Stereotype threat is defined as being at risk of confirming a negative stereotype about the group(s) to which one belongs (Steele & Aronson, 1995). In the original study on stereotype threat, Steele and Aronson (1995) found that when African American participants were told that a difficult verbal test was a measure of their intellectual ability, they performed worse than White participants. However, when the test was presented as less reflective of their intellectual ability, African American participants’ performance matched that of White participants. They also found that the stereotype alone, without the diagnostic presentation of the test, impaired performance among African Americans who were asked to report their race on a demographic form before taking the test. Steele and Aronson (1995) suggested that these findings are a result of stereotype-threatened participants “alternating their attention between trying to answer the items and trying to assess the self-significance of their frustration” (p. 809), thereby reducing both speed and accuracy on standardized tests. Since the original study, there have been over 300 studies conducted on stereotype threat. Stereotype threat has been used to help explain the achievement gap between African American and White students. Furthermore, research has shown that stereotype threat influences other domains besides academics.

Roberson, Deitch, Brief, and Block (2003) found that stereotype threat influences feedback seeking and feedback acceptance among African Americans in the workplace. They asked African American professionals to fill out a survey that inquired about solo status (being the only minority member of their work group), stereotype threat, feedback-seeking strategies (directly asking and seeking information about their performance), and feedback discounting (attributing their manager’s evaluation of their performance to the manager’s racial prejudices). Results revealed that there were positive relationships between solo status and perceptions of stereotype threat, stereotype threat and a greater degree of feedback discounting, and stereotype threat and a monitoring strategy for seeking feedback. The authors suggested that there was a positive relationship between solo status and perceptions of stereotype threat because being the only member of a racial group in a company increases the salience of identity group membership, making that minority member more vulnerable to stereotype threat. This finding also helps explain the significant relationship between stereotype threat and the increased use of a monitoring strategy for feedback and feedback discounting because it increases the salience of race and racial stereotypes among interactions of the solo status individuals and their managers.

Bosson, Haymovitz, and Pinel (2004) found that stereotype-threatened gay men demonstrated more nonverbal anxiety than nonthreatened gay men during their interactions with preschool children. Stereotype threat also influences social interactions between minorities and nonminorities (Goff, Steele, & Davies, 2008), and even the performance of nonminorities on the Racial Implicit Association Test (Frantz, Cuddy, Burnett, Ray, & Hart, 2004). In addition, studies have shown that a history of stigmatization is not necessary for individuals to experience stereotype threat (Aronson et al., 1999; Leyens, Désert, Croizet, & Darcis, 2003). Faculty mentor: David B. Porter
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2000). For example, Aronson et al. (1999) found that when White men were told that their performance on a math test would be compared to that of Asian men they performed significantly worse than White men in a control group.

There has also been substantial research about the relationship between stereotype threat and performance. For instance, Schmader (2002) found that performance was significantly impaired only among women who strongly identified with their gender group when taking a math test investigating gender differences. Brown and Pinel (2003) found that women with high scores on a stigma consciousness scale (Pinel, 1999; as cited by Brown & Pinel, 2003) in the stereotype threat condition showed a performance decrement on the math test, whereas the math test performance among women with low scores on the stigma consciousness scale in the same condition was unaffected. Aronson et al. (1999) suggested that people who considered a particular domain important were the ones who were most likely to be affected by stereotype threat. These studies suggest that group identification, stigma consciousness, and the importance of the task, moderate the relationship between stereotype threat and performance outcomes.

Although he did not study stereotype threat in particular, Rotter (1966) examined the influence on performance of another variable, locus of control. Locus of control is defined by the extent to which individuals attribute their performance to internal or external forces (Rotter, 1966). Individuals with an internal locus of control believe that outcomes are contingent upon their own behavior or personal characteristics (Rotter, 1966). Internal locus of control is usually associated with greater academic and vocational achievement, greater persistence, greater ability to delay gratification, less emotional maladjustment, higher self-esteem, and more satisfying interpersonal relationships (Lefcourt, 1992). Individuals with an external locus of control believe that outcomes are a function of chance, luck, fate, or under the control of powerful others (Rotter, 1966). External locus of control is usually associated with lower academic and vocational achievement, less persistence, less ability to delay gratification, more emotional maladjustment, lower self-esteem, and less satisfying interpersonal relationships (Lefcourt, 1992).

Cadinu, Maass, Lombardo, and Frigerio (2006) argued that individuals with an internal locus of control are generally more competent and more motivated to perform well on tasks and are therefore more vulnerable to stereotype threat. The authors also postulated that individuals with an internal locus of control take full responsibility for their own success and failure, making them even more vulnerable to stereotype threat. Cadinu et al. found that, in fact, individuals with an internal locus of control did show a sharper decrease in their performance in the stereotype threat condition compared to individuals with an external locus of control.

Although Cadinu et al. (2006) provided support for the increased stereotype threat effect for individuals with an internal locus of control, research also suggests that individuals with an external locus of control are more vulnerable to social influences, images, and messages (Avtgis, 1998; Fouts & Vaughan, 2002; Nowicki & Strickland, 1973). These findings suggest that individuals with an external locus of control are more likely to be influenced by social factors (e.g., stereotypes) and thus are more susceptible to experiencing stereotype threat. This line of research suggests that individuals with an internal locus of control would have a greater ability to overcome the negative effects of stereotype threat, whereas individuals with an external locus of control would be less able to do so. In fact, this idea was reflected in the original study on stereotype threat:

If the student perceives that a significant portion of the test is within his or her competence, it may preempt or override stereotype threat by proving the stereotype inapplicable. When the student cannot gain this perception, however, the group stereotype becomes relevant as an explanation and may undermine performance. (Steele & Aronson, 1995, p. 810)

This argument suggests that individuals with an external locus of control are more vulnerable to stereotype threat than those with an internal locus of control because they are more heavily influenced by social messages and therefore lack the ability to prove the stereotype wrong, which leads to impaired performance. The present study was designed to examine whether individuals with an external locus of control would perform worse than those with an internal locus of control in the stereotype threat condition. In addition, based on previous research (Lefcourt, 1992), I hypothesized that participants with an internal locus of control would perform better than those with an external locus of control, overall. I also hypothesized that participants of both races in the control condition would perform better than those in the stereotype threat condition.

Method

Participants
Sixty undergraduate students (20 men and 40 women) were recruited for participation in this study. The participants consisted of 28 African American students...
and 32 White students. There were 24 freshmen, 19 sophomores, 9 juniors, and 8 seniors. The majority of the participants were recruited from introductory courses on a small liberal arts college campus in the Midwest. Others were recruited from campus-wide flyers. The treatment of participants was in accordance with the ethical standards of the APA.

Materials
In this study, the materials consisted of a consent form, demographic questionnaire, Pettijohn’s (1990) version of Rotter’s locus of control survey (http://198.45.22.27/connectext/psy/ch11/survey11.mhtml) and an online version of Simon Says (http://www.gizdic.com/ freegames/gamespages/simonsays.htm). The demographic questionnaire asked for the academic classification, race, and gender of the participant. Although Rotter’s locus of control survey was online, students filled out the paper version and then the experimenter entered the information on the website. The survey consisted of 21 questions that were each scored on a 100 point scale, in which 0 represented the strongest external locus of control and 100 represented the strongest internal locus of control. There were five categories of locus of control: very strong external locus of control (0–15 points), external locus of control (20–35 points), internal and external locus of control (40–60 points), internal locus of control (65–80 points) or very strong internal locus of control (85–100 points). Participants used their personal laptop computers to play the online Simon Says game. This game requires participants to observe and then repeat increasingly lengthy strings of color response sequences. Participants were provided with a data sheet that had instructions on how to play the game and space to record their scores. Game performance was measured by the median of scores received on three rounds of the Simon Says computer game.

Design
The independent variables were type of instructions and the subjects’ locus of control. The two levels of the type of instructions were stereotype threat condition versus no stereotype threat (control) condition. The stereotype threat condition participants were given standard instructions and exposed to stereotype threat based on their race. African American participants were told that Simon Says was a measure of their intellect and Whites were told that Simon Says was a measure of their coordination and rhythm ability. Research in this area suggests that common stereotypes about African American individuals (Jencks & Phillips, 1998) and White individuals (Shipler, 1997) are that they lack intelligence and rhythmic ability, respectively.

Procedure
Individuals were tested in one of four group sessions, each of which consisted of 15 participants. Participants entered the classroom and were asked to set their laptop up and complete the consent form. While participants were setting up, the experimenter randomly chose the word “control” or “stereotype threat” out of a bucket. This determined the type of instructions that the participant would receive. Participants were given a demographic questionnaire, Rotter’s Locus of Control survey, and a data sheet. After participants filled out the demographic questionnaire and Rotter’s Locus of Control survey, instructions at the bottom of the survey advised participants to raise their hand for further instructions from the experimenter. The experimenter then told participants to go to the Simon Says webpage on their laptop and play the game for 3 min as a warm up and to record their scores. Once this was completed, participants were instructed by the experimenter to turn the page to the data sheet and read the instructions out loud. The experimenter asked each participant to verbally summarize the results and to mention what the task was assessing (if the participant was in the stereotype threat group). This was done to emphasize the statement designed to induce stereotype threat (stereotypes suggesting that African American individuals lack high levels of intelligence (Jencks & Phillips, 1998) and White individuals lack rhythmic ability (Shipler, 1997)). Once participants read through and summarized the instructions (and the embedded stereotype threat, if they were in the experimental group), participants began to play Simon Says and recorded their scores for three rounds. After participants recorded their scores and any comments or questions they had about the study, the experimenter collected their surveys, questionnaires, and data sheets. Finally, participants were given an opportunity to ask questions about the study and were informed that their name was entered in a drawing for one of seven $10 Walmart gift cards.

Results
There were five categories of locus of control, very strong external locus of control (0–15 points), external locus of control (20–35 points), internal and external locus of control (40–60 points), internal locus of control (65–80 points) or very strong internal locus of control (85–100 points) that were collapsed into two categories, more external (0–50) or more internal (51–100), due to the small number of participants in each category. Of the 60 participants, 58 were categorized as more external, and two as more internal. A 2 x 2 x 2 analysis of variance (ANOVA) was conducted to determine the overall effects of race, condition, and locus of control. A 2 x 2
x 2 ANOVA revealed that there were no overall effects of race, condition, or locus of control.

Means of the Simon Says scores were compared via t-tests. Participants with an internal locus of control \((M = 8.43, SD = 4.57, n = 54)\) did not perform significantly better than those with an external locus of control \((M = 5.33, SD = 2.16, n = 6)\). However, participants in the control condition \((M = 9.93, SD = 5.08, n = 30)\) performed significantly better than those in the stereotype threat condition \((M = 6.30, SD = 2.83, n = 30)\), \(t(58) = -3.42, p < .01\). Participants with an external locus of control \((M = 4.80, SD = 1.92, n = 5)\) did not perform significantly worse than those with an internal locus of control \((M = 6.60, SD = 2.91, n = 25)\) in the stereotype threat condition. Although African American \((M = 7.06, SD = 2.41, n = 17)\) and White \((M = 5.31, SD = 3.11, n = 13)\) participants performed slightly worse in the stereotype threat condition, that difference only approached significance, \(t(28) = 1.74, p = .09\). Participants with an external locus of control \((M = 8, n = 1)\) did not perform significantly worse than those with an internal locus of control \((M = 10, SD = 5.16, n = 29)\). African American \((M = 11.13, SD = 5.07, n = 15)\) and White \((M = 8.73, SD = 4.98, n = 15)\) participants in the control condition did not significantly differ on performance.

**Discussion**

Hypotheses on locus of control were not supported in the present study. However, 97% of the sample had an internal locus of control, which did not allow for a fair comparison of results between them and people who had an external locus of control. Given that research suggests that individuals with an internal locus of control are highly motivated and take their academic work seriously (Lefcourt, 1992), it is possible that these people are more likely to be at a university than those with an external locus of control. Therefore, future research should take place in other settings where more balanced numbers of individuals from both groups are likely to be found. More participants would allow full use of the entire five-category locus of control scale with adequate numbers of participants in each category.

Although research on locus of control was not supported in this study, findings did confirm that stereotype threat impairs performance. However, research suggests that individuals must know the stereotype of their group, identify themselves as a member of that group, and be concerned about what others will think of their performance on a specific task (Steele & Aronson, 1995). Although participants recorded group membership on the demographic form (e.g., African American or White), there were no data collected on whether or not the participants were familiar with the stereotype about their group or if they considered the task to be important. Furthermore, there were no data collected on how strongly participants identified with their racial group. Therefore, future research should include an objective measure of these three criteria set forth by Steele and Aronson (1995).

Results did support a major finding in the literature (Aronson et al., 1999; Leyens et al., 2000) that a history of stigmatization is not necessary for individuals to experience stereotype threat. African American and White participants were both negatively influenced by stereotype threat. A great deal of research supports the existence of stereotype threat and its existence among all groups. Therefore, it is important to focus on ways to reduce stereotype threat to improve everyone’s performance.

Steele and Aronson (1995) suggested that reframing academic tasks, such as standardized tests, would help reduce stereotype threat. In their original study, they found that changing the assumed diagnosticity of the test contributed to better performance among African Americans. However, it is unrealistic to remove the diagnosticity from tests in educational settings, therefore Quinn and Spencer (2001) suggested that language should be added to the introduction of the test that assures people that the test is fair (i.e., assuring women that a test is gender fair). In addition, research suggests that not emphasizing threatened social identities helped to reduce stereotype threat.

Ambady, Paik, Steele, Owen-Smith, and Mitchell (2004) found that when women were encouraged to think of their positive attributes before taking a math test, they were less likely to experience stereotype threat. Stricker and Ward (2006) found that asking participants to report their demographic information at the end of the testing session reduced the effects of stereotype threat. These studies suggest decreasing the salience of threatened identities reduces the likelihood of experiencing stereotype threat. Research also suggests that encouraging students to affirm themselves helped to reduce stereotype threat. For example, Frantz et al. (2004) found that when White participants were able to affirm their commitment to being nonracist before taking the Racial Implicit Association Test, their performance on the test was less likely to be defined as racially biased. It is important to not only communicate high standards to students, but also to encourage them and let them know they are capable of meeting the standards (Cohen, Steele, & Ross, 1999).

Future research should explore other ways in which the negative effects of stereotype threat can be reduced. Furthermore, research should focus on potential mediators and moderators of stereotype threat and performance. Although some mediators
and moderators, such as fearing the confirmation of a negative belief about your group (Aronson et al., 1999), cognitive load (Cheryan & Bodenhausen, 2000), hyper-vigilance (Keller & Dauenheimer, 2003), availability of role models (Marx & Roman, 2002; Marx & Goff, 2005), and locus of control (Cadinu et al., 2006), have been identified, further research is needed to investigate these variables and identify other potential variables that may contribute to the relationship between stereotype threat and performance. Once mediator and moderator variables are identified, interventions for reducing the negative effects of stereotype threat can be developed. Although locus of control as a potential moderator variable was not supported in this study, the notion that performance is negatively influenced by stereotype threat and that these effects take place irrespective of race was supported. Therefore, future research should continue attempting to clearly define stereotype threat and its causes, identifying individuals who are vulnerable to it, and finding ways to reduce its negative effects.

References


