their hypothesis. The current study did not include a few nodes condition. Instead, this study included an alternate map activity to focus on the direct effect of the exercise of listing multiple social identities in response to stereotype threat. Unlike the Gresky et al. (2005) study, the focus was not on the number of nodes, but the level of engagement or effort given to the task. A one-way analysis of variance was conducted to determine if differences exist in the level of activity engagement between conditions on the mapping activities. The maps were scored by counting the number of items listed for the four map components. The maps were divided into four components dependent on map type: 1) Identity or Food Categories, 2) Identity or Food exemplars, 3) Exemplar connections or Best day and time to visit, and 4) Valued exemplars or favorite food. Two individuals, the researcher, and a graduate assistant, scored the maps and achieved 100% interrater reliability. The scores were then totaled across the four areas. For example, if a student in the mitigation condition listed 5 identity categories, 5 total identity exemplars, 5 connections, and listed 5 identities that they highly valued, then they would have

received a total score of 20.

Descriptive statistics show a minimum of 18 and a maximum of 100 items listed for all participants (M = 48.27, SD = 19.04). Table 7 displays descriptive statistics and the analysis of variance output for each map component. Only one ANOVA revealed a significant difference between the groups in a map component. There was a significant difference across conditions in total number of exemplars listed, $F(2,67) = 3.46$, $p = .037$, $\eta^2 = .094$. An LSD post hoc test revealed that students in the threat condition listed significantly ($p = .023$) more (food) exemplars (M = 54.74, SD = 20.48) than students in the mitigation condition (identity) (M = 42.51, SD = 16.49). The students in the control condition listed marginally more (food) exemplars (M = 53.19, SD = 19.78) than students in the mitigation condition (identity), (p = .059). However, a Welch test to correct non-homogeneity in this analysis was unsuccessful, and these results should be interpreted cautiously. The general conclusion is that participants in the different conditions were equally engaged and generated similar numbers of categories, connections, and valued exemplars in the mapping tasks.

Table 7

Level of Engagement on Mapping Activities – Descriptive Statistics and ANOVA Output

Map Component	N	Mean	Std. Deviation	Homogeneity (Mean)	Sig.
Categories	70	7.44	2.91	.004*	.659
Control	16	6.88	2.60		
Threat	19	7.47	4.17		
Mitigation	35	7.69	2.19		
Identity exemplars	70	26.24	12.47	.021*	.001*
Control	16	32.13	14.56		
Threat	19	31.05	13.37		
Mitigation	35	20.94	8.31		
Exemplar connections	70	8.89	5.88	.519	.342
Control	16	8.38	4.53		

Threat	19	10.58	5.73		
Mitigation	35	8.20	6.44		
Valued exemplars	70	5.70	4.05	.483	.991
Control	16	5.81	4.30		
Threat	19	5.63	4.33		
Mitigation	35	5.69	3.89		

*The mean difference is significant at the .05 level.

Stereotype Threat and Mitigation

Research Questions 1 and 2. *Does an overt stereotype threat affect the academic performance of student-athletes on an academic task? Does the identification of multiple social identities alleviate the effects of stereotype threat on student-athletes' academic performance?*

A series of one-way ANOVAs were conducted, one for each dependent measure. Results revealed no main effect of condition (mitigation, threat, control) on any dependent variable. See Table 8 for output data from the analyses. Table 9 displays mean scores and standard deviations. Although not statistically significant, Table 9 shows that the control group yielded a higher total score, followed by the mitigation condition and then the threat condition, as expected. Furthermore, the control group yielded higher total scores on each performance measure, as expected, except total writing and language items, where the mitigation condition yielded the highest score, followed by the control condition and then the threat condition. Overall, the explicit stereotype threat did not depress academic performance as hypothesized, nor did listing multiple social identities improve performance.

Table 8

Summary of Series of ANOVAs of Test Performance by Condition

DV	Source	DF	Type III Sum of Squares	Mean Square	F Value	Sig.	Partial Eta Squared
Total items	Condition	2	1.366	.092	.092	.912	.003
Writing and Language		2	.262	.131	.060	.942	.002

Math	2	1.435	.718	.204	.816	.006
Total difficult items	2	1.209	.605	.371	.691	.011
Writing and Language	2	.493	.246	.519	.597	.015
Math	2	.229	.115	.107	.899	.003

*The mean difference is significant at the .05 level.

Table 9

Mean Scores - Test Performance by Condition

		Mean Scores – Overall Test Performance					
Condition	**N**	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	12.13	2.16	5.06	1.34	7.06	1.77
Threat	19	11.74	2.88	5.00	1.37	6.74	1.88
Mitigation	35	11.86	2.85	5.14	1.59	6.71	1.92
Total	70	11.89	2.68	5.09	1.46	6.80	1.85
		Mean Scores – Difficult Items					
	N	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	3.50	1.03	1.44	.629	2.06	.93
Threat	19	3.32	1.25	1.26	.653	2.05	1.03
Mitigation	35	3.17	1.38	1.23	.731	1.94	1.08
Total	70	3.29	1.26	1.29	.684	2.00	1.02

Gender Identity

Research Questions 3 and 4. *Does gender identity affect academic performance among student-athletes? Does gender identity moderate the relationship between the experimental conditions and academic performance among student-athletes?*

A series of 3 (condition) x 2 (gender identity) ANOVAs were conducted, one for each dependent measure. Results revealed no main effects of condition or gender identity and no interaction effects on any dependent variable. See Table 10 for output data from the analyses. Table 11 displays mean scores and standard deviations of female and male sports participants in each experimental condition. As discussed earlier, there was no significant difference in GPA

mean between female and male student-athletes. Overall, male student-athletes performed better (but not significantly so) than female student-athletes, especially on difficult test items.

Table 10

Summary of Series of ANOVAs of Test Performance – Condition by Gender Identity

DV	Source	DF	Type III Sum of Squares	Mean Square	F Value	Sig.	Partial Eta Squared
Total items	Condition	2	3.770	1.885	.249	.780	.008
	Gender	1	1.419	1.149	.187	.666	.003
	Interaction	2	11.054	5.527	.730	.486	.022
Writing and Language	Condition	2	1.144	.572	.265	.768	.008
	Gender	1	7.919	7.919	3.663	.060	.054
	Interaction	2	2.030	1.015	.470	.627	.014
Math	Condition	2	1.514	.757	.214	.808	.007
	Gender.	1	2.634	2.634	.744	.392	.011
	Interaction	2	5.000	2.500	.706	.497	.022
Total difficult items	Condition	2	.587	.294	.177	.838	.005
	Gender	1	1.043	1.043	.628	.431	.010
	Interaction	2	1.314	.657	.395	.675	.012
Writing and Language	Condition	2	.695	.347	.723	.489	.022
	Gender	1	.019	.019	.039	.844	.001
	Interaction	2	1.026	.513	1.067	.350	.032
Math	Condition	2	.042	.021	.019	.981	.001
	Gender	1	.782	.782	.724	.398	.011
	Interaction	2	1.389	.695	.644	.529	.020

*The mean difference is significant at the .05 level.

Table 11

Mean Scores of Test Performance – Condition by Gender Identity

		Mean Scores – Overall Test Performance					
Condition	**N**	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	12.13	2.16	5.06	1.34	7.06	1.77
Female	5	13.20	1.48	6.00	.00	7.20	1.48
Male	11	11.64	2.92	4.64	1.43	7.00	1.95

Threat	19	11.74	2.88	5.00	1.37	6.74	1.88
Female	10	11.80	3.33	5.20	1.55	6.60	2.17
Male	9	11.67	2.50	4.78	1.20	6.89	1.62
Mitigation	35	11.86	2.85	5.14	1.59	6.71	1.92
Female	28	11.71	2.83	5.25	1.53	6.46	1.93
Male	7	12.43	3.10	4.71	1.89	7.71	1.60
Total	70	11.89	2.68	5.09	1.46	6.80	1.85
Female	43	11.91	2.82	5.33	1.44	6.58	1.92
Male	27	11.85	2.51	4.70	1.44	7.15	1.73
		Mean Scores – Difficult Items					
	N	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	3.50	1.03	1.44	.629	2.06	.93
Female	5	3.60	.89	1.40	.548	2.20	.84
Male	11	3.45	1.13	1.45	.688	2.00	.93
Threat	19	3.32	1.25	1.26	.653	2.05	1.03
Female	10	3.00	1.15	1.10	.568	1.90	1.10
Male	9	3.67	1.32	1.44	.726	2.22	.97
Mitigation	35	3.17	1.38	1.23	.731	1.94	1.08
Female	28	3.11	1.34	1.29	.659	1.82	1.06
Male	7	3.43	1.62	1.00	1.000	2.43	1.13
Total	70	3.29	1.26	1.29	.684	2.00	1.02
Female	43	3.14	1.25	1.26	.621	1.88	1.03
Male	27	3.52	1.28	1.33	.784	2.19	1.00

Academic Self-Concept

Research Questions 5 and 6. *Does the degree of academic self-concept affect academic performance among student-athletes? Does academic self-concept moderate the relationship between the experimental conditions and academic performance among student-athletes?*

A reliability analysis was conducted on the Academic Self-Concept scale comprising 18 items. Cronbach's alpha showed the questionnaire to reach acceptable reliability, α = 0.90, with convergent validity shown by a relationship with grade point average (r = .55, p < .001). Academic self-concept scores were divided at the median (median = 55) to create higher self-concept and lower self-concept groups (higher self-concept: N = 36, M = 62.36, SD = 4.83; lower self-concept N = 34, M = 50.29, SD = 3.18). Across all conditions, the mean academic

self-concept scale score was 56.50 with a minimum score of 41 and a maximum score of 70. The highest score possible on the ASCS-SF is a 72.

A series of 3 (condition) x 2 (academic self-concept: lower, higher) ANOVAs were conducted, one for each dependent measure. Results revealed no main effects of condition or academic self-concept and no interaction effects on the dependent variables, except for the following. A significant main effect of academic self-concept was found for the number of math items correct, difficult items correct, and difficult math items correct. (See Table 12 for the output data.) Students higher in academic self-concept performed better (M = 7.44, SD = 1.48) than students lower in academic self-concept (M = 6.12, SD = 1.98), $F(1,64) = 9.20$, $p = .003$, $\eta^2 = .126$ on all math items. Additionally, students higher in academic self-concept scored better (M = 3.64, SD = 1.10) than students lower in academic self-concept (M = 2.91, SD = 1.33), $F(1,64) = 4.63$, $p = .035$, $\eta^2 = .067$ on all difficult test items. Further, students higher in academic self-concept performed better (M = 2.33, SD = .89) than students lower in academic self-concept (M = 1.65, SD = 1.04), $F(1,64) = 7.10$, $p = .01$, $\eta^2 = .100$ on difficult math items. Table 13 displays the means and standard deviations for these analyses.

Table 12

Summary of Series of ANOVAs of Test Performance – Condition by Academic Self-Concept

DV	Source	DF	Type III Sum of Squares	Mean Square	F Value	Sig.	Partial Eta Squared
Total items	Condition	2	1.277	.639	.088	.915	.003
	ASC	1	26.988	26.988	3.736	.058	.055
	Interaction	2	5.412	2.706	.375	.689	.012
Writing and Language	Condition	2	.219	.110	.048	.953	.002
	ASC	1	.044	.044	.019	.890	.000
	Interaction	2	1.721	.861	.379	.686	.012
Math	Condition	2	2.254	1.127	.355	.702	.011

	ASC	1	29.208	29.208	9.203	.003*	.126
	Interaction	2	1.029	.514	.162	.851	.005
Total difficult items	Condition	2	1.977	.988	.644	.528	.020
	ASC	1	7.102	7.102	4.629	.035*	.067
	Interaction	2	1.000	.500	.326	.723	.010
Writing and Language	Condition	2	.541	.270	.550	.580	.017
	ASC	1	.001	.001	.001	.972	.000
	Interaction	2	.264	.132	.268	.766	.008
Math	Condition	2	.681	.340	.347	.708	.011
	ASC	1	6.970	6.970	7.101	.010*	.100
	Interaction	2	.268	.134	.136	.873	.004

*The mean difference is significant at the .05 level.

Table 13

Mean Scores of Test Performance – Condition by Academic Self-Concept

		Mean Scores – Overall Test Performance					
ASC Group	**N**	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	12.13	2.16	5.06	1.34	7.06	1.77
High	8	12.50	2.39	4.88	1.55	7.63	1.60
Low	8	11.24	1.98	5.25	1.17	6.50	1.85
Threat	19	11.74	2.88	5.00	1.37	6.74	1.88
High	8	13.00	2.20	5.25	1.04	7.75	1.39
Low	11	10.82	3.06	4.82	1.60	6.00	1.90
Mitigation	35	11.86	2.85	5.14	1.59	6.71	1.92
High	20	12.30	1.72	5.05	1.15	7.25	1.52
Low	15	11.27	3.88	5.27	2.09	6.00	2.20
Total	70	11.89	2.68	5.09	1.46	6.80	1.85
High	36	12.50	1.95	5.06	1.19	7.44	1.48
Low	34	11.24	3.19	5.12	1.72	6.12	1.98
		Mean Scores – Difficult Items					
	N	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	3.50	1.03	1.44	.629	2.06	.93
High	8	3.75	1.17	1.38	.744	2.38	.74
Low	8	3.25	.89	1.50	.535	1.75	1.03
Threat	19	3.32	1.25	1.26	.653	2.05	1.03
High	8	3.63	1.30	1.25	.707	2.38	.92
Low	11	3.09	1.22	1.27	.647	1.82	1.08
Mitigation	35	3.17	1.38	1.23	.731	1.94	1.08
High	20	3.60	1.05	1.30	.733	2.30	.98
Low	15	2.60	1.60	1.13	.743	1.47	1.06

Total	70	3.29	1.26	1.29	.684	2.00	1.02
High	36	3.64	1.10	1.31	.710	2.33	.89
Low	34	2.91	1.33	1.26	.666	1.65	1.04

Race/Ethnicity

Research Questions 7 and 8. *Does race/ethnicity affect academic performance among student-athletes? Does race/ethnicity moderate the relationship between the experimental conditions and academic performance among student-athletes?*

The racial and ethnic background of participants consisted of 47 Caucasian students, 14 African American students, 2 biracial students (African American and Caucasian), and 7 students who did not list their race, but listed their ethnicity as Hispanic, Latino(a), or Spanish Origin. Also, 3 Caucasian students listed their ethnicity as Hispanic, Latino(a), or Spanish Origin. I grouped students into three racial/ethnic groups for purposes of data analysis: 1) African American, 2) Caucasian, 3) Hispanic. The two biracial students and all students who identified their ethnicity as either Hispanic, Latino(a), or Spanish Origin were categorized into their corresponding racial and ethnic minority groups. The grouping method was not implemented to ignore the layered experiences of the multiracial/ethnic participants or ignore the complexity of race/ethnicity, rather the method was used to improve the clarity of interpretation of results. The racial/ethnic composition, for purposes of data interpretation, included 44 Caucasian students (27 female and 17 male), 16 African American students (11 female and 5 male), and 10 Hispanic students (5 female and 5 male).

Furthermore, the groupings were based on societal perceptions of racial and ethnic assignment, which greatly impacts stereotype threat activation. For example, a study found that both African American and Caucasian study participants viewed a biracial person (African American and Caucasian) as “more” African American than Caucasian (Ho, Kteily, & Chen,

2017; Ho, Sidanius, Cuddy, & Banaji, 2013;). Research supports the same perception of ethnicity among Hispanic people (Hollinger, 2005). The idea supports the notion of hypodescent practices (crudely known as the "one-drop rule") in American culture, which describes the assignment of a person of mixed race, by the dominant social group, to a single racial group.

A series of 3 (condition) x 3 (race/ethnicity: African American, Caucasian, and Hispanic) ANOVAs were conducted, one for each dependent measure. Results revealed no main effects of condition or race/ethnicity and no interaction effects on the dependent variables, except for the following. There was a main effect of race/ethnicity on the total number of items correct, $F(2,61) = 3.54$, $p = .035$, $\eta^2 = .104$; math items correct, $F(2,61) = 7.66$, $p = .001$, $\eta^2 = .083$; difficult items correct, $F(2,61) = 5.57$, $p = .009$, $\eta 2 = .145$; and difficult math items correct, $F(2,61) = 8.45$, $p = .001$, $\eta^2 = .217$. LSD post hoc tests revealed significant differences in scores between African American and Caucasian students. Caucasian students performed significantly better ($M = 12.36$, $SD = 2.16$) than African American students ($M = 10.81$, $SD = 3.60$) on total items correct ($p = .047$), math items correct (Caucasian: $M = 7.30$, $SD = 1.56$, African American: $M = 5.56$, $SD = 2.10$, $p = .001$), and difficult items correct (Caucasian: $M = 3.55$, $SD = 1.15$, African American: $M = 2.69$, $SD = 1.45$, $p = .018$). Additionally, Caucasian and Hispanic students performed significantly better (Caucasian: $M = 2.23$, $SD = .886$, Hispanic: $M = 2.10$, $SD = .994$) than African American students ($M = 1.31$, $SD = 1.14$) on difficult math items correct (Caucasian: $p = .001$, Hispanic: $p = .040$). Tables 14 and 15 show output data and means and standard deviations.

Table 14

Summary of Series of ANOVAs of Test Performance – Condition by Race/Ethnicity

DV	Source	DF	Type III Sum of Squares	Mean Square	F Value	Sig.	Partial Eta Squared

Total items	Condition	2	3.092	1.546	.226	.799	.007
	Race/Ethnicity	2	48.475	24.238	3.538	.035*	.104
	Interaction	4	48.201	12.050	1.759	.149	.103
Writing and Language	Condition	2	2.121	1.060	.475	.624	.015
	Race/Ethnicity	2	2.418	1.209	.541	.585	.017
	Interaction	4	10.261	2.565	1.149	.342	.070
Math	Condition	2	.256	.128	.042	.958	.001
	Race/Ethnicity	2	45.565	22.782	7.565	.001*	.199
	Interaction	4	16.520	4.130	1.371	.254	.083
Total difficult items	Condition	2	.615	.307	.211	.811	.007
	Race/Ethnicity	2	15.049	7.525	5.156	.009*	.145
	Interaction	4	11.111	2.778	1.903	.121	.111
Writing and Language	Condition	2	.296	.148	.326	.723	.011
	Race/Ethnicity	2	2.463	1.231	2.714	.074	.082
	Interaction	4	3.251	.813	1.791	.142	.105
Math	Condition	2	.062	.031	.036	.965	.001
	Race/Ethnicity	2	14.723	7.362	8.452	.001*	.217
	Interaction	4	8.700	2.175	2.497	.052	.141

*The mean difference is significant at the .05 level.

Table 15

Mean Scores of Test Performance – Condition by Race/Ethnicity

		Mean Scores – Overall Test Performance					
Race/Ethnicity	**N**	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	12.13	2.16	5.06	1.34	7.06	1.77
African American	4	11.00	1.83	5.50	.58	5.50	1.92
Caucasian	11	12.82	1.99	5.09	1.45	7.73	1.42
Hispanic	1	9.00	.	3.00	.	6.00	.
Threat	19	11.74	2.88	5.00	1.37	6.74	1.88
African American	4	8.50	3.11	4.25	1.50	4.25	1.71
Caucasian	11	12.55	2.16	5.09	1.45	7.45	1.04
Hispanic	4	12.75	2.63	5.50	1.00	7.25	2.06
Mitigation	35	11.86	2.85	5.14	1.59	6.71	1.92
African American	8	11.88	4.22	5.63	2.33	6.25	2.25
Caucasian	22	12.05	2.28	5.05	1.13	7.00	1.83
Hispanic	5	11.00	3.08	4.80	2.17	6.20	1.92
Total	70	11.89	2.68	5.09	1.46	6.80	1.85
African American	16	10.81	3.60	5.25	1.84	5.56	2.10
Caucasian	44	12.36	2.16	4.90	1.27	7.30	1.56
Hispanic	10	11.50	2.84	5.07	1.73	6.60	1.84

		Mean Scores – Difficult Items					
	N	**Total Score**	**SD**	**Writing and Language**	**SD**	**Mathematics**	**SD**
Control	16	3.50	1.03	1.44	.629	2.06	.93
African American	4	2.75	.50	1.75	.500	1.00	.82
Caucasian	11	3.91	.94	1.45	.522	2.45	.69
Hispanic	1	2.00	.	.00	.	2.00	.
Threat	19	3.32	1.25	1.26	.653	2.05	1.03
African American	4	1.75	.96	1.25	.500	.50	.58
Caucasian	11	3.91	1.04	1.45	.688	2.45	.69
Hispanic	4	3.25	.50	.75	.500	2.50	.58
Mitigation	35	3.17	1.38	1.23	.731	1.94	1.08
African American	8	3.13	1.81	1.25	.707	1.88	1.25
Caucasian	22	3.18	1.22	1.18	.795	2.00	1.02
Hispanic	5	3.20	1.64	1.40	.548	1.80	1.30
Total	70	3.29	1.26	1.29	.684	2.00	1.02
African American	16	2.69	1.45	1.38	.619	1.31	1.14
Caucasian	44	3.55	1.15	1.32	.708	2.23	.89
Hispanic	10	3.10	1.20	1.00	.667	2.10	.99

There was a marginally significant condition by race/ethnicity effect on difficult math items, $F(4,61) = 2.50$, $p = .052$, $\eta^2 = .141$ (see Table 16). Figure 10 displays results from further investigation through a simple effect analysis. In the control condition, African American student-athletes received significantly lower scores ($M = 1.00$, $SD = .816$) than Caucasian student-athletes ($M = 2.45$, $SD = .688$) on difficult math items ($p = .010$). In the threat condition, African American student-athletes received significantly lower scores ($M = 0.50$, $SD = .577$) than the other race/ethnicity groups on difficult math items (Hispanic: $M = 2.50$, $SD = .577$, $p = .004$; Caucasian, $M = 2.45$, $SD = .688$, $p = .001$). Yet, African American students in the mitigation condition posted significantly higher scores ($M = 1.88$, $SD = 1.25$) on difficult math items than African American students in the threat condition ($p = .02$). Additionally, the difference between African American student-athletes' performance on difficult math items in the control condition and mitigation condition shows a marginal trend ($p = .13$). There were no significant differences between racial/ethnic groups in the mitigation condition.

Table 16

Analysis of Variance Summary (Difficult Math Items) – Condition by Race/Ethnicity

Source	df	Type III Sum of Squares	Mean Square	F Value	Sig.	Partial Eta Squared
Condition	2	.062	.031	.036	.965	.001
Race/Ethnicity	2	14.723	7.362	8.452	.001*	.217
Condition*Race/Ethnicity	4	8.700	2.175	2.497	.052†	.141
Error	61	53.130	.871			
Total	70	352.000				

*The mean difference is significant at the .05 level.
†The mean difference is marginally significant at the .10 level

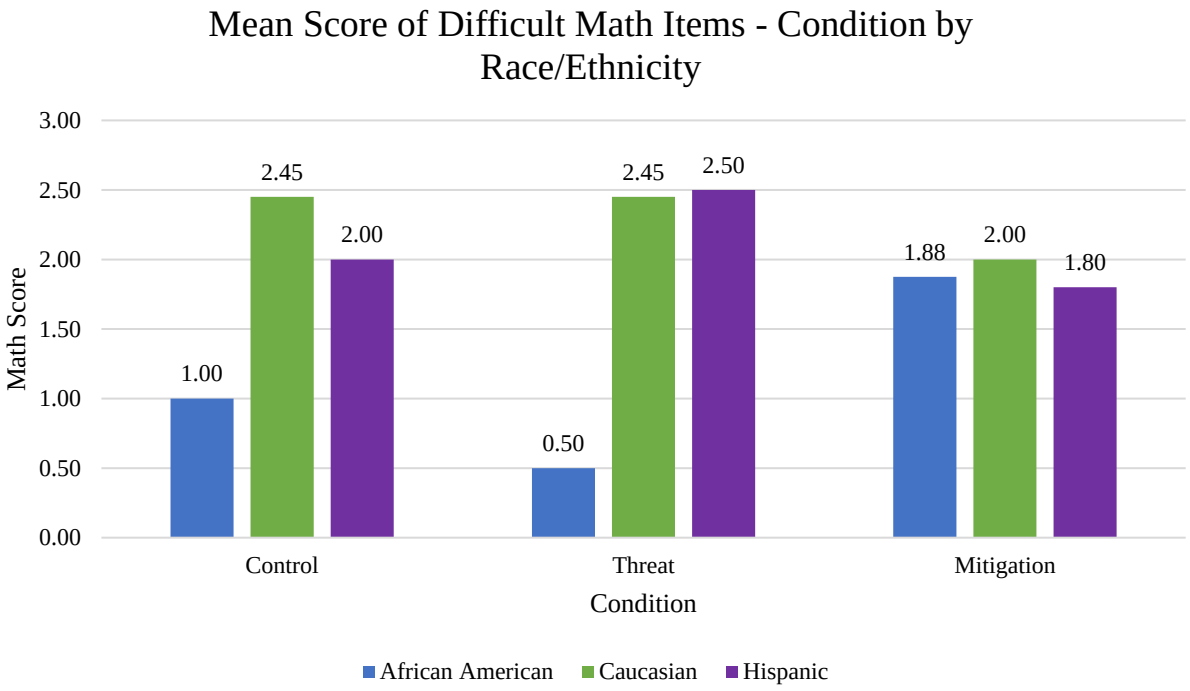


Figure 10. Mean Score on Difficult Math Items - Condition by Race/Ethnicity

The observation of this interaction effect on difficult math items prompted further exploration into the moderate and easy math items. Two 3 (condition) x 3 (race/ethnicity: African American, Caucasian, and Hispanic) ANOVAs were conducted, one for moderate math

items and one for easy math items. The analyses yielded no main effects and no interaction effect. Table 17 displays means and standard deviations for those performance measures.

Table 17

Mean Scores of Moderate and Easy Math Items – Condition by Race/Ethnicity

		Mean Scores – Moderate and Easy Items			
Race/Ethnicity	**N**	**Math Moderate**	**SD**	**Math Easy**	**SD**
Control	16	2.13	.88	2.87	.342
African American	4	1.75	.96	2.75	.500
Caucasian	11	2.36	.81	2.91	.302
Hispanic	1	1.00	.	3.00	.
Threat	19	2.00	.94	2.68	.582
African American	4	1.50	1.00	2.25	.957
Caucasian	11	2.27	.65	2.73	.467
Hispanic	4	1.75	1.50	3.00	.000
Mitigation	35	1.91	.95	2.86	.430
African American	8	1.75	.71	2.63	.744
Caucasian	22	2.09	.97	2.91	.294
Hispanic	5	1.40	1.14	3.00	.000
Total	70	1.99	.93	2.81	.460
African American	16	1.69	.79	2.56	.727
Caucasian	44	2.20	.85	2.86	.347
Hispanic	10	1.50	1.80	3.00	.000

Summary of Findings

Hypotheses 1 and 2 were not supported. There was no evidence that the explicit prime activated stereotype threat among all student-athletes and no evidence of the impact of a threat mitigation condition on all student-athletes. Further, no support was found for Hypotheses 3 and 4. There was no influence of gender identity on performance nor did it function as a moderator of the relationship between the experimental conditions and academic performance among student-athletes. However, the results showed, as expected (Hypothesis 5), that academic self-concept affected academic performance on some measures. Students who scored higher on the academic

self-concept scale answered more items correctly on math items, all difficult items, and difficult math items than students who scored lower on the academic self-concept scale. However, Hypothesis 6 was not supported; academic self-concept did not function as a moderator of the relationship between the experimental conditions and academic performance. There was support for Hypotheses 7 and 8. Race/ethnicity had a main effect on academic performance in the predicted direction. African American student-athletes posted significantly lower performance on all test items, math items, and all difficult items than Caucasian student-athletes; and difficult math items in comparison to both Caucasian and Hispanic student-athletes. Further, a marginally significant condition by race/ethnicity interaction effect for difficult math items was observed. In the control condition, African American student-athletes performed significantly worse than Caucasian student-athletes. In the threat condition, African American student-athletes performed significantly worse than their Caucasian and Hispanic counterparts on difficult math items, but African American student-athletes in the mitigation condition performed significantly better on difficult math items than African American student-athletes in the threat condition. Additionally, there was a marginal trend between African American student-athletes in the control condition and the mitigation condition (mitigation condition scoring better than control condition). Further, the performance of African American participants in the mitigation condition was not different from Caucasian and Hispanic students, suggesting that for African American participants, the threat condition further reduced performance and the mitigation condition reduced the threat effect in the area of difficult math.

Investigation of Potential Relationships

When ANOVAs with grouping variables suggested some main or interaction effects, further relationships were explored using correlations. Therefore, the following sections will

focus on the variables of academic self-concept and race/ethnicity and their relationships with other variables measured.

Academic Self-Concept. Bivariate correlations revealed several significant positive relationships between academic self-concept scale-short form (ASCS-SF) score and academic performance. Table 18 shows mean ASCS-SF score by race/ethnicity and condition. Overall, there were significant positive relationships between ASCS-SF score and total test score (r = .325, p = .006), math score (r = .394, p = .001), score on all difficult items (r = .413, p < .001), and score on difficult math items (r = .392, p = .001) across all conditions. Subsequent correlations examined the relationship between ASC and performance within experimental conditions and within the race/ethnicity by experimental conditions. In the mitigation condition, there were significant positive relationships between ASCS-SF score and total test score (r = .346, p = .042), math score (r = .445, p = 007), score on all difficult items (r = .565, p < .001), and score on difficult math items (r = .535, p = .001). Specifically, there were significant positive relationships between ASCS-SF score and academic performance among Hispanic and Caucasian student-athletes in the mitigation condition, as follows. Among Hispanic student-athletes, there were significant positive relationships between ASCS-SF score and score on all difficult items (r = .975, p = .005) and score on difficult math items (r = .997, p < .001). Significant positive relationships were observed among Caucasian student-athletes between ASCS-SF score and total test score (r = .430, p = .046), total math score (r = .477, p = .025), score on all difficult items (r = .616, p = .002), and difficult math items (r = .497, p = .019). Student ASCS-SF scores did not significantly predict performance in the control or threat conditions. African American student ASCS-SF scores did not significantly predict performance

in any condition. Thus, results indicated that ASC predicted performance on some variables, but only for Hispanic and Caucasian participants in the mitigation condition.

Table 18

Academic Self-Concept Scale-Short Form Score - Race/Ethnicity by Condition

Race/Ethnicity	Condition	N	Minimum	Maximum	Mean Score	SD
African American	Control	4	50	69	57.50	8.58
	Threat	4	45	64	53.00	8.04
	Mitigation	8	53	67	57.50	5.26
Caucasian	Control	11	47	70	56.64	8.18
	Threat	11	45	68	56.45	7.61
	Mitigation	22	44	69	56.77	7.21
Hispanic	Control	1	56	56	56.00	.
	Threat	4	50	56	53.00	2.45
	Mitigation	5	41	70	58.40	12.58
Total	Control	16	47	70	56.81	7.71
	Threat	19	45	68	55.00	6.86
	Mitigation	35	41	70	57.17	7.54

Race/Ethnicity. A marginally significant condition by race/ethnicity interaction effect on difficult math items was shown through an analysis of variance reported above. Post-hoc analyses showed that, in the control condition, African American student-athletes received significantly lower scores than Caucasian student-athletes on difficult math items ($p = .010$). African American student-athletes had significantly poorer scores in the threat condition than did Caucasian ($p = .001$) and Hispanic ($p = .004$) student-athletes, but there was no difference between these groups in the mitigation condition. African American participants' performance on difficult math items in the mitigation condition was significantly better than their performance in the threat condition ($p = .02$), and reached marginal significance in the control condition ($p = .13$). This suggests that only African Americans were affected by the threat and mitigation

interventions in the predicted directions. This raises the question of whether there were race/ethnicity group differences in the amount of engagement by participants in the different mapping tasks and whether differences in that degree of engagement predicted their performance differences in the different conditions. In other words, did race/ethnicity differences lead to different degrees of engagement with the mapping tasks and does that explain the observed interaction effect?

Bivariate correlations were performed between the level of engagement with different mapping tasks and test performance for race/ethnicity groups separately. Figure 11 organizes the results. First, I present the following relationships observed in the mitigation condition:

- Among all students, there was a significant positive correlation between the number of exemplars starred (valued identities) and the number of items correct on all difficult items (r = .382, p = .024) and difficult writing and language (r = .367, p = .030) items, specifically.
- Among African American students, there was a significant positive correlation between the number of exemplars starred (valued identities) and the number of items correct on all difficult items (r = .791, p = .020), and difficult writing and language (r = .748, p = .033) and math (r = .722, p = .043) items, separately.
- Among Hispanic students, there was a significant positive correlation between the number of exemplars starred (valued identities) and the total number of items correct on the academic exam (r = .918, p = .028).
- Among Caucasian students, there was a significant positive correlation between the total engagement score on the self-concept mapping activity and the number of items correct on difficult writing and language items (r = .429, p = .046).

- Among Caucasian students, there was a significant positive correlation between the number of connections made between exemplars (identities) and the number of items correct on difficult writing and language items (r = .440, p = .040), and a significant negative relationship between the number of connections made between exemplars (identities) and the number of items correct on difficult math items (r = -.440, p = .040).

It is important to reference results from the manipulation check, because data revealed that the students in the threat condition included more total number of exemplars (foods) on their maps than students in the mitigation condition (identities). If it is assumed that the level of engagement in the food mapping task predicted performance, then one could expect to observe a positive relationship between engagement and academic performance. On the other hand, if it is assumed that the food mapping task was a non-meaningful distraction (as intended), there would be no relationship between engagement and performance. The following relationships were observed in the threat condition:

- Among all students, there was a significant positive correlation between the number of food categories listed and the number of items correct on the difficult writing and language items (r = .462, p = .047).
- Among Hispanic students, there was a significant positive correlation between the total engagement on the food mapping activity and the number of items correct on all writing and language items (r = .955, p = .045).
- Among African American students, there was a significant positive correlation between the number of exemplars starred (favorite food) and the number of items correct on difficult writing and language items (r = .962, p = .038).
- Among African American students, there was a significant positive correlation between

the number of dates and times listed (best time and day to visit at the food location) and the number of items correct on difficult writing and language items (r = .993, p = .007).

Last, significant relationships were observed in the control condition. It would be assumed that the food mapping task would be irrelevant to performance, and in the absence of a threat, any correlation between engagement and performance in the control condition indicates a baseline relationship. The following relationships were observed in the control condition:

- Among all students, there was a significant negative relationship between the number of food categories listed and the number of items correct on all difficult items (r = .570, p = .021).
- Among all students, there was a significant positive relationship between the number of dates and times listed (best time and day to visit the food location) and the number of items correct on math items (r = .563, p = .527) and all difficult items (r = .527, p = .036).
- Among Caucasian students, there were significant positive relationships between total engagement on the food mapping activity and the number of items correct on difficult writing and language items (r = .684, p = .020), the number of food exemplars listed and the number of items correct on difficult writing and language items (r = .761, p = .007), and the number of dates and times listed (best time and day to visit the food location) and the number of items correct of difficult writing and language items (r = .654, p = .029).
- Among Caucasian students, there was a significant negative relationship between the number of food categories listed and the number of difficult items correct (r = -.671, p = .024).

Gresky and her colleagues did not use this method to determine level of engagement. Instead, they were more interested in the type of identity categories and identity examples presented by participants (e.g., academic, activities, family, friends, and other). In their study they found that participants who listed many social identities included more "family' nodes than participants who listed few social identities and included a smaller number of "other' nodes. Overall, the type of identities included on participant maps did not impact women's math performance.

Total Engagement								
Control			**Threat**			**Mitigation**		
AA	*C* +Difficult Writing and Language	*H*	*AA*	*C*	*H* +Writing and Language	*AA*	*C* + Difficult Writing and Language	*H*
Identity/Food Categories								
Control -Difficult Items			**Threat** +Difficult Writing and Language			**Mitigation**		
AA	*C* -Difficult Items	*H*	*AA*	*C*	*H*	*AA*	*C*	*H*
Category/Food Exemplars								
Control			**Threat**			**Mitigation**		
AA	*C* +Difficult Writing and Language	*H*	*AA*	*C*	*H*	*AA*	*C*	*H*
Exemplar connections/Best day and time								
Control +Math items +Difficult items			**Threat**			**Mitigation**		
AA	*C* +Difficult Writing and Language	*H*	*AA* +Difficult Writing and Language	*C*	*H*	*AA*	*C* +Difficult Writing and Language -Difficult	*H*

							Math	
Valued Exemplars/Favorite food								
Control			**Threat**			**Mitigation** +Difficult Items +Hard Writing and Language		
AA	*C*	*H*	*AA* +Difficult Writing and Language	*C*	*H*	*AA* +Difficult Items +Difficult Writing and Language +Difficult Math	*C*	*H* +All Test Items
KEY								
+/- Direction of relationship			**AA: African American**			**C: Caucasian**	**H: Hispanic**	

Figure 11. Conceptual Model of Multiple Correlation Data

Summary of Exploratory Findings

The first set of exploratory findings suggest that academic self-concept contributes to academic test performance overall, as shown in previous studies (e.g., DeFreitas & Rinn, 2013). However, a closer examination here suggested that ASC predicted performance only for Hispanic and Caucasian participants in the mitigation condition (after they had mapped their social identities).

The second set of explorations looked closely at relationships between engagement with the different mapping tasks and test performance within race/ethnicity groups. Engagement with the food mapping task in the control condition predicted test performance only for Caucasian student-athletes and mainly for their performance on difficult writing/language items. A different pattern was observed in the threat condition. Engagement with the food mapping task in the threat condition had no relationship with test performance among Caucasian participants. However, among African American student-athletes, two components of the task positively

predicted performance on difficult writing and language items. Among Hispanic participants, total engagement predicted the number of writing and language items correct. Generally, food mapping engagement predicted writing and language scores, perhaps because a general language fluency underlies both.

Looking at the identity mapping task within race/ethnicity groups, components of the task (total engagement and number of connections) predicted score on difficult writing and language items for Caucasian participants, a pattern similar to the predictions in this group in the control condition. However, within the African American group, the more valued identities listed in the map, the greater their performance on all difficult items, difficult writing and language items, and difficult math items. Within the Hispanic group, the more valued identities listed, the greater the total test score. Only identity mapping positively predicted performance on hard math items and only among African American participants. This is noteworthy since the condition by race/ethnicity interaction effect was observed for difficult math items. The methods used in this section were exploratory, yet the findings hint at a specific component of the self-concept mapping activity – listing valued identities - that may have enhanced test performance for African Americans on difficult math items.

Discussion

The main goal of this study was to explore the impact of a stereotype threat mitigation technique among Division I student-athletes on an evaluative academic task. The mitigation encouraged participants to explore their multiple social identities through a self-concept mapping activity. In addition, the study sought to explore moderators that may influence the impact of the mitigation. The study expanded the work of Gresky et al. (2005) which explored a similar self-concept mapping activity to address the experiences of stereotype threat among women during

an evaluative math task. The current investigation provides the first study to evaluate a stereotype threat mitigation strategy tailored to student-athletes.

The study investigated a technique to empower students to address negative stereotypes and stereotype threat. The issue of stereotyping and its consequences are complex, and although the recipient of the negative stereotype is not at fault, the best and immediate response to a social and psychological threat is managed internally, sometimes resulting in decreased performance in a valued area.

Stereotype Threat and Mitigation

Overall, the hypothesis that student-athletes in the control condition would perform significantly better than students in the threat condition was not supported; thus, the threat did not depress performance. Further, the mitigation did not improve performance over the threat condition (possibly since there was no effective threat to mitigate). Although not significant, mean scores show that, as predicted, student-athletes in the control condition performed better (total test score) than the student-athletes in the mitigation condition, followed by student-athletes in the threat condition.

Gender Identity

Gender identity did not impact test performance, and there was no observation of significant interactions between gender identity and conditions on any performance measure. The hypotheses in this study about gender identity were based on literature that has reported that female student-athletes are seen as the academic vanguard of the athletic community and are more affected by stereotype threat because of their presumably stronger academic self-concept.

It is noteworthy that females performed worse (but not significantly so) than males on all math items in both the threat and mitigation conditions (not in the control condition); on all

difficult items in both the threat and mitigation conditions (not in the control condition); and on difficult math items in both the threat and mitigation conditions (not in the control condition). The differences between females and males in the threat and mitigation conditions are not significant but are in the predicted directions and could be of interest to stereotype threat researchers because of the wealth of literature on women, stereotype threat, and math performance (Beasley & Fishcer, 2012; Brown & Josephs, 1999; Gresky et al., 2005; Schmader, 2001; Spencer, Steele, & Quinn, 1999)

Academic Self-Concept

As predicted, student-athletes with higher academic self-concept had significantly higher scores on the academic task than student-athletes with lower academic self-concept, specifically, on all math items, all difficult items, and difficult math items. Contrary to predictions, academic self-concept did not serve as a moderator between the experimental conditions and performance measures. Follow-up bivariate correlations identified significant positive relationships between ASCS-SF score and the abovementioned performance measures plus total test score across all conditions. However, when investigating these relationships within the different experimental conditions, academic self-concept scale scores predicted performance in the mitigation condition only and for only Caucasian and Hispanic participants, possibly suggesting that the mitigation task was successful in priming the academic self for those students and in so doing influenced performance.

The findings suggest that academic self-concept is a strong predictor of academic performance, however it does not clearly explain how the construct interacts with stereotype threat and stereotype threat mitigation strategies. Nevertheless, it appears that students in the mitigation condition were able to leverage their academic self-concept in a way that students in

the threat condition and control conditions were not. It is yet to be determined how the act of recalling, listing, and reflecting on multiple social identities buffers against attacks on one identity. The data is promising in that it could lead to directing attention to developing a student-athlete's self-concept and academic self-concept, specifically, to improve overall academic performance and combat stereotype threat. Additionally, the findings offer one potential technique to boost academic self-concept for further study (listing multiple social identities).

Race and Ethnicity

> "Today, to be sure, we know that the Negro is not biologically or mentally inferior; there is no truth in those rumors of his body or his incorrigible sexuality; or no more truth than can be easily explained or even defended by the social sciences. Yet, in our most recent war, his blood was segregated as was, for the most part, his person. Up to today we are set at a division, so that he may not marry our daughters or our sisters, nor may he – for the most part – eat at our table or live in our houses. Moreover, those who do, do so at the grave expense of a double alienation: from their own people, whose fabled attributes they must either deny or, worse, cheapen and bring to market; from us, for we require of them, when we accept them, that they at once cease to be Negroes and yet not fail to remember what being a Negro means – to remember, that is, what is means to us" (Baldwin & Morrison, 1998, pp. 20-21).

The passage is from James Baldwin's essay entitled *Many Thousands Gone*, published in 1955, which pointedly discusses the history and oppression of African Americans in the United States. Since slavery, African Americans have been treated as an inferior race, and as such, Americans are often socialized to believe negative stereotypes about African American people and their contributions to America. No other concept has caused so much division than race in

America. It is because of those deeply-rooted feelings and misconceptions about African Americans that they have experienced, currently experience, and will continue to experience violence, racism, discriminatory practices, impostor syndrome, stereotype threat in learning spaces, and other negative consequences tied to their racial identity. Of greatest interest to this study and findings is Baldwin's declaration about identity negotiation in the African American community. Baldwin discusses the challenges of belonging in a society that appropriates African American culture yet abhors African American people. Additionally, he speaks to the task of managing a dual existence (living in Black America and White America simultaneously). Specific to this study's findings, the challenges may compound experiences with stereotype threat among African American student-athletes who are attempting to negotiate roles as an African American, student, athlete (specifically a Division I athlete) at American colleges and universities.

The hypothesis that, based on previous literature about the impact of racial discrimination on academic achievement among African American student-athletes (Carter-Francique, Hart, & Cheeks, 2015), African American student-athletes would yield significantly lower scores on the academic task than Caucasian student-athletes was supported. Caucasian student-athletes performed significantly better than African American student-athletes on total items correct, math items correct, and difficult items correct. Additionally, Caucasian and Hispanic students performed significantly better than African American students on difficult math items correct. It is relevant to remember that although there were differences between race/ethnicity groups on the academic task in this study, there were no differences in reported GPA between the groups, suggesting that African American students found the testing situation, even without an explicit threat about athletes, a more stressful situation, quite possibly because of the racial stereotype

threat that is “in the air” (Steele, 1997). Importantly, the hypothesis that student-athletes in the mitigation condition would yield significantly higher scores on the academic tasks than students in the threat condition was supported only for African Americans in the area of difficult mathematics. African American student-athletes yielded significantly poorer scores than Caucasian student-athletes on difficult math items in the control condition. Additionally, African American student-athletes yielded significantly poorer scores than both Caucasian and Hispanic student-athletes on difficult math items in the threat condition. However, African American student-athletes in the mitigation condition scored significantly better than African American student-athletes in the threat condition and equally to other groups in the mitigation condition. There was no significant difference in academic performance between African American student-athletes in the control condition and African American student-athletes in the threat condition. There was a marginally significant difference between African American student-athletes in the control condition and African American student-athletes in the mitigation condition.

The findings suggest that, possibly, there was a “threat in the air” (Steele, 1997) for African American student-athletes in the control condition which may suggest that even without an explicit prime, African American student-athletes were impacted by stereotype threat. Then, the threat was compounded in the threat condition (not significantly so), yet the mitigation was effective in increasing their performance. The explicit prime about the academic ability of student-athletes could have differentially affected the African American student-athletes in the threat condition, but African American student-athletes benefitted from the mitigation strategy on difficult math items and achieved performance equal to their peers.

In general, these findings support recent research about student-athletes and math

performance when faced with stereotype threat. As mentioned earlier and worth reiterating, Riciputi and Erdal (2017) found that when student-athletes were primed with their athletic identity, they received lower math scores than student-athletes who were not primed. Also, and specific to math performance by students of color, Betty and Leyva (2016) describe mathematics as a racialized space. The researchers posit that current mathematics environments perpetuate internalized deficit beliefs among students of color. In the present study, African American student-athletes in all conditions, but especially in the threat and mitigation conditions, could have been impacted by both explicit and implicit threats to their intellectual ability compounded not only by their identity as African American, student, and athlete, but also their math identity. Racial and ethnic identity is further implicated in the findings of positive relationships between academic self-concept and test performance only for Caucasian and Hispanic participants in the mitigation condition. The findings suggest that how Caucasian and Hispanic students felt about their academic selves impacted performance in a manner that it did not for African American students in the mitigation condition, even though there were no significant differences between the groups' ASCS-SF scores.

What explains African Americans' performance on difficult math items? The African American participants in this study did not differ from other participants in GPA or academic self-concept, but only in the mitigation condition were they able to score equally with the other groups on difficult math items. For African Americans only, listing valued identities in the mitigation task predicted performance on difficult math items. The theme in this study's findings persists, suggesting that future mitigation strategies should consider variations of techniques based on identity groups.

Strengths, Limitations, and Implications

Strengths. The current study built on previous literature and expanded it to student-athletes' academic performance under stereotype threat. It tested a potential mitigation strategy and points toward formulation of robust mitigation strategies specific to this group, particularly African American student-athletes. Many evidence-based strategies exist to help resist stereotype threat in the learning environment, but none cater to the collegiate athlete, a unique and seemingly paradoxical community at colleges and universities. Another strength of the study is the intentional anti-deficit framework serving as the foundation of the experiment – a framework that hopes to uplift the student-athlete community as well as encourage practitioners to acknowledge issues in the athletic community and address them from a strengths-based and success-based approach. Further strengths are present in the experimental design and measures used in the study.

The study addressed limitations raised by Gresky and her colleagues in their study; they did not include a 'no threat control condition.' Without the comparison group they could not make a claim that the explicit stereotype threat they used led to reduced performance among their participants. The current study included a no-threat, no-mitigation control group. Also, the current study included students from both female and male sports teams since prior research has produced differing outcomes about gender identity as a moderator of the relationship between stereotype threat and academic performance. The current study found no evidence that gender identity was a main effect or a moderator.

Last, the study emphasized the role of academic self-concept on academic performance, and self-concept maps as a potential identity development tool for student-athletes and possibly all college students. The study also suggests further exploration of self-concept maps in the collegiate classroom environment. This identity development exercise is a low cost, high stakes

option that could improve academic self-concept and achievement among marginalized groups.

Limitations. The study limitations include sample profile and sample size. Trends in hypothesized directions observed in the current results may prove to be significant in a study with a larger sample. There was a slight imbalance of race/ethnicity and larger imbalance of gender identity in the present study that was not representative of Division I student-athletes nationally. The NCAA (2018) reported that the Division I student-athlete body consists of 47% females and 53% males; and 57% Caucasian and 43% student-athletes of color. The current study yielded 61% females and 39% males, and 63% Caucasian student-athletes and 37% student-athletes of color. Additionally, in this study, there was a small number of students from revenue sports (N = 8) compared to students from non-revenue sports (N = 62). These are the students who may be most affected by stereotype threat because their high visibility may place them at greater risk of being stereotyped (Simons, Bosworth, Fujita, & Jensen, 2007). The low diversity in the sample could jeopardize generalizability. Last, the study did not include a measure of athletic identity, which could have provided further insight on additional moderators that influence student-athlete stereotype threat.

Implications. The current study does not hypothesize that experiences with stereotype threat can dissipate through one exercise, yet the premise is that the exploration of multiple social identities over time could serve as a positive strategy for identity development, meaningful identity activation, and identity appreciation. Griffin (2017), in her qualitative study on African American male collegiate football players, shared a quote from one of the study participants who stated: “I love playing football. I hate being a football player.” This sentiment highlights athletic identity conflict and the balancing act that must be performed daily by student-athletes. The study offers an opportunity for the higher education community to dismantle this dichotomous

thinking (e.g., only student or athlete) and address challenges that may arise using approaches that acknowledge the full range of social identities that students possess. Specifically, results from this study help 1) identify potential stereotype threat mitigation strategies for student-athletes, 2) extend our understanding of the influence of academic self-concept and race/ethnicity on academic performance, and 3) explore potential moderators, particularly race/ethnicity, in the relationship between stereotype threat mitigation and academic performance among student-athletes.

A practical application of this study's findings could include incorporating identity exploration activities in NCAA Life Skills programs. Also, coaches could encourage activities beyond the athletic facilities. Academic advisors could join in this effort with the coaches and implement an internal competition between teams to promote involvement in extracurricular activities outside of their sport. Specifically, greater attention could be placed on student-athletes of color. As Barack Obama stated in his discussion about his *My Brother's Keeper* initiative, students of color do not suffer from an achievement gap, rather an opportunity gap. There is a need for culturally-aware student-athlete development support staff to create, implement, and revise culturally-specific academic programming. The goal of these proposed ideas is to allow student-athletes to explore and develop multiple social identities.

Future Directions

The study focused on building a model for mitigating stereotype threat among Division I student-athletes. The findings of the study suggest that mitigation strategies may be most effective if they are culturally specific and specific to a certain task. First, future studies could explore the mitigation strategy among affinity groups separately, for example, African American students, females, international students, and students who receive athletic scholarships. The

current mitigation strategy may help buffer stereotype threat to some degree, but it seems beneficial to tailor the mitigation strategy to meet the needs of a specific population. To reach that goal, the literature on student-athlete stereotype threat could benefit from a qualitative investigation of student-athletes' perceptions of stereotype threat and their opinions on how to combat it. The student voice could be critical in establishing robust identity development exercises and subsequent mitigation strategies.

Second, further investigation should be conducted on the impact of specific mapping components to provide a possible rationale for how these areas functioned as stereotype threat deterrents on test performance. Also, a mixed-method study focused on exploring the differences between the ethnic groups and the identities they include on their maps could contribute to future understanding.

Last, in future studies it would be beneficial to explore the use of an implicit priming technique instead of the explicit priming technique. The inclusion of more students from revenue sports could also strengthen the findings. A comparison between Division I, III, and III student-athletes would provide insight on the differences of stereotype threat experiences and the potential mitigation strategy across athletic divisions; and a similar comparison between revenue and nonrevenue sports participants. Additionally, future research could further explore academic self-concept and explore athletic identity as moderators for the relationship between stereotype threat mitigation strategies and academic performance among student-athletes. To end, future research could explore the extent to which the current study and findings apply to student-athletes of all levels (youth sport, high school, professional).

Conclusion

The student-athlete experience *can* consist of academic achievements, immediate and

strong support systems, lifelong community, and holistic personal and professional development; *if* it is intentionally designed to do so. The design should include a focus on social factors and psychological factors that lead to success. The current study focused on a socio-psychological factor, stereotype threat, that could hinder the variety of benefits inherent to the Divison I athletic experience. This study provides a glimpse into the impact that engaging student-athletes in activities that allow them to explore their interests, and understand their worth beyond the classroom or sports complex, may have on overall development. Specifically, identity development activities may significantly benefit students of color who may deal with compounded stereotypes as a contingency of their race/ethnicity and student status (e.g., student-athlete) in learning environments. For example, this study's findings showed that African American student-athletes outperformed other African American student-athletes on difficult math items when they participated in an identity development exercise in which the latter group did not. Further exploration provided some indication that reflecting on valued identities enhanced academic performance among African American student-athletes.

The 'dumb jock' stereotype is pervasive, unfair, harsh, and unnecessary. It does not celebrate the multiple social identities held by student-athletes. These bright, capable, and hopeful students are not *your* student-athlete; they are learners, brothers, aunts, cousins, musicians, and future doctors. With the proper resources, they can become change agents in a world in desperate need of leaders.

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APPENDICES

Appendix A

Consent Form

Georgia State University
Informed Consent

Title: Exploring the Experiences of Students Participating in Extracurricular Activities on College Campuses
Principal Investigator: Ann Kruger, Ph.D.
Student Principal Investigator: Jacob English, M.S.

Purpose

The purpose of the study is to explore the experiences of students participating in extracurricular activities on college campuses. You are invited to take part in this research study because you are a student-athlete enrolled at Georgia State University for the fall 2018 semester and participating on an NCAA-sponsored sports team. Approximately 389 participants will be recruited for this study. Participation will require you to complete one 10-15-minute survey online about academic self-concept and participate in one experimental 1-hour workshop which consists of a survey and some cognitive tasks.

Procedures

If you decide to take part, you will be asked to complete two related activities. The first activity is one 10-15-minute online survey exploring academic self-concept. The survey will be followed by a 1-hour workshop on the campus of Georgia State University during this semester. During the workshop, you will be asked to engage in a mapping activity and take an academic test. We will not tell you everything about the study in advance. When the study is over, we will tell you everything. At that time, you can choose whether you want to allow us to use the information/responses you have provided.

You will interact with the Student Principal Investigator and a student research assistant throughout the length of the experiment. The following procedures are experimental: mapping activity; and academic evaluation.

Future Research

Researchers will remove information that may identify you and may use your data for future research. If we do this, we will not ask for any additional consent for you.

Risks

In this study, you will not have any more risks than you would in a normal day of life.

Benefits
This study is not designed to benefit you personally. Overall, we hope to gain information about the experiences of college students who participate in extracurricular activities.

Compensation

You will receive a $40 Amazon gift card for participating in this study, which will be distributed at the end of the 1-hour workshop.

Alternatives
The alternative to taking part in this study is to not take part in the study.

Voluntary Participation and Withdrawal

You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time. You may refuse to take part in the study or stop at any time; this will not cause you to lose any benefits to which you are otherwise entitled.

Confidentiality

We will keep your records private to the extent allowed by law. The following people and entities will have access to the information you provide:

- Principal Investigator: Ann Kruger, Ph.D.
- Student Principal Investigator: Jacob English, M.S.
- GSU Institutional Review Board
- Office for Human Research Protection (OHRP)

Names and email addresses will be collected at the time of consent. However, that identifiable information will be stored separately from all other subject data. We will use a study number rather than your name on study records. A code linking name to a study identification will be stored separately in a third secure location. The survey information will be stored in Qualtrics and will only be accessed by Dr. Ann Kruger and Jacob English using a password. Researchers with access to nonidentifiable data will not have access to the identifiable data. Analyzed data will be stored on a firewall-protected, password-secured, encrypted computer in the office of Mr. Jacob English. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally. At the conclusion of the study, all identifiable data will be destroyed.

Contact Information

Contact Dr. Ann Kruger by phone at 404-413-8040 or by email at ackruger@gsu.edu; or Mr.

Jacob English by phone at 404-413-5907 or by email at jacobenglish@gsu.edu:

- if you have questions about the study or your part in it
- if you have questions, concerns, or complaints about the study

Contact the GSU Office of Human Research Protections at 404-413-3500 or irb@gsu.edu:

- if you have questions about your rights as a research participant
- if you have questions, concerns, or complaints about the research

Consent

Upon request, we will give you a copy of this consent form to keep. You can print out a copy of this consent form to keep.

If you are willing to volunteer for this research, please indicate below by pressing the "Agree" button.

_____
Printed Name of Participant

_____ _____
Signature of Participant Date

_____ _____
Principal Investigator or Researcher Obtaining Consent Date

Appendix B

Phase 1: Pre-Experiment Recruitment Email

Subject: Study Invitation for Student-Athletes (Part 1 of 2)

Hello [Student Name]:

You are invited to participate in a research study exploring the experiences of students participating in extracurricular activities on college campuses. You have been selected because you are enrolled at [University] during the fall 2018 semester and participating on a NCAA-sponsored sports team. Your participation in this study will require you to complete a 10-15-minute survey online about academic self-concept and attend a 1-hour workshop on campus which includes a brief survey and some cognitive tasks. You will receive a $40 Amazon gift card at the conclusion of the workshop to demonstrate respect and appreciation for your time and effort to complete the study.

- **Location of Study:** Classroom on campus
- **Timing of Study:** Early-Mid January (based on your availability)

If you wish to participate, please click on the link below. This link will direct you to a consent form. After carefully reading the consent form you will have the opportunity to click on "Agree." By clicking "Agree" you are providing your consent to participate in the study and will be directed to the survey questions.

Results from this study will provide valuable information to inform students, instructors, colleges, and universities as programs are developed. We will keep the information you provide and your identity private.

Your participation in this study is absolutely voluntary. Please contact me directly at jacobenglish@gsu.edu for more detailed information. Thank you.

[Survey link]

Best,
Jacob English, M.S.
Student Principal Investigator
Department of Learning Sciences
College of Education and Human Development

Appendix C

Phase 2: Experiment Recruitment Email

Subject: Study Invitation for Student-Athletes (Part 2 of 2)

Hello [Student Name]:

Thank you for agreeing to participate in the study exploring the experiences of students participating in extracurricular activities on college campuses. You will receive a $40 Amazon gift card for participating in this study, which will be distributed at the end of the 1-hour workshop. Below is the information that you need to participate in the second part of the study. Please use the link below to select a time to participate in the study.

- Location: Classroom on campus
- Duration: 1 hour

[Sign Up Link]

I will send you a confirmation email, once your registration is complete.

Once you arrive at the <location>, you will be greeted by a research assistant and given a number that you will use throughout the study instead of using your name on study documentation. This is to protect your privacy.

As a reminder, results from this study will provide valuable information to inform students, instructors, colleges, and universities as programs are developed.

If you have any questions before the day of the experiment, please contact me directly at jacobenglish@gsu.edu for more information. Thank you.

Best,

Jacob English, M.S.
Student Principal Investigator
Department of Learning Sciences
College of Education and Human Development

Appendix D

Academic Self-Concept Scale Short Form (Reynolds, 1988, 2010)

For information on obtaining a copy of the Academic Self-Concept Scale Short Form (ASCS-SF), contact: William Reynolds,

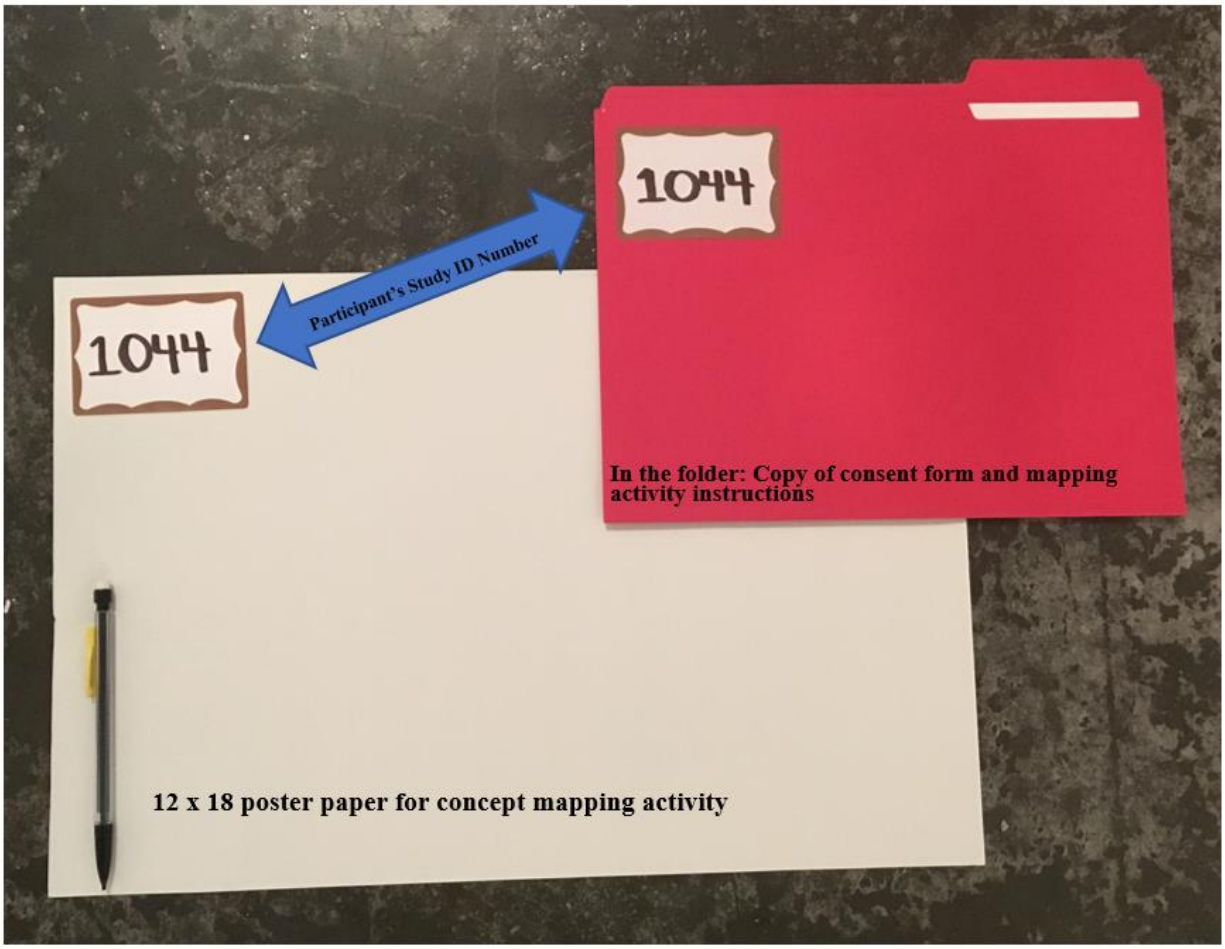
Professor Emeritus of Psychology

Humboldt State University

BSS 527 Arcata, California 95521

Appendix E

Student Materials for all Experimental Conditions



Appendix F

Self-Concept Map Instructions (Mitigation condition)

Self-Concept Mapping Activity

Self-concept mapping activities provide a visual tool to elaborate on a topic.

Instructions

1. You will have 20 minutes to create your map.
2. Think about your interests and your social identities. Select and write down categories from the list below that relate to your social identities and interests. Separate the categories in their own areas on the paper. There is no limit on the number of categories that you select.

    - Art
    - Dance
    - Ethnicity/Race/Nationality
    - Family
    - Gender identity
    - Music
    - Occupation
    - Organizations/Clubs/Affiliations
    - Politics
    - Relationships
    - Religion
    - School
    - Sports
    - Other (Specify)

3. Now, reflect and write down a list of identities or roles related to the categories you selected. Write your list under the selected categories. For example, if you select Family as a category, you could list son, brother, uncle etc. as identities or roles that you highly value in your life; or if you select Relationships as a category, you could list friend, girlfriend/boyfriend, business partner etc. as identities or roles that you highly value in your life.
4. Draw a line between identities or roles that you feel are connected. Not the categories.

5. Place a star next to the identities that are most significant to your overall identity.
6. Please write “Me” at the center of your map.

Appendix G

Alternate Map Instructions (Food Map: Threat and Control conditions)

Mapping Activity

Mapping activities provide a visual tool to elaborate on a topic.

Instructions

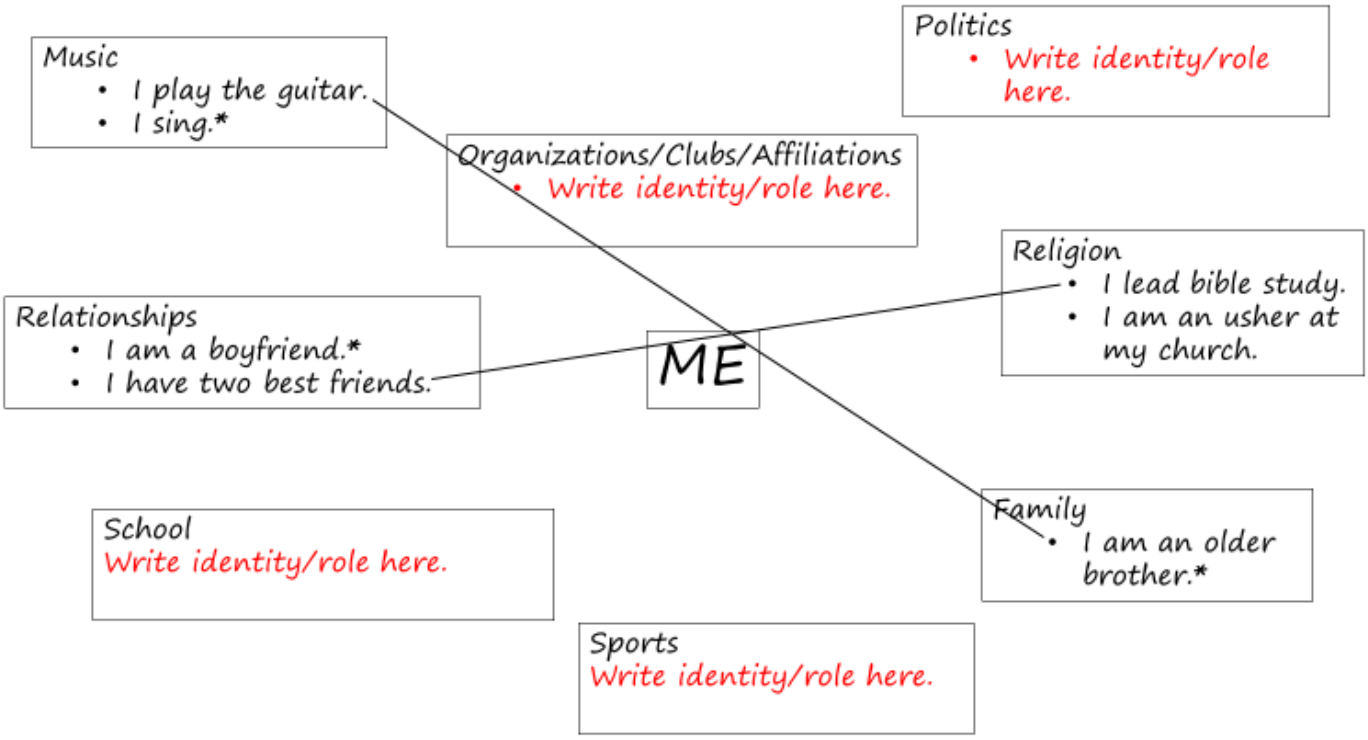
1. You will have 20 minutes to create your map.
2. Think about your favorite and most visited places to eat. Select and write down categories from the list below related to those places. Separate the categories in their own areas on the paper. There is no limit on the number of categories that you select.

    - Coffee Shop
    - Delivery
    - Diner
    - Family member's house
    - Fast Food
    - Grocery Store
    - Health Food Store
    - Restaurant
    - Other (Specify)

3. Now, write down a list of items that you recently purchased or ate. Write your list under the selected categories.
4. Write down the best day and time to visit the locations you listed.
5. Place a star next to your favorite food items.
6. Please write "Food" at the center of your map.

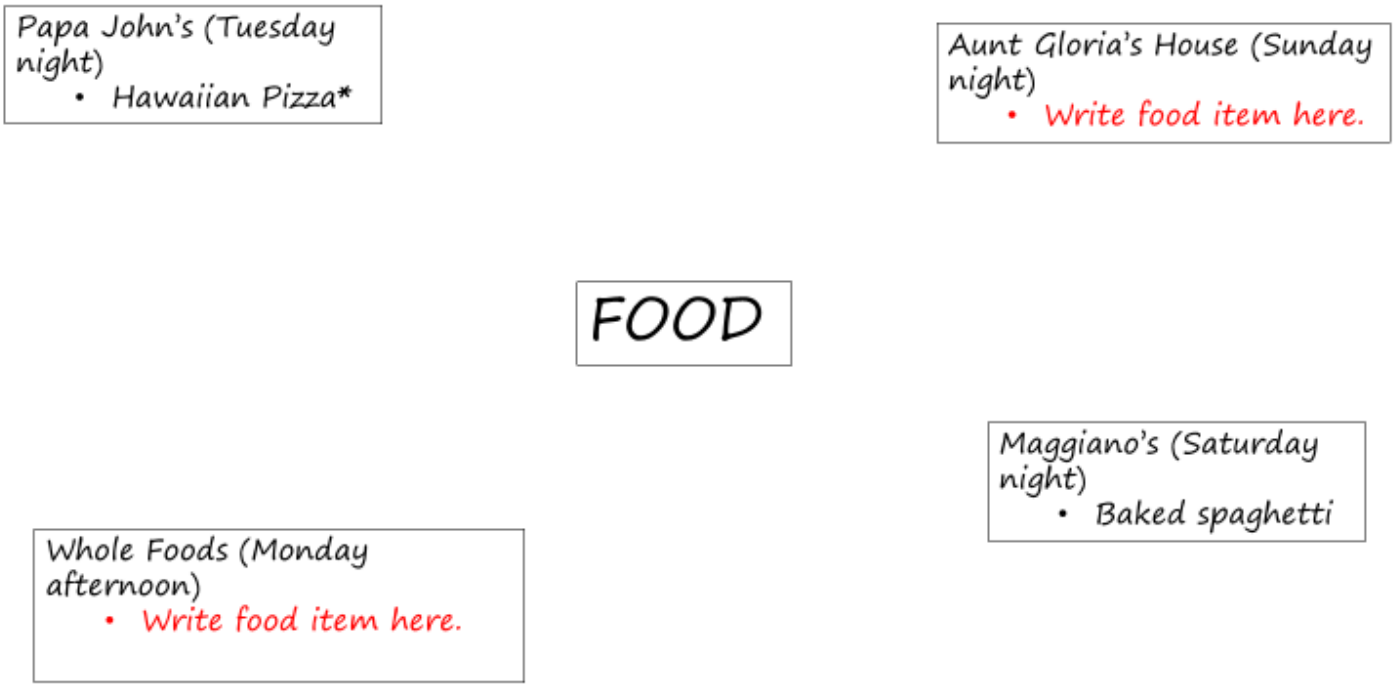
Appendix H

Experiment Facilitator Example of Self-Concept Map (Mitigation condition)



Appendix I

Experiment Facilitator Example of Alternate Map (Threat and Control conditions)



Appendix J

SAT-style Academic Examination

Academic Examination

THIS TEST BOOK MUST NOT BE TAKEN FROM THE ROOM. UNAUTHORIZED REPORDUCTION OR USE OF ANY PART OF THIS TEST BOOK IS PROHIBITED

Writing and Language Section

Instructions

The passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

After reading the passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a "NO CHANGE" option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Each question will direct you to an underlined portion of a passage. A pair of brackets containing an uppercase *Q* and a number — for example, [Q1] — indicates that a question refers to that location in the passage or the following underlined portion of the passage.

A Life in Traffic

A subway system is expanded to provide service to a growing suburb. A bike-sharing program is adopted to encourage nonmotorized transportation. [Q1] To alleviate rush hour traffic jams in a congested downtown area, stoplight timing is coordinated. When any one of these changes [Q2] occur, it is likely the result of careful analysis conducted by transportation planners.

The work of transportation planners generally includes evaluating current transportation needs, assessing the effectiveness of existing facilities, and improving those facilities or [Q3] they design new ones. Most transportation planners work in or near cities, [Q4] but some are employed in rural areas. Say, for example, a large factory is built on the outskirts of a small town. Traffic to and from that location would increase at the beginning and end of work shifts. The transportation [Q5] planner's job,might involve conducting a traffic count to determine the daily number of vehicles traveling on the road to the new factory. If analysis of the traffic count indicates that there is more traffic than the [Q6] current road as it is designed at this time can efficiently accommodate, the transportation planner might recommend widening the road to add another lane.

Transportation planners work closely with a number of community stakeholders, such as government officials and other interested organizations and individuals.
[Q7] Next, representatives from the local public health department might provide input in designing a network of trails and sidewalks to encourage people to walk more. [Q8] According to the American Heart Association, walking provides numerous benefits related to health and well-being. Members of the Chamber of Commerce might share suggestions about designing transportation and parking facilities to support local businesses.

[Q9] People who pursue careers in transportation planning have a wide variety of educational backgrounds. A two-year degree in transportation technology may be sufficient for some entry-level jobs in the field. Most jobs, however, require at least a bachelor's degree; majors of transportation planners are [Q10] varied, including fields such as urban studies, civil engineering, geography, or transportation and logistics management. For many positions in the field, a master's degree is required.

Transportation planners perform critical work within the broader field of urban and regional planning. As of 2010, there were approximately 40,300 urban and regional planners employed in the United States. The United States Bureau of Labor Statistics forecasts steady job growth in this field, [Q11] projecting that 16 percent of new jobs in all occupations will be related to urban and regional planning. Population growth and concerns about environmental sustainability are expected to spur the need for transportation planning professionals.

Adapted from *United States Bureau of Labor Statistics, Employment Projections Program.* "All Occpuations" includes all occupations in the United States economy.

1. **For [Q1]: Which choice best maintains the sentence pattern already established in the paragraph?**
   A. NO CHANGE
   B. Coordinating stoplight timing can help alleviate rush hour traffic jams in a congested downtown area.
   C. Stoplight timing is coordinated to alleviate rush hour traffic jams in a congested downtown area.
   D. In a congested downtown area, stoplight timing is coordinated to alleviate rush hour traffic jams.

2. **For [Q2]: Select an Answer**
   A. NO CHANGE
   B. occur, they are
   C. occurs, they are
   D. occurs, it is

3. **For [Q3]: Select an Answer**
   A. NO CHANGE (they design)
   B. to design
   C. designing
   D. design

4. **For [Q4]: Which choice results in the most effective transition to the information that follows in the paragraph?**
   A. NO CHANGE
   B. where job opportunities are more plentiful.
   C. and the majority are employed by government agencies.

D. DELETE the underlined portion and end the sentence with a period.

5. **For [Q5]: Which choice best maintains the sentence pattern already established in the paragraph?**
   A. NO CHANGE
   B. planner's job
   C. planners job,
   D. planners job

6. **For [Q7]: Select an Answer**
   A. NO CHANGE
   B. For instance,
   C. Furthermore,
   D. Similarly,

7. **For [Q9]: Select an Answer**
   A. NO CHANGE
   B. People, who pursue careers in transportation planning,
   C. People who pursue careers, in transportation planning,
   D. People who pursue careers in transportation planning,

8. **For [Q10]: Select an Answer**
   A. NO CHANGE
   B. varied, and including
   C. varied and which include
   D. varied, which include

9. **For [Q11]: Which choice completes the sentence with accurate data based on the graph?**
   A. NO CHANGE
   B. warning, however, that job growth in urban and regional planning will slow to 14 percent by 2020.
   C. predicting that employment of urban and regional planners will increase 16 percent between 2010 and 2020.
   D. indicating that 14 to 18 percent of urban and regional planning positions will remain unfilled.

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

Mathematics Section

Instructions

For questions 10 through 18, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet.

10. Which of the following numbers is less than 0.216
    A. 0.221
    B. 0.2161
    C. 0.2166
    D. 0.2106
    E. 0.22

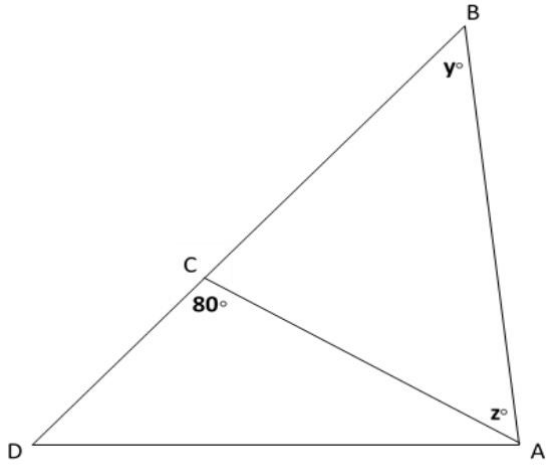
11. If 2t=8and 3s+t=13, what is the value of s?
    A. 2
    B. 3
    C. 5
    D. 4
    E. 6

12. If the degree measures of the three angles of a triangle are 50°, z°, and z°, what is the value of z?
    A. 75
    B. 80
    C. 65
    D. 60
    E. 70

13. If k is an odd integer, what is the greatest odd integer less than k?
    A. 2(k−1)
    B. k−1
    C. 2(k−1)−3
    D. k−2
    E. k−3

14. If 8 less than y is 3 more than 9, what is the value of y?
    A. -4
    B. 24
    C. 35

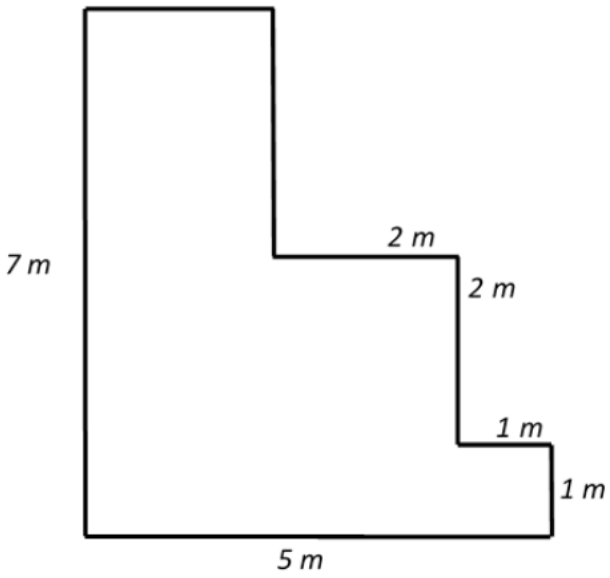
D. -19
E. 20



15. In ΔABD above, if y=35, what is the value of z?
    A. 40
    B. 30
    C. 45
    D. 25
    E. 35

16. How many seconds are required for a bicycle to go 2 miles at a constant speed of 4 miles per hour?
    A. 1200
    B. 1800
    C. 2400
    D. 3600
    E. 3000

17. If 15x+55y=35, what is the value of 3x+11y?
    A. 15
    B. 30
    C. 14
    D. 7
    E. 8



Note: Figure not drawn to scale.

18. What is the area of the figure above?

A. 23 m^2
B. 19 m^2
C. 21 m^2
D. 17 m^2
E. 15 m^2

Appendix K

Demographic Survey

1. Study Identification Number:

2. How do you describe yourself?
    - Female
    - Male
    - Write in:

3. What categories describe your race/ethnicity? Select all boxes that apply.
    - American Indian or Alaska Native
    - Asian
    - Black or African American
    - Hispanic, Latino or Spanish Origin
    - Middle Eastern or North African
    - Native Hawaiian or Other Pacific Islander
    - White
    - Write in:

- What is your age?
    - 17
    - 18
    - 19
    - 20
    - 21
    - 22
    - 23
    - 24
    - 25
    - Write in:

4. What is your classification?
    - Freshman
    - Sophomore
    - Junior
    - Senior

5. What is your major?
    - Write in:

6. What is your grade point average?
    - 4.00 or higher
    - 3.80 – 3.99
    - 3.60 – 3.79
    - 3.40 – 3.59
    - 3.20 – 3.39
    - 3.00 – 3.19
    - 2.80 – 2.99
    - 2.60 – 2.79
    - 2.40 – 2.59
    - 2.20 – 2.39
    - 2.00 – 2.19
    - 1.99 or lower

7. If you are on a sports team, what sport team are you on:
    - Men's Baseball
    - Men's Basketball
    - Women's Basketball
    - Women's Beach Volleyball
    - Women's Court Volleyball
    - Women's Cross Country
    - Men's Football
    - Men's Golf
    - Women's Golf
    - Men's Soccer
    - Women's Soccer
    - Women's Softball
    - Men's Tennis
    - Women's Tennis
    - Women's Track and Field
    - Write in:

Appendix L

Debrief Email

Subject: Study Follow-Up

Hello [Student Name],

Thank you for participating in the recent study exploring the experiences of student-athletes on college campuses. When you signed your consent form, you acknowledged that you understood that the researchers needed to withhold certain details about the study to ensure that we could answer our research questions and better inform the development of positive models, programs, and initiatives for student-athletes. The study is complete, and I would like to share with you details about the study.

The study did explore the experiences of student-athletes. During the study, you may have heard the statement: “I’m exploring performance on the exam that you will take today. In the past, student-athletes have not performed as well as other students nationally. I will compare test performance of student-athletes and nonstudent-athletes.” The statement was not true, because we did not test the exam among other college students. We have no evidence that student-athletes performed differently on this test or any other standardized test than their peers. We made no such comparison. The reason we used that false statement was to create a situation like in real life. Some student-athletes hear negative stereotypes about their academic abilities, and it can affect their performance. We wanted to recreate that experience to explore whether different mapping activities could reduce the negative effects of the stereotype.

Please let me know if you have any questions. I am happy to share with you the full report once it is complete. As a reminder, your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally.

You are not required to respond to this message. You should only respond if you would like your data removed from the study or if you have any questions.

Best,

Jacob English, M.S.
Student Principal Investigator
Department of Learning Sciences
College of Education and Human Development