

Positive Stereotypes and Their Effect on Anxiety and Performance in College Students



Alexander Alnajada

Submitted to the Psychology Department, Allegheny College
in partial fulfillment of the requirements for the degree of
BACHELOR OF SCIENCE
March 31, 2014

Running head: POSITIVE STEREOTYPES AND THEIR EFFECT ON PERFORMANCE

Positive Stereotypes and Their Effect on Anxiety and Performance in College Students

A Senior Comprehensive Project
Presented by:
Alexander Alnajada

March 31, 2014

Pledge: _____

Approved:

Dr. Lydia Eckstein Jackson, Ph.D.

Dr. Kimberley Coddington, Ph.D.

Acknowledgements

Professor Jackson – I don't even know where to begin. You have helped me so much throughout this entire comping process. I want to thank you for being my comp advisor. You always answered my e-mails and questions in a timely manner. You were in your office when I wanted to stop by. You were always trying to get me to come out of the "comfort zone" and this comp has made me come out of some "comfort zones" of my own. You understood what I was going through when I had a rough fall semester and were willing to give me a little extra time to catch up with everyone else. Also, you kept telling me to "Don't fix what doesn't need to be fixed" and that really helped me out a lot especially during the last week of working on my comp because I kept obsessing over how to make it perfect. Thank you so much for everything that you have done.

Professor Coddington – I want to thank you for being my current second reader for my comp. I actually want to thank you for the foundations of psychology class you taught during my freshman year since that was the class that got me interested in psychology when I didn't even know what psychology was really all about. I also want to thank for answering my questions and providing feedback on my proposal.

Professor Heuchert – I want to thank you for being my original second reader for my comp. I want to thank you for allowing me to start developing my comp while I was in your junior seminar class and for providing feedback when I was just starting to develop a proposal.

My family and friends back home – I want to thank my mom, Aunt Bonny, Uncle Frank & Aunt Linda, Uncle Joey & Aunt Sher, my cousin Maria, Rick, Ricky, and Spencer for supporting me as I went to college. Even though I faced a lot of challenges while in college and even contemplated that I might not make it here, I'm really grateful to have all of your support as I was going through college and even through the comping process, even though most of you did not really understand how much work this actually involved or even really understood my project when I talked about it. I would like to thank everyone else at my hometown who have supported me throughout my senior year.

I would like to dedicate this comp to my grandpa. He was with me for my whole life and always gave me good advice throughout my life. At times I didn't really listen to everything but I really miss him and his talks we used to have while I was home.

My comp group – I would like to thank Philippa, Justine, Lizzy, & Mel who were going through the comping process directly with me. We provided each other with feedback on drafts and gave each other social support. I felt that having a comp group really helped me in progressing through my comp in a timely fashion because I felt accountable to actually get things done. I would also like to thank our newest member of the comp group, Jordana. Even though we just met this semester, we still had many interesting experiences in tai chi.

My Allegheny friends – I would like to thank all of my friends that I made here at Allegheny. I would specifically like to thank our theatre junior seminar and Mark Cosdon for allowing me to come to New York City over fall break and have new experiences there when I was going through a rough time. Special shout-outs go to Serena, Kara, Christina, Robby, Erin, KJ, Tim, Zach, Jake, Amber, Cale, and everyone else who has made this year much more bearable for me.

Abstract

Previous stereotype threat research has primarily focused on the negative stereotypes of race or sex differences and standardized test performance. The present study expands on that by looking into positive college student stereotypes. The first hypothesis of this study was that college students exposed to the positive college student stereotypes will perform worse on the standardized test than those not exposed. The second hypothesis of the study was that those students exposed to the positive stereotypes would have increased anxiety. Participants completed a questionnaire manipulating identity salience, took a test containing questions from a practice GRE, and then completed a mood questionnaire. Data were analyzed on 49 college students. The manipulation check was not successful in that neither group was more worried about their performance. Differences were present in the total GRE scores and the total quantitative scores but not for the total verbal scores. Overall, differences were not present in anxiety. However, the experimental group reported feeling more confident and more tired compared to the control group. These findings can be utilized in school and college settings. These findings also add to the body of literature in stereotype threat in relation to positive stereotypes. Limitations and future research are discussed.

Key words: stereotype threat, positive stereotypes, college students, anxiety, test performance

Positive Stereotypes and Their Effect on Anxiety and Performance in College Students

Italians are great cooks, Asians are really intelligent in math, Blacks are skilled athletes and dancers, women are nurturing, and college students are overachievers. These are some examples of different positive stereotypes that exist in society. While stereotypes are usually seen as being negative, they can be positive as well (Kay, Day, Zanna, & Nussbaum, 2013). People categorize others into groups based on these stereotypes and create ingroup favoritism and outgroup bias (Schaller, 1991; Tajfel & Turner, 1986). There have been many studies that show how stereotypes can have an effect on an individual. Certain stereotypes, both negative and positive stereotypes, about a person belonging to a group can make the person feel depersonalized and interfere with their desire to be seen as an individual separate from their group identity (Czopp, 2008; Siy & Cheryan, 2013). Negative stereotypes can justify prejudice against a group of people, even without any interaction or other information about that group of people (Crandall, Bahns, Warner, & Schaller, 2011). Stereotypes can cause discrimination among a certain group, particularly in the workforce (Lipton, O'Connor, Terry, & Bellamy, 1991). Additionally, stereotypes can even play a role in the cause of hate crimes due to a member belonging to a group another person may have prejudicial views about (Craig, 2002). Also stereotypes can affect someone's decrease in academic performance (Cheryan & Bodenhausen, 2000; Steele & Aronson, 1995).

The existence of negative stereotypes means that anything someone does or any of their personal features that conform to it make the stereotype more likely to be a self-characterization in the viewpoint of other people, and even in one's own viewpoint. This is called a stereotype threat and is usually seen as a self-evaluative threat (Steele & Aronson, 1995). When the negative stereotype is introduced, a person associated with the stereotyped group will exhibit

added stress when given a task to complete. The person becomes pressured by the stereotype by perceiving their own abilities as being judged by expectations on how the stereotyped group would perform (Croizet, Désert, Dutrévis, & Leyens, 2001; Steele, 1997; Steele, 2010; Steele & Aronson, 1995). “Stereotype threat is a general threat not tied to the psychology of particular stigmatized groups. It affects the members of any group about whom there exists some generally known negative stereotype” (Steele, 1997, p. 617). Basically, any group of individuals that have a negative stereotype specifically attached to that group can experience stereotype threat.

Whether an elderly person forgets where they put their keys, a woman gets into a bad car accident, or when an African American had a stressful time recently and fails an exam, these can be examples of people in these groups feeling the risk of confirming a negative stereotype about these groups.

Stereotype threat has been shown to have an effect on the performance of various cognitive abilities. Mathematical reasoning was assessed in several studies pertaining to stereotype threat (Aronson, et al., 1999; Brown & Pinel, 2003; Spencer, Steele, & Quinn, 1999). Spencer et al. (1999) had women and men take a difficult math test. However, to manipulate stereotype threat, the instructions either stated that the test had been shown to produce gender differences or had been shown to produce no gender differences. Females who were told that the test would produce gender differences performed worse than their male counterparts (Spencer et al., 1999).

In addition to quantitative reasoning, verbal skills were also assessed (Croizet & Claire, 1998; Steele & Aronson, 1995). Croizet & Claire (1998) either told participants that they were assessing their intellectual ability on verbal problems or that they were testing about the role attention plays on memory. All of the participants were either from either a high or a low

socioeconomic status and their SES identity was either made salient by providing their parents' occupation and education level or made nonsalient by just being asked to give general information not relevant to their social class. Those who identified as coming from a low SES background, had their SES identity made salient, and were told that the test would measure their verbal intellectual ability before taking a test containing verbal GRE questions ended up doing worse than high SES background participants (Crozier & Claire, 1998).

Some factors that can further these vulnerabilities of stereotype threat are domain identification and stigma consciousness (Brown & Pinel, 2003; Keller 2007). Domain identification is how much a person values achievement in a certain domain. People with high domain identification are likely to experience more pressure in a testing situation than people with low domain identification thus resulting in the stereotype threat causing a greater hindrance in the performance of someone with high domain identification (Keller, 2007). Another study introduced when white males could experience stereotype threat when taking a math test (Aronson, et al., 1999). The study showed that white males who were told that Asians students outperform Caucasian students ended up doing worse. The study also showed white males who rated themselves as having high domain identification in math did worse than those who rated themselves as having a low domain identification in math (Aronson, et al., 1999). Stigma consciousness is the individual's self-consciousness of their stigmatized status within a certain group. An example of this is how much a woman would feel that her behavior is interpreted by men in terms of her being a woman. People who are high in stigma consciousness when evoked with a stereotype threat end up doing worse than people who are low in stigma consciousness (Brown & Pinel, 2003).

Stereotype threat can impair standardized test performance of domain-identified students; however anxiety may also play a role in stereotype threat. However, the results are mixed as to whether stereotype threat has an effect on anxiety. Spencer et al. (1999) thought that women who were in the stereotyped condition, besides performing worse on the math test, would have greater anxiety from the stereotype threat. They measured for anxiety using the state-trait anxiety index immediately after the test was completed. However, the results suggested that there was no strong evidence of anxiety as a mediator of performance in this experiment. Similarly, Steele & Aronson (1995) measured for anxiety using the same measure and measured for it after the completion of the verbal skills test thinking that African Americans would have reported greater anxiety. In their second study, they told participants in the stereotyped condition to give a strong effort in completing the test because the test was to evaluate their verbal abilities and limitations. They did experience a decrease in performance but no differences were found on anxiety. With the replication of that study in their fourth study, they measured anxiety again. The main difference between that study and their previous study was that they asked for their race before taking the test in order to prime the participants of their race. African Americans who were primed of their race before the test reported greater anxiety (Steele & Aronson, 1995).

While negative stereotypes are generally seen as being harmful and can be associated with stereotype threat, positive stereotypes are generally seen as being helpful. Rydell, McConnell, & Beilock (2009), thought that people identify with multiple social groups and further suggested that while people have many social identities, people are only categorized into one social identity at any given moment. According to the previous idea, they thought that when presented with both a negative stereotype about females performing worse on quantitative tests and a positive stereotype about college students performing well on quantitative tests that they

would identify more with the positive college student stereotype. They tested this hypothesis with four different experiments and found similar results across all of them. Overall, females that were only presented with gender-related stereotypes experienced stereotype threat whereas females that were presented with both college-related stereotypes and gender-related stereotypes seemed to gravitate toward identifying with the positive social identity of being a college student (Rydell et al., 2009).

While positive stereotypes are generally seen as being positive in nature and can potentially boost academic performance, there is other evidence that suggests positive stereotypes can also be detrimental to academic performance (Czopp, 2010; Rosenthal & Crisp, 2007). Caucasian undergraduate students reviewed a profile of a fictitious high school senior who was presented as a gifted athlete with a low GPA and SAT score and had an interest in schoolwork. The senior was either presented as an African American or a Caucasian male. Overall, the study found that those who agreed with the positive racial stereotype of African Americans having an innate ability to be successful athletes advised the student toward focusing on furthering his athletics whereas the Caucasian student was advised to focus more on academics (Czopp, 2010). Another study examined how two positive stereotypes would have a decreased effect on math performance of males. When presented with two positive stereotypes, one being made aware of their gender group that males performed better than females on math and the other being aware their school group membership, males who had a high domain identification with math underperformed in this condition compared to those who were only exposed to only one positive stereotype. This finding only occurred for individuals who thought group membership was important to them (Rosenthal & Crisp, 2007).

Further, a study on Asian-American women and math performance found that when exposed to the positive stereotype that Asians do well in math, they ended up performing worse on the math test. The self-identified Asian-American women were assigned into one of three identity-salience conditions, one related to the ethnic identity, one related to the gender identity, and one that was a personal identity control group. Identity salience was manipulated through the use of the Collective Self-Esteem Scale and adapted to the three conditions. Afterwards, they were given a challenging quantitative skills test consisting of questions taken from the Graduate Record Examination (Cheryan & Bodenhausen, 2000). The most important finding showed that a positive stereotyped social identity can cause a decrease in academic performance. The gender stereotype threat introduced failed to create a decrease in the performance but when the ethnic stereotype ability was emphasized, they failed to show the quantitative skills expected of Asians. This study indicates that failing to live up to the high expectation of Asian students being intelligent in math can place a considerable burden on members of this group (Cheryan & Bodenhausen, 2000).

The Present Study

While a great deal of research deals with negative stereotypes and their harmful effects, there is not much research on positive stereotypes and their effects (Spencer et al., 1999; Steele & Aronson, 1995). Positive stereotypes are often overlooked as potentially being harmful to a person; however previous research has investigated this phenomenon of a stereotype threat being initiated through a positive stereotype (Cheryan & Bodenhausen, 2000). Furthermore, research on stereotype threat from negative or positive stereotypes typically focused on race or sex differences in relation to performance on a standardized test. However, Steele (1997) states that stereotype threat can have an effect on any group that has negative associations about that

particular group. This could also apply to positive stereotypes in relation to stereotype threat. Therefore, stereotype threat can potentially have an effect on college students in general and that was what the present study focused on.

College students are typically seen as intelligent, driven, and high achieving. Aside from one study indicating the college student stereotype as being a boost in place of a negative stereotype (Rydel et al., 2009), there are no other studies that depicted the college student stereotype in relation to stereotype threat. While Rydel et al. (2009) used the positive college student stereotype about college students doing well on quantitative tests or even simply just having participants indicate their school status, there are other positive stereotypes about college students that further identity and manipulation as a college student and these could be linked to stereotype threat. Additionally, college students should ideally be seen as being intelligent in academics in general rather than just in math. Therefore, the present study tested participants in verbal and quantitative skills.

Also, anxiety had mixed results with whether it was really connected with stereotype threat (Spencer et al., 1999; Steele & Aronson, 1995). However, anxiety was not measured with positive stereotypes in relation to stereotype threat. Therefore, the present study measured for anxiety.

The first research question for this study was; would college students exposed to the positive college student stereotypes, along with their college identity made salient perform worse on a standardized test? The second research question for this study was; would college students exposed to the positive college student stereotypes experience greater anxiety during and immediately after the test? The first hypothesis of this study was that the college students in the group exposed to positive college student stereotypes would perform worse on the standardized

test than college students not exposed to the positive stereotype. The second hypothesis of this study was that the college students exposed to positive college student stereotypes would have greater anxiety than those who were not exposed.

Method

Research Design

The study had an experimental design with participants being randomly assigned to one of two groups, either the experimental group or the control group. The experimental group had the manipulation questions consisting of questions that invoked the positive stereotypes whereas the control group did not (see Appendix). The independent variable was the usage of positive stereotypes and the dependent variables were the overall performance on the standardized test and the levels of anxiety experienced.

Participants

All of the participants ($N = 50$) were recruited from Allegheny College. They had to be at least 18 years old to participate in the study. Some of the participants were recruited through SONA, which is an online sign-up system through the college and others were recruited from psychology classrooms. The participants received either research credit or extra credit for their participation and were given the chance to enter into a drawing for a gift card.

Measures

Two computers in the human research labs in the building were used for the study. The entire study was programmed into MediaLab.

Collective Self-Esteem Scale (Luthanen & Crocker, 1992). The CSE scale consisted of nine questions that both the experimental and the control groups completed. The questions asked the

participants to consider their memberships in the group of being a college student and how they felt about belonging to that particular group. Some sample items include; “As a college student, I feel that...I am a worthy member of this group” and “As a college student, I feel that...I often feel I’m a useless member of this group”. Participants chose their responses on a 7-point Likert scale, with 1 meaning “strongly disagree” and 7 meaning “strongly agree”, as to how much they agreed with the statements (see Appendix).

Manipulation items. Participants in the experimental group were given an additional five questions following the completion of the CSE. The questions consisted of statements relating to the positive stereotypes about college students. Some sample items include, “I am aware that college students usually outperform non-college students on standardized tests” and “In general, others think that college students are high achievers”. Participants chose their responses on a 7-point Likert scale, with 1 meaning “strongly disagree” and 7 meaning “strongly agree”, as to how much they agreed with the statements (see Appendix).

GRE questions. The test questions chosen for this experiment were adapted from the practice test in the Kaplan GRE Exam 2000-2001 edition. There were a total of twelve questions, six were in the verbal section and six were in the quantitative section. All of the questions were multiple-choice.

Positive and Negative Affect Scale (David & Clark, 1994). The PANAS was used to measure the current mood and anxiety of the participants that they were feeling at that moment. Some of the responses that were measured included feeling “nervous”, “worried”, “tired”, “confident”, and “calm”. The participants chose their responses on a 5-point Likert scale, with 1 meaning “very slightly or not at all” and 5 meaning “extremely” (see Appendix). Additionally, a manipulation check, “worried about performance” was added after the completion of the initial

items on the PANAS and that was also rated on a 5-point Likert scale, with 1 meaning “very slightly or not at all” and 5 meaning “extremely”.

Demographics. At the end of the study, participants were asked to fill out a demographics questionnaire. Participants were asked for their age, sex, race, class year, and current GPA in college (see Appendix).

Procedure

At the study, all participants came into a human research lab and read and signed an informed consent form (see Appendix) before proceeding with the study. The participants were blind to the main purpose of the study and were told that the study’s purpose was to find out about college students’ perceptions about standardized tests. After signing, participants were randomly assigned to either one of two groups; the experimental or the control group. Both the experimental and the control groups completed all required tasks on a computer. Participants completed a survey with questions from the Collective Self-Esteem Scale (Luthanen & Crocker, 1992). If assigned to the experimental group, participants completed another questionnaire that was added onto the CSE. These questions consisted of the exposure to positive college student stereotypes. After completion of that section, participants read instructions for the next part, which consisted of instructions about the test they were going to take. A pencil, paper, and a simple calculator were provided for participants to use, if needed. The test with questions adapted from a practice GRE (Kaplan, 2000) consisted of two sections; verbal and quantitative. The participants were given 20 minutes to complete the test, ten minutes for each section. A timer was included so that participants were able to keep track of how long they had to work on each section. The order in which the verbal or quantitative section was presented first was randomly determined. When the time was finished the participants stopped working on the

section and moved onto the next section. After they completed both sections, they received another instruction screen telling them that they have finished the test. Following the test, participants completed a shortened version of the PANAS (David & Clark, 1994) to measure the current mood/anxiety of the participants and answered the manipulation check question to see if they were worried about their performance on the test. Finally, they completed a demographics questionnaire. Once everything was finished, the participants received an initial verbal debriefing saying that they will receive a full debriefing form (see Appendix) once all of the data has been collected, assured them that the scores on the test will not be traced back to any particular individual, and were asked if they had any questions or comments before they left. All of the participants were given the chance to be entered into a raffle for a \$25 gift card.

Results

A total of 50 participants completed the research study. However, one female participant from the experimental group had to be excluded from data analysis due to the person guessing the main purpose of the study. Therefore, data from 49 participants (69% female, 67% Caucasian, $M_{age} = 19.33$, $SD = 1.16$) were analyzed. There were 24 participants in the experimental group and 25 participants in the control group.

GRE Scores

To test whether the experimental group consisting of participants exposed to the positive stereotypes about college students would perform worse than participants not exposed to the positive stereotype, a one-way ANOVA was conducted. As predicted, the college students exposed to the positive stereotypes performed worse on the standardized test ($M = 6.58$, $SD = 2.21$) than did the college students not exposed to the positive stereotypes before taking the test ($M = 8.32$, $SD = 1.75$), $F(1,47) = 9.369$, $p = .004$, $\eta_p^2 = .166$. College students in the

experimental group performed worse on the quantitative section ($M = 3.04$, $SD = 1.60$) than did students in the control group ($M = 4.48$, $SD = 1.29$), $F(1,47) = 12.002$, $p = .001$, $\eta_p^2 = .203$.

However, the experimental group did not differ in scores on the verbal section ($M = 3.54$, $SD = 1.14$) from the control group ($M = 3.84$, $SD = 1.07$), $F(1,47) = .894$, $p = .349$, $\eta_p^2 = .019$. (See figure 1)

Manipulation Check

A one-way ANOVA was conducted to see if the students exposed to the positive stereotype would have been more worried about their performance than students not exposed to the stereotype. However, there was no difference between the experimental group being worried about their performance after the test ($M = 3.13$, $SD = 1.23$) than the control group ($M = 3.12$, $SD = 1.05$), $F(1,47) = .000$, $p = .988$, $\eta_p^2 = .000$. This finding for the manipulation check was contrary to expectations.

Anxiety and Mood

To test whether the experimental group consisting of participants exposed to the positive stereotypes about college students would have increased anxiety than the control group, a one-way ANOVA was conducted on all of the items from the PANAS. There were no differences in reports of feeling nervous between the experimental group ($M = 1.96$, $SD = .81$) and the control group ($M = 2.32$, $SD = 1.35$), $F(1,47) = 1.289$, $p = .262$, $\eta_p^2 = .027$. There were also no differences in reports of worried between the experimental group ($M = 1.83$, $SD = 1.09$) and the control group ($M = 2.16$, $SD = 1.11$), $F(1,47) = 1.083$, $p = .303$, $\eta_p^2 = .023$. Participants in the experimental group reported that they were feeling more confident ($M = 3.04$, $SD = 1.23$) than participants in the control group ($M = 2.28$, $SD = .98$), $F(1,47) = 5.757$, $p = .02$, $\eta_p^2 = .109$. (See figure 2) Participants in the experimental group reported that they were feeling more tired ($M =$

3.17, $SD = 1.13$) than the control group ($M = 2.40$, $SD = 1.19$, $F(1,47) = 5.341$, $p = .025$, $\eta_p^2 = .102$). (See figure 3) (See table 1 for full group statistics of PANAS items) (See table 2 for full results of PANAS items)

Correlations

Correlations were done on the CSE scale, the manipulation scale, and the GRE test scores. The CSE items were not correlated with the manipulation items at all, $r = .000$, $n = 24$, $p = .998$. There was no correlation between the CSE and the GRE total score, $r = .126$, $n = 49$, $p = .389$. This was not expected. (See table 3 for full correlations)

Sex and GPA demographics

A 2 x 2 ANOVA was conducted on sex and condition with the total GRE scores as an outcome variable. There was no sex main effect between males ($M = 7.93$, $SD = 2.16$) and females ($M = 7.32$, $SD = 2.17$), $F(1,44) = .977$, $p = .377$, $\eta_p^2 = .043$. There was a condition main effect between the experimental group ($M = 6.58$, $SD = 2.21$) and the control group ($M = 8.32$, $SD = 1.75$), $F(1,44) = 10.689$, $p = .002$, $\eta_p^2 = .195$. There was no condition x sex interaction, $F(1,44) = 1.10$, $p = .300$, $\eta_p^2 = .024$.

A one-way ANOVA was conducted on condition with the total GRE scores as an outcome variable. GPA was used as a covariate since GPA was shown to be significantly related with the GRE scores and the control group had a higher GPA than the experimental group. After controlling for GPA, there was still a condition main effect between the experimental group ($M = 6.58$, $SD = 2.21$) and the control group ($M = 8.32$, $SD = 1.75$), $F(1,46) = 4.973$, $p = .031$, $\eta_p^2 = .098$. There was a main effect for GPA, $F(1,46) = 13.115$, $p = .001$, $\eta_p^2 = .222$.

Discussion

Previous research in stereotype threat has primarily focused on a negative stereotype about a certain group, usually race or sex, and how that can cause people in that group to perform worse on a standardized test (Crozier, Desert, Dutrevis, & Leyens, 2001; Spencer et al., 1999; Steele, 1997; Steele, 2010; Steele & Aronson, 1995). Additionally, some research has been done on how positive stereotypes about a certain group of people can also create a stereotype threat paradigm in that they perform worse than those not exposed to the stereotype (Cheryan & Bodenhausen, 2000; Rosenthal & Crisp, 2011). The purpose of this study was to expand previous literature by the looking at positive college student stereotypes and see if that would have had an effect on performance on a standardized test. Therefore, the first hypothesis of the study was that college students exposed to the positive college student stereotypes before taking the standardized test would have performed worse overall than those not exposed to the positive stereotypes. The second hypothesis was that college students exposed to the positive college student stereotypes would have experienced greater anxiety during and immediately after taking the standardized test than those not exposed to the stereotypes.

Small correlation was found between the Collective Self-Esteem items and the three subsets of the GRE scores and between the manipulation items and the three subsets of the GRE scores. No correlation was found between the CSE items and the manipulation items. Differences were only observed on the quantitative total score and the total GRE score and not on the verbal total score. Participants not exposed to the positive college student stereotypes before taking the test actually reported being slightly more nervous, worried, shaky, and afraid even though there were essentially no differences between the two groups. Participants exposed to the stereotypes reported being more confident and more tired than participants not exposed to

the stereotypes. The manipulation check was unsuccessful in that both groups reported being moderately worried about their performance on the test. There was a marginal difference of sex for the GRE quantitative and total scores. Random assignment was not successful in that participants in the control group had a higher GPA. However, after controlling for GPA, differences were still present.

One finding that was surprising was that there was a lack of correlation between the CSE items, the manipulation items, and the GRE scores. The CSE items were designed to make the college identity salient before taking the test with the added manipulation items for the experimental group creating a stereotype threat. Also, both sets of items were specifically related to college students. This brings up the question if the stereotype threat through the positive stereotype actually worked for this experiment.

Since differences were found between the two groups on the quantitative and the total GRE scores, this reflects similar findings of previous studies in that most of the studies focused on race or sex and math performance. However, not many studies really focused on the verbal section of a standardized test. This may explain why the verbal scores in the present study did not differ between the two groups. As to why there is a lack of stereotype threat and performance on verbal tasks is not known at the present time.

The hypothesis that college students exposed to the positive stereotype would have an increase in anxiety was not supported by this study. The anxiety questionnaire was placed after the completion of the test so there is a possibility that the participants were not as nervous or worried about their performance as much. Steele (2010) argued that people under the stereotype threat may have not wanted to admit to being anxious or that they did not know they were anxious. There could also be a possibility that the participants did not feel the study had a

realistic environment as what would be experienced in a naturalistic setting like there was no mention that they would ever see how they scored so maybe they just were not really worried or anxious about their performance.

One finding that was not expected was that participants in the experimental group were feeling more confident after taking the test than the control group. This was contrary to the anxiety hypothesis which would have suggested that the experimental group would have higher anxiety, thus less confidence. It might be possible that the participants in the experimental group might have seen those positive stereotypes as being a “boost” rather than a hindrance to their performance but this does not explain why they performed worse overall compared to the control group. It might also be possible that the participants in the experimental group became overconfident in their academic performance abilities on the GRE test. This could explain why they performed worse but were less anxious and worried and were more confident and calm after the test was over. This could also imply that maybe being exposed to a positive stereotype with the impression of stereotype threat would cause an increase in confidence but a decrease in academic performance.

Another finding that was unexpected was that participants in the experimental group claimed to be more “tired” and “drowsy” compared to the control group and there was significance to this finding. While this could just indicate that the participants were tired by the time of the day they participated in the study, this could have other implications. If they were really as tired as they claimed to be, this could have affected in how they performed in that maybe they could have misread directions, which was a slightly common problem made in the verbal comments by participants after they completed the study. There is a possibility that random assignment may have not be successful in that participants that were chosen in the

experimental group may have already come in feeling tired. Further, the reporting of feeling more tired could lead to a tendency to self-handicap in order to feel better about their performance (Keller, 2002). However, Cheryan & Bodenhausen (2000) did not find any difference for self-handicapping behaviors between the identity salience conditions. This could be tied into why the experimental group was feeling less anxious and more confident in that they felt tired and that they thought they performed well despite being tired. Additionally, if they did not necessarily know they were anxious, they may have mistaken their anxious feelings as feeling tired instead of anxious. It may be possible that the sense of trying to live up to the positive college student stereotypes could have created a sense of fatigue after completing the test therefore anxiety could manifest through feeling tired and not necessarily through feeling nervous or worried. However, no specific conclusion can be drawn as to why participants in the experimental group reported feeling more tired than participants in the control group because participants were not asked how they were feeling before participating in the study.

Limitations

While the present study found that the students exposed to the positive stereotypes performed worse on the GRE overall, the study had many limitations as well. A major limitation was the choice of the manipulation items. The manipulation items were chosen based on common knowledge of typical stereotypes depicting college students. There may be other positive stereotypes out there about college students relating to academic performance, but there was also not really any relevant literature specifically related to this study. There is only one article relating specifically to college student stereotypes and dealt primarily with how the stereotype can alleviate stereotype threat through the access of multiple identities (Rydell, McConnell, & Beilock, 2009).

Another major limitation, specifically for the anxiety items could have been the usage of a self-reported anxiety scale. Bosson, Haymovitz, & Pinel (2004) found that measuring anxiety from a stereotype threat through self-report did not show any difference between the two groups despite non-verbal signs of anxiety and distress. This may imply that the participants in the present study may have not correctly self-evaluated how they were feeling at the present moment and that if non-verbal anxiety was measured there may have been a stronger difference between the two groups and possibly a reversal in trends as compared to the results of anxiety in this study.

Another somewhat major limitation to this study was the use of the GRE as the test of academic performance. Many of the studies on stereotype threat and positive stereotypes used items, specifically math items, taken from a standardized test such as the GRE. However, some students just do not do as well on standardized tests. Additionally, the items from the GRE were picked at random. Also, the GRE questions only consisted of verbal and quantitative questions and with the verbal section there were no reading comprehension questions included.

Some other limitations could be from error variance. The timer that was included on the verbal and quantitative sections of the study that was thought to be a helpful tool ended up turning out to be a negative addition to some of the participants. A few participants noted in the “additional comments” that they seemed more worried about completing the test within the time rather than making sure that they were answering the questions correctly. Additionally, some participants noted that they misread instructions at first or did not realize that they clicked on a choice and it automatically took them to the next question without the option to go back. Other researchers were conducting other studies on some days and there was more noise in the

hallways so it might not have been completely quiet for the participants to be able to concentrate as efficiently as on days when there was not a lot of other noise.

Future Research

More research needs to be done on positive college student stereotypes since there is no other research study that depicts positive college student stereotypes as being potentially harmful, at least to the researcher's knowledge. Future research should focus on other types of tests besides standardized tests, whether they are knowledge tests, recall tests, etc to see if this could have more of a direct effect in classroom performance. If using standardized tests, there should be modifications made to these standardized tests. There was a recent article in the New York Times indicating that ETS was implementing new changes to the SAT test to make it more suitable for students to take by making many changes to towards the reading and math sections (Lewin, 2014). More research needs to be done on connecting the link between positive stereotypes portrayed in a stereotype threat and anxiety. Specifically, future studies should focus on non-verbal anxiety factors.

While the present study had many limitations, there are some implications to the findings of the study. First of all, the study indicates positive stereotypes can play a role in decreasing academic performance. This finding could be useful in school and college settings in being aware that a positive stereotype can potentially be detrimental to the academic performance of a student. To the researcher's knowledge, this is the first study to ever look at positive college student stereotypes in a way that depicts a stereotype threat rather than a stereotype boost. Also to the researcher's knowledge, this study is the first study to look into positive college student stereotypes and a potential link toward anxiety, even though the findings were not significant to the hypothesis. It does seem that high expectations are placed on college students though and this

study and possibly future studies should take into consideration that a positive stereotype, even just on a general population like college students rather than a specific race or sex, can potentially lead to a decrease in performance on an academic exam.

References

- Aronson, J., Lustina, M. J., Good, C., Keough, K., Steele, C. M., & Brown, J. (1999). When white men can't do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology*, 35(1), 29-46. doi:<http://dx.doi.org/10.1006/jesp.1998.1371>
- Bosson, J. K., Haymovitz, E. L., & Pinel, E. C. (2004). When saying and doing diverge: The effects of stereotype threat on self-reported versus non-verbal anxiety. *Journal of Experimental Social Psychology*, 40(2), 247-255. doi:[http://dx.doi.org/10.1016/S0022-1031\(03\)00099-4](http://dx.doi.org/10.1016/S0022-1031(03)00099-4)
- Brown, R. P., & Pinel, E. C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of Experimental Social Psychology*, 39(6), 626-633. doi:[http://dx.doi.org/10.1016/S0022-1031\(03\)00039-8](http://dx.doi.org/10.1016/S0022-1031(03)00039-8)
- Cheryan, S., & Bodenhausen, G. V. (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of "model minority" status. *Psychological Science*, 11(5), 399-402. doi:<http://dx.doi.org/10.1111/1467-9280.00277>
- Craig, K. M. (2002). Examining hate-motivated aggression: A review of the social psychological literature on hate crimes as a distinct form of aggression. *Aggression and Violent Behavior*, 7(1), 85-101. doi:10.1016/S1359-1789(00)00039-2
- Crandall, C. S., Bahns, A. J., Warner, R., & Schaller, M. (2011). Stereotypes as justifications of prejudice. *Personality and Social Psychology Bulletin*, 37(11), 1488-1498. doi:<http://dx.doi.org/10.1177/0146167211411723>
- Croizet, J., & Claire, T. (1998). Extending the concept of stereotype and threat to social class: The intellectual underperformance of students from low socioeconomic

- backgrounds. *Personality and Social Psychology Bulletin*, 24(6), 588-594.
doi:<http://dx.doi.org/10.1177/0146167298246003>
- Croizet, J., Désert, M., Dutrévis, M., & Leyens, J. (2001). Stereotype threat, social class, gender, and academic under-achievement: When our reputation catches up to us and takes over. *Social Psychology of Education*, 4(3-4), 295-310.
doi:<http://dx.doi.org/10.1023/A:1011336821053>
- Czopp, A. M. (2008). When is a compliment not a compliment? evaluating expressions of positive stereotypes. *Journal of Experimental Social Psychology*, 44(2), 413-420.
doi:<http://dx.doi.org/10.1016/j.jesp.2006.12.007>
- Czopp, A. M. (2010). Studying is lame when he got game: Racial stereotypes and the discouragement of black student-athletes from schoolwork. *Social Psychology of Education*, 13(4), 485-498. doi:<http://dx.doi.org/10.1007/s11218-010-9129-8>
- David, W., & Clark, L. A. (1994). *Positive and negative affect schedule--expanded version* doi:<http://dx.doi.org/10.1037/t04754-000>
- Kay, A. C., Day, M. V., Zanna, M. P., & Nussbaum, A. D. (2013). The insidious (and ironic) effects of positive stereotypes. *Journal of Experimental Social Psychology*, 49(2), 287-291.
doi:<http://dx.doi.org/10.1016/j.jesp.2012.11.003>
- Kaplan. (2000). *GRE exam 2000-2001*. New York, NY: Simon & Schuster.
- Keller, J. (2002). Blatant stereotype threat and women's math performance: Self-handicapping as a strategic means to cope with obtrusive negative performance expectations. *Sex Roles*, 47(3-4), 193-198. doi:<http://dx.doi.org/10.1023/A:1021003307511>
- Keller, J. (2007). Stereotype threat in classroom settings: The interactive effect of domain identification, task difficulty and stereotype threat on female students' maths

performance. *British Journal of Educational Psychology*, 77(2), 323-338.

doi:<http://dx.doi.org/10.1348/000709906X113662>

Lewin, T. (2014, March, 5). A new sat aims to realign with schoolwork. *The New York Times*.

Retrieved from http://www.nytimes.com/2014/03/06/education/major-changes-in-sat-announced-by-college-board.html?hp&_r=1

Lipton, J. P., O'Connor, M., Terry, C., & Bellamy, E. (1991). Neutral job titles and occupational stereotypes: When legal and psychological realities conflict. *Journal of Psychology: Interdisciplinary and Applied*, 125(2), 129-151.

Luthanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, 18, 302-318.

Rosenthal, H. E. S., & Crisp, R. J. (2007). Choking under pressure: When an additional positive stereotype affects performance for domain identified male mathematics students. *European Journal of Psychology of Education*, 22(3), 317-326.

doi:<http://dx.doi.org/10.1007/BF03173429>

Rydell, R. J., McConnell, A. R., & Beilock, S. L. (2009). Multiple social identities and stereotype threat: Imbalance, accessibility, and working memory. *Journal of Personality and Social Psychology*, 96(5), 949-966. doi:<http://dx.doi.org/10.1037/a0014846>

Schaller, M. (1991). Social categorization and the formation of group stereotypes: Further evidence for biased information processing in the perception of group-behavior correlations. *European Journal of Social Psychology*, 21(1), 25-35.

doi:<http://dx.doi.org/10.1002/ejsp.2420210103>

- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, 35(1), 4-28.
doi:<http://dx.doi.org/10.1006/jesp.1998.1373>
- Siy, J. O., & Cheryan, S. (2013). When compliments fail to flatter: American individualism and responses to positive stereotypes. *Journal of Personality and Social Psychology*, 104(1), 87-102. doi:<http://dx.doi.org/10.1037/a0030183>
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52(6), 613-629. doi:<http://dx.doi.org/10.1037/0003-066X.52.6.613>
- Steele, C. M. (2010). *Whistling vivaldi: How stereotypes affect us and what we can do*. New York: W.W. Norton & Company Inc.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of african americans. *Journal of Personality and Social Psychology*, 69(5), 797-811.
doi:<http://dx.doi.org/10.1037/0022-3514.69.5.797>
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In J. T. Jost & J. Sidanius (Eds.), *Political psychology: Key readings. Key readings in social psychology* (276-293). New York, NY, US: Psychology Press.

Table 1:

Group statistics of PANAS items

Measure	Positive Stereotype		No Stereotype	
	M	(SD)	M	(SD)
Confident	3.04	1.23	2.28	.98
Calm	2.92	.78	2.68	1.15
Nervous	1.96	.81	2.32	1.35
Determined	3.13	1.15	2.72	1.17
Drowsy	2.71	1.30	2.04	.79
Shaky	1.33	.82	1.84	1.18
Worried	1.83	1.09	2.16	1.11
Excited	1.79	.78	1.24	.52
Tired	3.17	1.13	2.40	1.19
Surprised	2.00	1.06	1.40	.58
Afraid	1.25	.53	1.52	.96
Exhausted	2.54	1.38	2.04	1.37
Dissatisfied with self	2.25	1.23	2.00	.91
At ease	2.54	.88	2.48	1.05

Table 2:

Independent samples test of PANAS items

Measure	t	df	Sig. (2-tailed)
Confident	2.40	47	.02
Calm	.84	47	.40
Nervous	-1.14	47	.26
Determined	1.22	47	.23
Drowsy	2.18	47	.03
Shaky	-1.74	47	.09
Worried	-1.04	47	.30
Excited	2.92	47	.01
Tired	2.31	47	.03
Surprised	2.47	47	.02
Afraid	-1.21	47	.23
Exhausted	1.28	47	.21
Dissatisfied with self	.81	47	.42
At ease	.22	47	.83

Table 3:

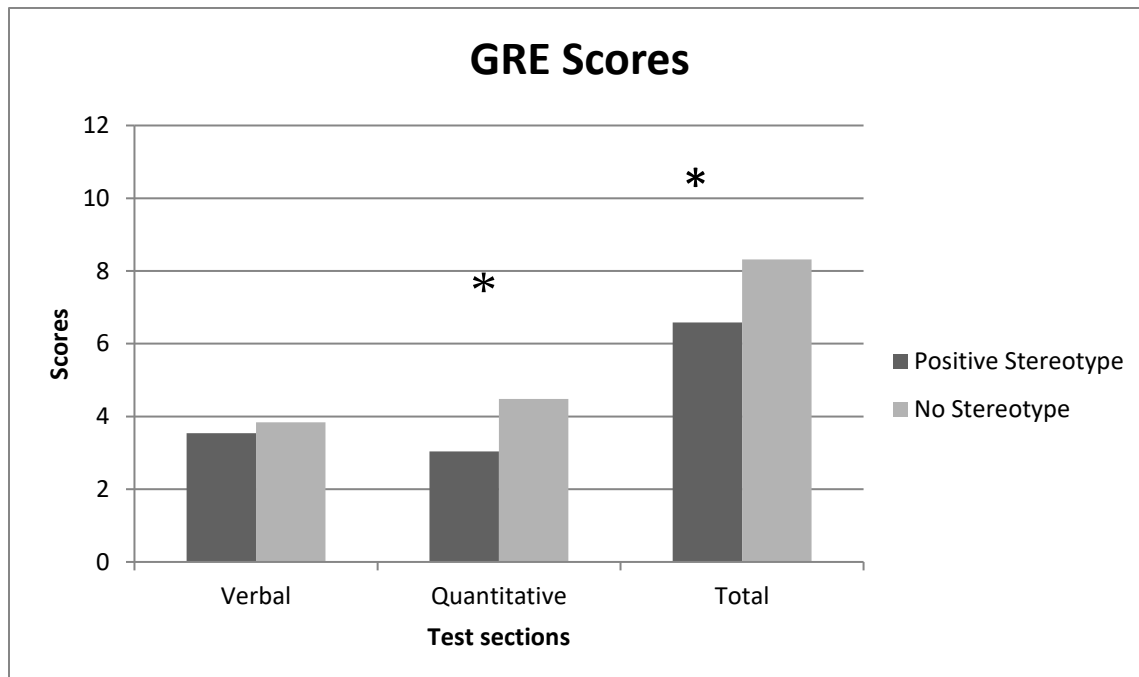
Correlations between CSE, manipulation, and GRE item scores

Measure	M	SD	1	2	3	4	5
1. CSE	5.50	.69	—				
2. Manipulation	5.58	.63	.00	—			
3. Verbal	3.69	1.10	.22	.18	—		
4. Quantitative	3.78	1.61	.02	.04	.23	—	
5. Total GRE	7.47	2.15	.13	.12	.69**	.87**	—

Note. **Correlation is significant at the 0.01 level (2-tailed).

Figure 1:

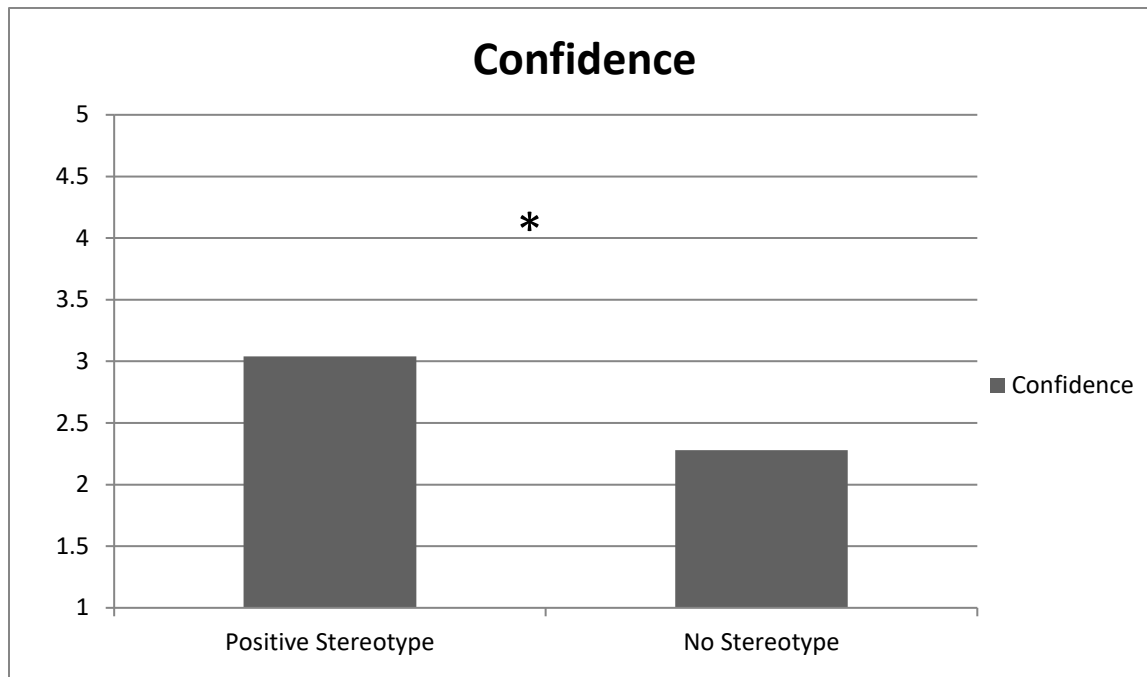
GRE composite scores between positive vs. no stereotype



Note.* $p < .05$

Figure 2:

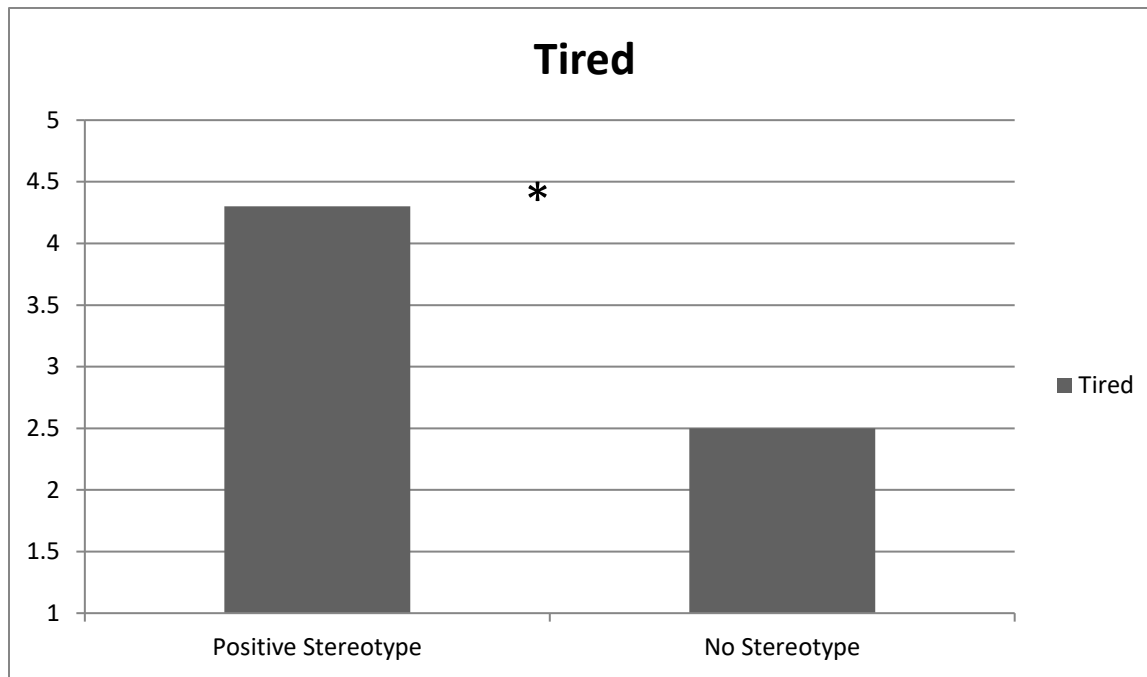
Significance of self-reports of confidence between the two groups



Note. * $p < .05$

Figure 3:

Significance of self-reports of tired between the two groups



Note.* $p < .05$

Appendix
Informed Consent Form

Perceptions of Testing and Stress in College Students
Allegheny College
Department of Psychology

Purpose of Research: The purpose of this study is to examine more closely how students feel about taking standardized tests.

Procedure: I understand that I will be asked to complete a series of questionnaires about my thoughts and feelings and there is a chance that I may be asked to complete some questions from a standardized test. Finally, I will complete a demographics questionnaire. All in all, the study will take approximately 30 minutes.

Risks to the Individual: I understand that there will be no more risk other than what is normally experienced in everyday life.

Compensation: I understand that I may receive extra credit at the discretion of my instructor, and that I can choose to be entered into a raffle to win a \$25 gift card to The Whole Darn Thing.

Confidentiality: I understand that my name will never be associated with the data I provide and will be completely confidential. I understand that the researcher is interested in patterns in the data as a whole as opposed to individual scores. Any reports made based on the data will focus solely on these general patterns.

Furthermore, I understand that all data will be stored under lock and key in the Psychology Department at Allegheny College. I understand that my consent form will be stored in a locked cabinet separately from my data. When the data I provide today are no longer needed, they will be destroyed.

Voluntary Nature of Participation: I understand that I do NOT have to participate in this experiment. Furthermore, upon beginning the experiment, I may choose to withdraw my participation at any time without penalty. I understand that I may skip any individual questions that I do not wish to answer, and I may choose not to participate in any part of the study without being questioned.

Contact Information: If I have any questions about this research project, I can contact Alexander Alnajada at alnajaa@allegheny.edu or the research advisor, Dr. Lydia E. Jackson at ljackson2@allegheny.edu or at (814)-332-5955. If I have any questions or concerns about the treatment of research participants, I can contact Dr. Richard Bowden, Chair of the Allegheny Institutional Review Board (IRB) at rbowden@allegheny.edu.

I understand that my signature below indicates that I am at least 18 years of age at the time of my participation in this study, and that I have received a copy of the informed consent form. I have carefully read and understood the information on this form and all of my questions this far have been answered. I hereby agree to participate in the study.

Participant's Signature _____ date _____

Participant's Name (print) _____ date _____

Researcher's Signature _____ date _____

Research Participation Debriefing Form

Positive Stereotypes and Their Effect on Anxiety and Performance in College Students
Allegheny College
Department of Psychology

Purpose of Research: Previous research has indicated that knowledge of negative stereotypes can significantly impede performance (“stereotype threat”, Steele & Aronson, 1995). The purpose of this research was to extend previous research on positive stereotypes and their role in stereotype threat by examining whether knowledge of positive stereotypes about college students could negatively affect performance on standardized tests. Specifically, the purpose here was to see whether knowledge of the stereotype of college students as smart, high-achieving, and driven had an influence on performance. Initially, college identity was made salient for all participants, and the stereotype was activated for half of the participants (“experimental group”), but not the other half (“control group”). The hypothesis was that those who were made aware of the positive stereotype experienced higher anxiety and therefore a decrease in performance on the GRE items, thus creating a stereotype threat by a positive stereotype.

Compensation: Some students may receive extra credit/research credit from their professors for their participation if the course allows it. Participants were also able to choose to enter their name into a raffle for a \$25 gift card to The Whole Darn Thing.

Confidentiality: The data you provided for this research project will be confidential and your name will never be associated with your results. Furthermore, when your data is no longer needed, it will be shredded.

To Learn More: For further information about this topic, please consult the following sources or contact the experimenter or the faculty advisor (contact information below).

Cheryan, S., & Bodenhausen, G. V. (2000). When positive stereotypes threaten intellectual performance: The psychological hazards of "model minority" status. *Psychological Science*, 11(5), 399-402.

Rosenthal, H. E. S., & Crisp, R. J. (2007). Choking under pressure: When an additional positive stereotype affects performance for domain identified male mathematics students. *European Journal of Psychology of Education*, 22(3), 317-326.

Rydell, R. J., McConnell, A. R., & Beilock, S. L. (2009). Multiple social identities and stereotype threat: Imbalance, accessibility, and working memory. *Journal of Personality and Social Psychology*, 96(5), 949-966.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African-Americans. *Journal of Personality and Social Psychology*, 69, 797-811.

Contact Information: If you have any questions about this research project, please consult the information below:

Experimenter: Alexander Alnajada

E-mail: alnajaa@allegheny.edu

Faculty Advisor: Dr. Lydia E. Jackson

E-mail: ljackson2@allegheny.edu

IRB Committee Chair: Dr. Rich Bowden

E-mail: rbowden@allegheny.edu

Counseling Center (Reis Hall Room 304) – (814)-332-4368

Collective Self-Esteem Scale

Instructions: We are all members of different social groups or social categories. Some of such social groups or categories pertain to gender, race, religion, nationality, etc.. For the following few questions, we would like you to consider your memberships in the group of being a COLLEGE STUDENT and respond to the following statements on the basis of how you feel about belonging to that group. There are no right or wrong answers to any of these statements. We are interested in your honest reactions and opinions. Please read each statement carefully and respond by using the scale provided.

1 = Strongly disagree 2 = Disagree 3 = Slightly disagree 4 = Neutral 5 = Slightly agree

6 = Agree 7 = Strongly agree

1. High academic achievement is very important to me.
2. I am a worthy member of this group.
3. I often regret being a member of this group.
4. Overall, my membership in this group has very little to do with how I feel about myself.
5. I feel I don't have much to offer to this group.
6. In general, I am glad to be a member of this group.
7. Belonging to this group is an important reflection of who I am.
8. I often feel I'm a useless member of this group.
9. I feel good about belonging to this group.

The following manipulation questions were only given to the experimental group following the previous 9 questions from the CSE. Same Likert scale was used.

10. Most people consider this group, on average, to be more intelligent than other groups.
11. I am aware that the expectation is that having a college education will likely lead to a more successful life.
12. I am aware that college students usually outperform non-college students on standardized tests.
13. Most people think that belonging to this group means one is smarter than those who didn't go to college.
14. In general, others think that college students are high achievers.

** Numbers 3, 4, 5, and 8 will be reverse scored.

GRE Test Questions

Instructions: In the following, you will be given several questions from a standardized test usually given to college students. There are two sections consisting of 6 questions per section. You have 10 minutes to complete each section (the order of which will be randomly determined). You may use the calculator and paper and pencil in front of you to answer the questions. The time will begin once you hit “continue.”

Section I: Verbal

Each of the following questions begins with a sentence that has two blanks. The blanks indicate that a piece of the sentence is missing. Each sentence is followed by 5 answer choices that consist of words. Select the answer choice that completes the sentence best.

1. The fundamental _____ between dogs and cats is for the most part a myth; members of these species often coexist_____.

- A. antipathy..amiably
- B. disharmony..uneasily
- C. compatibility..together
- D. relationship..peacefully
- E. difference..placidly

2. His desire to state his case completely was certainly reasonable; however, his lengthy technical explanations were monotonous and tended to _____ rather than _____ the jury.

- A. enlighten..inform
- B. interest..persuade
- C. provoke..influence
- D. allay..pacify
- E. bore..convince

3. The recent Oxford edition of the works of Shakespeare is _____ because it not only departs frequently from the readings of most other modern editions, but also challenges many of the basic _____ of textual criticism.

- A. controversial..conventions
- B. typical..innovations
- C. inadequate..norms
- D. curious..projects
- E. pretentious..explanations

Antonyms

Each of the following questions begins with a single word in CAPITAL letters. Five answer choices follow. Select the answer choice that has the most OPPOSITE meaning of the word in capital letters. Since some of the questions require you to distinguish fine shades of meaning, be sure to consider all the choices before deciding which one is best.

4. Undermine:

- A. appreciate
- B. donate
- C. bolster
- D. decay
- E. simplify

5. Disseminate:

- A. fertilize
- B. ordain
- C. suppress
- D. explain thoroughly
- E. make an impression

6. Meritorious:

- A. effulgent
- B. stationary
- C. uneven
- D. narrow-minded

E. unpraiseworthy

Section II: Quantitative

Please answer the following questions by selecting the best answer choice. Make sure to consider all choices before submitting your final answer.

1. John has four ties, 12 shirts, and three belts. If each day he wears exactly one tie, one shirt, and one belt, what is the maximum number of days he can go without repeating a particular

combination?

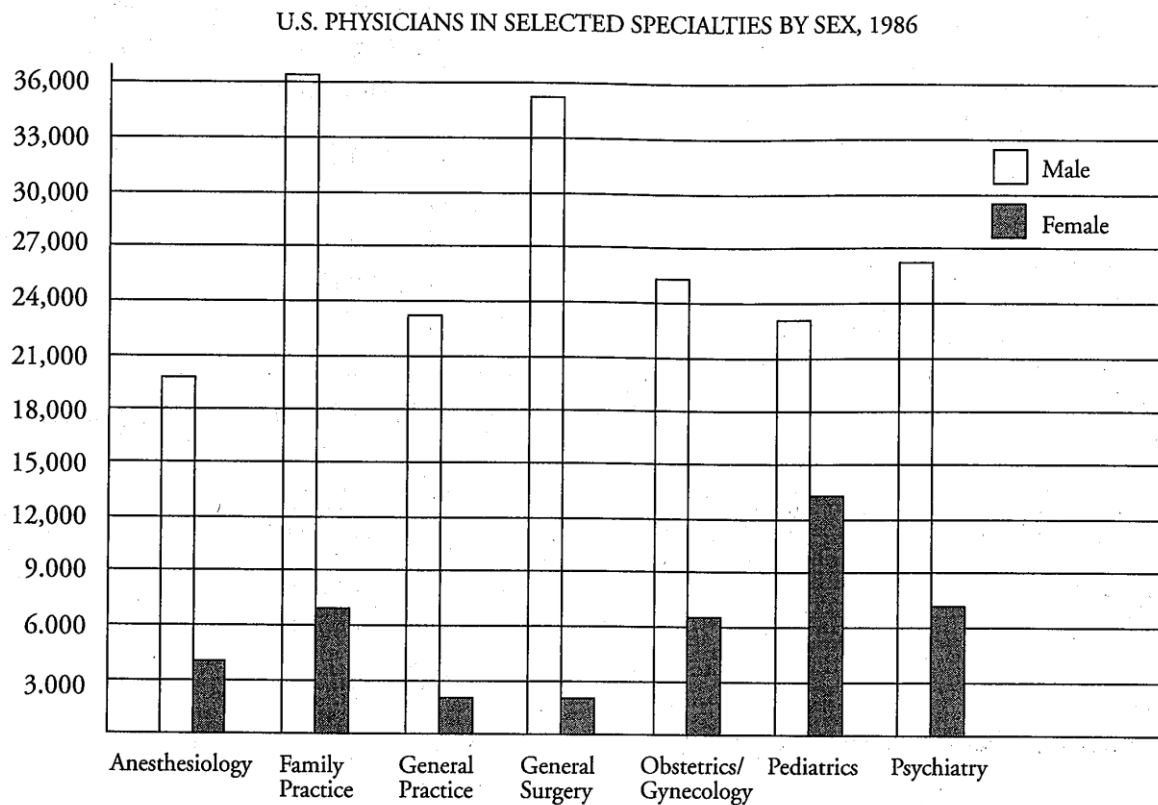
A. 12

B. 21

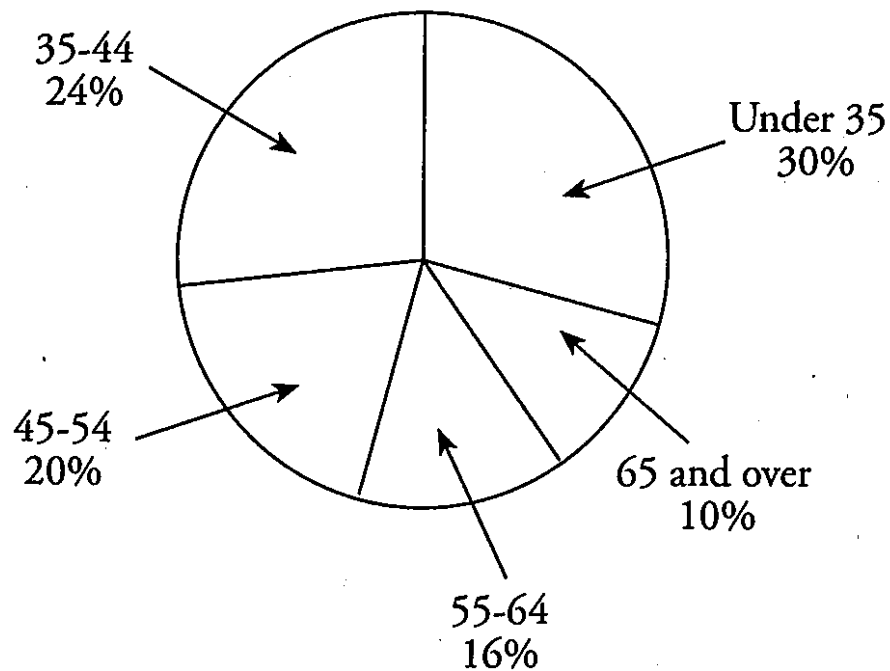
C. 84

D. 108

E. 144



GENERAL SURGERY PHYSICIANS BY AGE, 1986



For questions 2 and 3, refer to the charts above.

2. Which of the following physician specialties had the lowest ratio of males to females in 1986?

- A. Family practice
- B. General surgery
- C. Obstetrics/gynecology
- D. Pediatrics
- E. Psychiatry

3. In 1986, approximately how many general surgery physicians were between the ages of 45 and 54, inclusive?

- A. 5,440
- B. 6,300
- C. 7,350
- D. 7,800
- E. 8,900

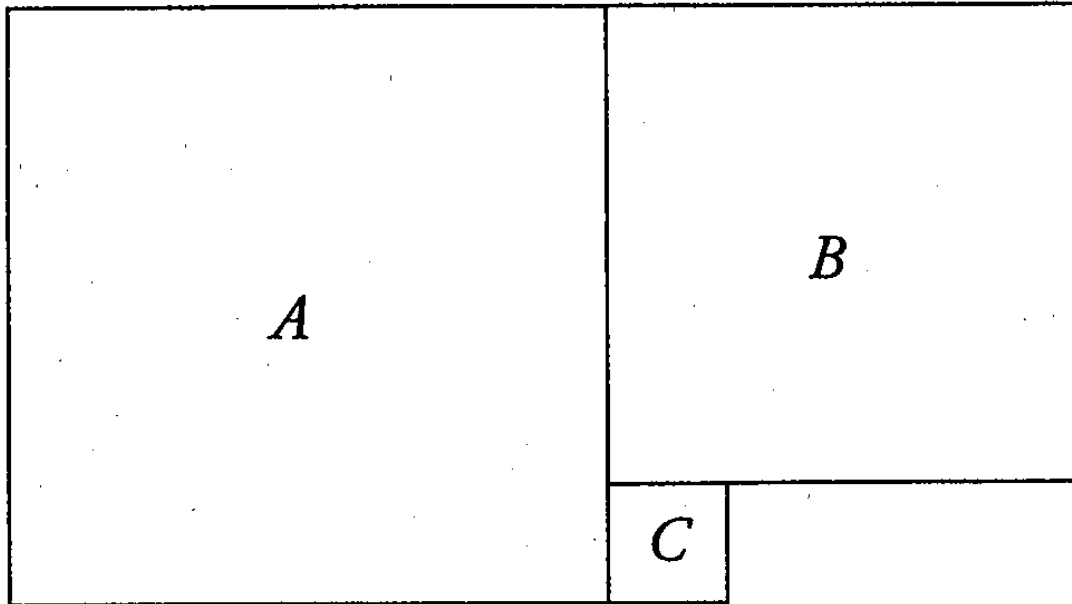
4. $|3| + |-4| + |3-4| =$

- A. 14
- B. 8

C. 7

D. 2

E. 0



5. In the figure above, there are three square gardening areas. The area of square *A* is 81 square meters and the area of square *B* is 49 square meters. What is the area, in square meters, of square *C*?

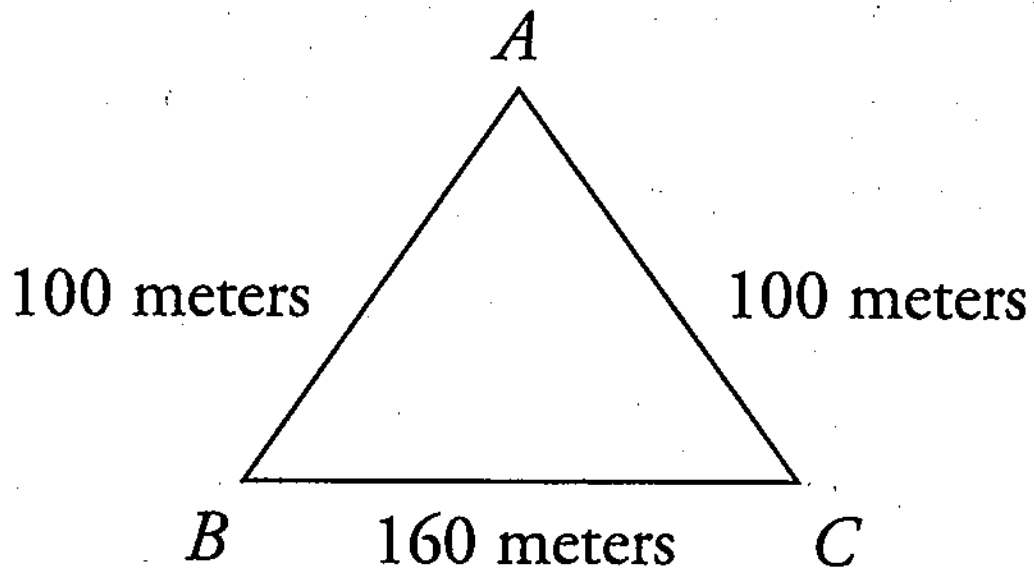
A. 2

B. 4

C. 9

D. 27

E. 32



6. In the figure above is a triangular field. What is the minimum distance, in meters, that a person would have to walk to go from point A to a point on the side BC ?

- A. 60
- B. 80
- C. 100
- D. 140
- E. 180

PANAS, abbreviated

Instructions: This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following scale to record your answers:

1 = very slightly or not at all 2 = a little 3 = moderately 4 = quite a bit 5 = extremely

_____ calm

_____ tired

_____ nervous

_____ surprised

_____ determined

_____ confident

_____ drowsy

_____ worried

_____ shaky

_____ afraid

_____ at ease

_____ exhausted

_____ excited

_____ dissatisfied with self

Manipulation Check

To what extent were you concerned about your performance on the previous test?

1 = very slightly or not at all 2 = a little 3 = moderately 4 = quite a bit 5 = extremely

Demographics Questionnaire

1. Sex: 1 = male 2 = female 3 = other 4 = do not wish to disclose
2. Class Year: 1 = Freshman 2 = Sophomore 3 = Junior 4 = Senior
5 = Other 6 = Do not wish to disclose
3. Age: 1 = 18 2 = 19 3 = 20 4 = 21 5 = 22 6 = 23
7 = 24 8 = 25 9 = 26 and older 10 = do not wish to disclose
4. Race: 1 = Caucasian 2 = Black/African American 3 = Asian/Asian American
4 = Hispanic/Latino 5 = Other 6 = Do not wish to disclose
5. Current GPA: 1 = 3.50-4.0 2 = 3.0-3.49 3 = 2.50-2.99
4 = 2.0-2.49 5 = less than 2.0 6 = do not wish to disclose
6. Are you currently preparing for the GRE or have you taken the GRE in the recent past?
1 = yes 2 = no
7. What did you think the hypothesis of this study was?
8. Are there any additional comments or questions about this study that you would like to share with us?
9. Had you heard anything about this study before coming here today?
10. If yes, did the information you heard influence your responses?