I AM HER AND SHE IS ME: THE IMPACT OF THE RACE OF FEMALE ROLE MODEL’S ON THE PERFORMANCE OF IN-GROUP MEMBERS

BY

BIANKA MARIA CHARITY

A THESIS

SUBMITTED TO THE DEPARTMENT OF PSYCHOLOGY

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR DEPARTMENTAL HONORS IN PSYCHOLOGY

THESIS ADVISORS:

VALERIE JONES TAYLOR, PH.D.
ANGELA FARRIS-WATKINS, PH.D.

SPelman COLLEGE

MAY 2015
IMPACT OF ROLE MODEL RACE ON IN-GROUP MEMBER PERFORMANCE

Abstract

A predominant theory used to investigate stereotypes and their effects on performance is stereotype threat. Psychologists Steele and Aronson (1995) originally developed this social-psychological theory to help explain the achievement gap between White and Black students. Stereotype threat is the preoccupation felt by members of marginalized groups who feel at risk of confirming negative stereotypes about their group that can lead to underperformance (Steele, 1997). With this effect in mind, could role models provide marginalized groups with the motivation to withstand potential threats to their identity and maintain the confidence to achieve?

To answer this question, a quasi-experiment was completed to determine whether the race of female role models impacts the academic performance and self-esteem of Black female college students. Spelman College students were randomly assigned to one of three female role model conditions: a black female role model, white female role model or no role model. To explore performance, participants completed a difficult intelligence task called the Advanced Progressive Matrices Task (Raven et al., 1998) and to assess self-esteem, the State Self-Esteem Scale was administered (Heatherton & Polivy, 1991). With a goal sample size of 60 participants, it is expected that students assigned to the black female role model condition will perform better and have higher self-esteem than students assigned to the white female role model condition and the no role model condition. This study attempts to further document that stereotype threat inhibits performance and confirm the impact of role models for the achievement of minority students.

Keywords: stereotype threat, race, situational cues, role-models, academic performance, self esteem
TABLE OF CONTENTS

Chapter                                    Page

I.  Introduction.................................................................1

II. Literature Review............................................................2
    a. The Discovery of Stereotype Threat in the Integrated Classroom........3
    b. Modern Advancements to the Classic Stereotype Threat Experiment..........6
    c. Situational Cues Control Stereotype Threat....................................9
    d. Role Model and Stereotype Threat Prevention..................................11
    e. Role Models and Self-Esteem Development.....................................14
    f. Literature Advancement.......................................................16
    g. Hypotheses........................................................................18
    h. Methodology.......................................................................18

III. Results..............................................................................26

IV. Discussion...........................................................................28

V. References............................................................................32

VI. Appendices.........................................................................38
Impact of the Race of Female Role Models on the Performance of their In-group Members

Over the course of one decade, more than 300 studies have been published on stereotype threat: the expectation that one will be judged or perceived negatively, on the basis of social identity group membership rather than actual performance and potential (Block, et al., 2011). In addition to further justifying the source of the achievement gap between black and white students, the applicability of stereotype threat theory has been extended to apply to any individual where there exists a negative stereotype about their social identity group (Steele & Aronson, 1995). For instance, while contributing empirical research has continuously sought to future confirm that stereotype threat in a learning environment results in the decreased performance of African Americans on standardized tests, literature has also noted similar negative effects for women students on math tests, and Hispanics on standardized tests.

In order to completely understand the role of stereotype threat on the performance of marginalized groups, it is important to understand how an individual comes to feel preoccupied by the idea of confirming a negative stereotype about their group. Situational cues are the exact features of any given environment which either allow vulnerability to or protection against threat. These cues correspond with individual’s concerns of the world; for both African American students and women students, an example of a negative cue is numerical representation. Additionally, there are positive cues that protect members of stereotyped groups from becoming aware of the way in which they are marginalized to the point where performance and potential are both inhibited. An example of a positive situational cue is a role model; this is a cue that the present research seeks to examine more deeply, with regard to the academic performance and subsequent self-esteem of Spelman College students.
A role model is an individual whose behavioral and/or social actions are imitated; they are revered and serve as a template for what is needed to achieve success (Lockwood, 2006). Research suggests that having a role model who is a member of one's same identifiable group (in-group) may provide a person with a sense of identity. Thus, an in-group member may also provide a person with evidence that "proves" that he/she is also able to succeed in a particular area (Manke & Cohen, 2011). For instance, current role model research suggests that women benefit most from having a role model who is a member of their same gender group. Moreover, a particular work by Manke and Cohen (2011) explored role models and their multiple and multifaceted messages. Their study suggests that by learning about how a role model has struggled, an individual may then begin to believe that he or she also has the capacity to overcome obstacles through exhibiting hard work. However, unfortunately, the collective outcomes of existing research on role models have been unsuccessful in suggesting that either race or gender play an impactful role in the relevancy of role models.

The current research expands on the remarks of previous literature regarding role models as it investigates the potential impact of the race of role models on the performance of marginalized groups. Specifically, the purpose of the present study was to explore whether becoming knowledgeable of a Black woman role model could serve as a more positive situational cue than either a White woman role model or no role model for Spelman College students, when they were placed in an academic situation where their performance and subsequent self-esteem were assessed.

**Literature Review**

The following section provides a brief overview of existing literature related to the development and evolution of stereotype threat research in performance situations, followed by
an explanation of the negative factors that elicit threat for marginalized groups. This literature also discusses how role models have come to be viewed as positive factors that protect marginalized groups from experiencing threat. The final section of the literature review states how present research on the impact of role models was extended to apply to the Historically Black College environment of Spelman College, in order to explore how the race of a female role model impacts the performance and self-esteem outcomes of female black students.

**The Discovery of Stereotype Threat in the Integrated Classroom**

Briefly following the integration of American schools in the mid 1950’s, researchers began to explore the ways in which Black students were coming to achieve in racially mixed classrooms. Initially, assumptions pertaining to biological and cultural differences amongst the two races were utilized to justify the poor performance of Black students in areas of academic performance, particularly, on standardized tests. However, as the achievement gap between Black and White students began to steadily increase over time, a pair of social psychologists, Claude Steele and Joshua Aronson became particularly intrigued with exploring the potential impact of stereotypes. Specifically, they wanted to investigate the ways in which a particular social-psychological predicament called *stereotype threat* could be used to more accurately explain the reasons for why specific groups such as African Americans and women were underperforming in classrooms. Stereotype threat occurs when members of stereotyped groups feel preoccupied by the thought of their behavior confirming negative stereotypes about their identity group (Steele, 1997). According to Steele and Aronson, stereotype threat specifically elicits negative self-evaluative feelings amongst members of marginalized groups where commonly acknowledged negative beliefs exist about them (Steele & Aronson, 1995).
The first experiment in exploring stereotype threat, utilized the status of African Americans in the United States at the time of desegregation to explore the academic underperformance of the entire population. Steele and Aronson hoped to find whether stereotype threat held an impact on the academic performance of the African American students through the facilitation of a series of experiments. They hypothesized that interracial academic settings interfere with the intellectual functioning of Black students on particularly difficult academic tasks as they first tend to become frustrated and then further become preoccupied by the thought of being judged on their performance in that situation (Steele & Aronson, 1995).

In the first experiment to uncover the role of stereotype threat on the intellectual performance of African American students, 114 Black and White College students were recruited to participate in a 30-minute test that included items from the verbal section of the Graduate Record Examination (GRE). Participants first provided the researchers with their previous verbal SAT scores and then they were randomly assigned to one of three conditions that varied in their levels of stereotype threat: a stereotype threat condition, a non-diagnostic only condition or a non-diagnostic challenge condition. In the stereotype threat condition, the test was described to the student participants as a diagnostic of intellectual ability. In the non-diagnostic only condition, the same test was described as a laboratory problem-solving task that was non-diagnostic of intellectual ability and in the additional non-diagnostic challenge condition, the test was only described as a challenge.

By indicating whether or not the test was a measurement of intellectual ability, the principal researchers hoped to vary the level of stereotype threat that existed for Black students as it is related to their ability to perform well on the test while in the presence of White participants who were also completing the test. For the dependent variable of academic performance...
performance, the researchers hypothesized that Black participants would perform much lower in the diagnostic condition, in comparison to their White counterparts. However, they were not expected to perform significantly lower than their White counterparts in the two non-diagnostic conditions.

In addition to academic performance, Black students were also assessed on their thoughts related to personal worth and academic competence following their completion of the test. The assessment included an 18-item self-report measure and it comprised of statements like ‘I feel confident about my abilities’ as well as “I feel as smart as others” (Steele & Aronson, 1995).

For the performance variable, the results of the experiment subsequently revealed that there was a main-effect of race, as White students performed higher than Black students on all three conditions. However, the results also showed that the performance of Black students on the test steadily increased, as stereotype threat decreased across all three conditions: Black students assigned to the non-diagnostic only condition performed significantly higher than Black students in both the non-diagnostic-challenge condition as well as the diagnostic condition. It was also found that Black students in the non-diagnostic challenge condition performed better than Black students in the diagnostic condition. (Steele & Aronson, 1995).

For the self-reported measure variable, stereotype threat condition was not found to have any effects on academic competence, personal-worth or disruptive thoughts and feelings. Yet, it is also interesting to note that Black students in all three conditions did report more bias on the test than did the White students in all three conditions. Also, the outcomes for the self-reported measure of perceived performance indicated that while condition description had not significant effect on the ratings of White students’ perceived performance, Black students in the diagnostic condition rated their performance lower than Black students in two non-diagnostic conditions.
The outcomes of this study subsequently show that stereotypes do exist for members of negatively stereotyped groups in their attempt to complete intelligence related tasks. Moreover, this classic study proves that stereotypes are threatening enough to cause targeted group members to not only perform lower than their White counterparts but also to perceive their performance lower than the students of the opposite racial group.

**Modern Advancements of the Classic Stereotype Threat Experiment**

The original research of stereotype threat theory by Steele and Aronson (1995) is now considered a classic as the theory is deemed as one of the most dynamically explored topics of social psychology (Derks, 2008). Thus, more modern researchers of stereotype threat have worked toward extending the validity of its theory in several ways such as exploring new marginalized groups and utilizing measures of performance.

In a 2006 study, Brown and Day were interested in creating clearer evidence of the impact of stereotype threat by testing the achievement level of African American students in comparison to White students on a non-verbal intelligence test called the Advanced Progressive Matrices Task (APM). The researchers assumed that by utilizing this recently established test, they would be able to even future challenge the conventional assumptions for underperformance by exploring more deeply the environmental factors that have contributed to the student differences found on tests of ability (Brown & Day, 2006).

Similar to the classic experiment, this study utilized Black and White college students and they were also randomly assigned to one of three conditions of stereotype threat: standard threat, high threat and low threat. Again, similar to the original work of Steele and Aronson (1995), the conditions varied in language as the APM task instructions were described in three different ways that either included or excluded terms related to intellectual ability. In the
standard stereotype threat condition, participants were given instructions which indicated that the APM task was a measure of "observation and clear thinking". In the high threat condition, the task was described as an "IQ test" and in the low threat condition, the test was described as a "series of puzzles to be completed" (Brown & Day, 2006).

The results of this experiment showed that African American participants in the low threat condition scored significantly better than the African American participants in the high threat condition; moreover, that African American participants in the low threat condition were able to perform as well as White participants in both the standard and high threat conditions (Brown & Day, 2006). These findings further justify the notion that stereotype threat occurs independently of biological factors; instead it is vulnerable to environmental influence.

In addition to utilizing different measures of performance to confirm the importance of stereotype threat for African American students, researchers have also begun to extensively explore women as an additional negatively stereotyped group that has been found to underperform in specific academic situations in comparison to male counterparts. Particularly, women's underrepresentation in science, technology, engineering and mathematics (STEM) has been concerning to the United States, specifically for decades (Smeding, 2012).

In response to this unfortunate trend, researchers have predicted that gender STEM stereotypes are what have discouraged women and girls from succeeding and pursuing in these disciplines as well as in related tasks of reasoning. These areas tend to initiate threat due to their masculine associations deemed by our environment, including expected salary (Smeding, 2012). Similar to the negative stereotypes that daunt the African American community, the negative stereotypes discovered, relating to women's poor performance in mathematics has encouraged
researchers to also investigate the ways in performance and gender related stereotypes work together to create an environment of stereotype threat for women within the classroom.

Through investigating the availability of stereotype threat for women in performance situations, it has been found that threat most frequently exists for women in academic settings of STEM. Negative academic outcomes have been found for women when they are in the presence of male peers and also when they are neither visually nor verbally reminded of the negatives stereotypes that exist for the group (Oswald & Harvey, 2000). For instance, Good, Aronson and Harder (2007) completed an experiment that explored the effects of stereotype threat on the advanced math performance of undergraduate women who were on track to earning math, engineering or science degrees (Good, Aronson & Harder, 2007).

The study utilized 174 male and female calculus students at a larger university. A 20 minute test was designed to reflect topics explored in their courses and were taken from the GRE. This test was offered to students in the form of an extra credit practice test in preparation for an upcoming exam. On the day of the test, students were provided with randomized research packets which included a consent form, the test, questionnaires and a debriefing section. The packets were also randomized by nature of instructions, this served as the manipulation. There were two conditions, a stereotype threat condition and a non-stereotype threat condition. Students in stereotype threat condition were handed packets in which the instructions expressed that they were preparing to take a test designed to measure math ability. Students in the non-stereotype threat condition read instructions similar to that of the stereotype threat condition. However, the non-threat condition instructions included an additional statement which said that the test had thus far not shown gender differences in performance and math ability and therefore,
was being administered to determine how “reliable and valid the test is for measuring math
ability” (Good et al., 2007).

The results of this experiment revealed a significant main effect of both sex and condition
on the performance of the student participants. While male and female students performed
comparably similar in the stereotype threat condition, female students assigned to the non-threat
condition performed significantly higher than their male counterparts (Good et al., 2007). The
outcomes of this research study are important when discussing the evolution of stereotype threat
research as it applies its classic model of experimentation to the investigation of women. Thus,
this experiment proves that stereotype threat is a risk to members of diverse identity groups in
performance situations, not just African American students.

Situational Cues Control Stereotype Threat

For members of all groups of social identity such as gender, age, race/ethnicity,
socioeconomic status, disability, it is the specific features of an environment called situational
cues that allow for individuals belonging to these groups to either become vulnerable to or
protected against stereotype threat (Murphy & Taylor, 2011). The most dominant situational cues
for a group are those that have an impact on ones’ psychological and behavioral outcomes. They
often correspond with aspects of one’s identity and include being stereotyped, feelings of
belonging, the likelihood of providing authenticity in a particular setting and devaluation
concerns (Murphy & Taylor, 2011). In result, for women and African Americans specifically,
researchers has extensively examined the role that specific situational cues play in modulating
the patterned underperformance of these groups, in comparison to other groups such as men and
Whites, respectively.
For African American and female students within the academic setting, there are specific situational cues that have been deemed successful in triggering threat for members of both groups due to their common concern of sense of belonging through numerical representation. Specifically, these two groups, alike, are very preoccupied by the idea of being outnumbered by a non-stereotyped group in a stereotypically vulnerable setting. There is literature to support this claim as settings that are un-balanced with in-group member representation have been found to decrease the stereotyped group members' expectation of their performance as well as their actual performance (Inzlicht & Ben-Zeev, 2000).

Research by Murphy, Steele and Gross (2007) supports the claim that numerical representation is a negative situational cue for women. Their research involved male and female participants who were recruited to participate in a study that was facilitated by a female experimenter (Murphy et al., 2007). Participants were randomly assigned to watch one of two seven-minute videos: a gender balanced video concerning math science and engineering (MSE) or an unbalanced gender video concerning MSE. All participants were told that the purpose of the viewing was to explore their physiological responses to the video itself, in addition to their opinion of the conference. The researchers of this study hypothesized that when physiological sensors were attached to each participant in order to measure their reaction to several components of physiological behaviors: cardiac interbeat interval, finger pulse amplitude, finger and ear pulse transit time, finger temperature and skin conductance level women would be sensitive to the cue of gender representation (Murphy et al. 2007).

The physiological and psychological measures of this study were defined by the outcomes of physiological vigilance, cognitive vigilance or recall, memory of the video and of the experimental room and sense of belonging. The outcomes of this study concluded that
women who watched the un-gender-unbalanced video remembered more MSE related items in the experimental room than women in the gender-balanced video. In addition, women who watched the gender un-balanced video were found to respond physiologically different than women in the opposite condition. They experienced a greater decrease in inter-beat interval, a greater increase in skin conductance as well as a greater activation of the cardiovascular system (Murphy et al., 2007). Lastly it was found that for sense of belonging, women in the un-balanced condition not only had stronger sense of belonging than women in the balanced condition, but also of the men who viewed either of the two videos.

Situational cues, however, do not end at creating vulnerability to stereotype threat; they also have the ability to protect marginalized groups against stereotype threat. To that end, one particular situational cue that could potentially encourage positive outcomes for marginalized groups is the presence of a role model. For African Americans and women specifically, the investigation of role models may be crucially important for exploring ways to improve their academic performance in environments that are vulnerable to stereotypical stimuli. This is what the present research explored.

**Role Models and Stereotype Threat Prevention**

There is no question that stereotype threat carries detrimental performance-related effects for marginalized groups. In fact, it is an environmentally created disposition that requires immediate and honest attention for the welfare of negatively stereotypes. In attempt to alleviate such disadvantageous outcomes, researchers have begun to conduct research that involves redefining situations as less threatening than initially intended. For example, this could be achieved through claiming that stereotype threat does not exist in specific situations through misattribution (McIntyre, Paulson and Lord, 2001).
More recent psychological research have begun to explore in-group role models as predictors of academic performance for marginalized individuals. In-groups role models are individuals who identify with the member of the negatively stereotyped group. Specifically, it has been suggested that in-group role models have the ability to buffer stereotyped group members from acting upon a stereotype threat stimuli by instead encouraging a counter-stereotypical response to a difficult situation (Marx & Goff, 2005). However, the effectiveness of in-group role models in their ability to improve the academic performance of threatened individual is dependent upon three specific criteria. First, the role must be perceived as competent. Second, they be an in-group member of the threatened individual. Finally, the threatened individual must also be aware of ways in which the in-group role model has succeeded in a domain for which their group is negatively stereotyped (Marx & Roman, 2002).

The assertion that in-group models have the ability to motivate individuals who are targets of stereotype threat is supported in current literature and it involves the exploration of two negatively stereotyped groups that have been extensively discussed thus far in this literature review of the present study. Black students and female students. For example, McIntyre and colleagues (2001) exercised this method of alleviating stereotype threat by having a female experimenter tell a group of female and male students that woman are better psychology experiment participants than men before administering a mathematics test that included 34 difficult sample quantitative GRE questions. After the instructions were read aloud, students were given 20 minutes to complete the test. Following the completion of the test, students were asked to rate the test difficulty, their performance both personally and in comparison to all students involved, as well as to respond to questions related to their belief toward the presence of stereotype threat in the project and gender differences in overall performance. The results of this
experiment indicated that female students performed significantly better on the math test when they were read instructions that included the statement that women are better experiment participants than male students in the unalleviated group (McIntyre et al., 2001).

Recent literature has also explored the relationship between an in-group role model and African American students. In 2009, the “Obama Effect” was coined as a term to describe the impact that our first African-American President of the United States, President Barack Obama has had upon Black Americans citizens as he has inspired the community with hope. This is a particularly valid statement as his accomplishments have defied the stereotypes that exist toward the US African Americans. In a study by Marx, Ko and Friedman (2009) President Obama’s position as a role model was utilized in order to examine a potential increase in the academic [exam] performance of Black students. The study involved a nationwide sample of 472 Black and White American participants who were asked to complete an online questionnaire.

Data collection was facilitated at two specific times: twice while President Obama’s success was salient and two additional times when his success was less salient. Participant’s performance was achieved through their completion of a verbal exam that contained model items from the GRE. Some of the items also asked for the student participants to state their opinion regarding stereotypes toward their group. Overall, the outcomes of this study allowed for the researchers of the study to conclude that the successes of President Obama have allowed for the adverse effect of stereotype threat to be reduced. Specifically, although the outcomes related to students performance were mixed amongst the four times of data collection, the outcomes related to the President’s ability to buffer the effects of stereotypical concerns of the group suggest that other Black American role models may also have the ability to further buffer the negative academic performance preoccupations of in-group members. Moreover, by identifying the three
specific circumstances for which role models have been found to be successful in buffering the academic performance of marginalized groups, the rationale of the present research questions can be considered appropriate for to the investigation of how the race of role models impacts the performance outcomes of their marginalized in-groups.

**Role Models and Self-Esteem Development**

The term self-esteem has been described in several ways. In 1965, Rosenberg described self-esteem as both the favorable and unfavorable outcomes regarding oneself. On the other hand, over ten years later Rubin et al. (1977) adopted a more modest explanation of this term, describing it as a relationship that exists between achievement and behavior. Although different, both definitions as well as other not noted here, work to portray self-esteem to be an influential contributor to academic success (Leary et al., 1995). Moreover, specific research outcomes have actually shown that a direct link exists between self-esteem and role models as the levels of self-esteem for individuals have been found to be somewhat dependent upon the presence or absence of role models (Wohlford, Lochman & Barry, 2004). Particularly, a characteristic of role models that has shown to impact the self-esteem of individuals more deeply than others is similarly: in ethnicity, age, race and interests. Similarities that exist between any individual and a role model are important in the establishment of self-esteem because it validates one’s own potential ability through self-enhancement and success, yet only under circumstances that seem attainable for the individual (Wohlford et al., 2004).

In an effort to examine this noted influence that role-models have upon the self-esteem of same-group individuals, the work of Marx & Roman (2002) can be referenced. Their research examines the impact of female role models on ability for female college students to perform well in mathematics due to situational factors (cues). The principal investigators of this study
hypothized that having a female role model would buffer and protect the performance of unconfident members of the negatively stereotyped group (Marx & Roman, 2002). In the first of three total experiments, a relationship between the presence of a female role model who serves as the experiment experimenter and women’s math exam performance is tested. Women’s feelings of self-esteem following the completion of a math exam were also examined. Furthermore, it was expected to find that women would perform as well as men on a difficult math exam, when the experimenter is female even while in the presence of situational factors that reminded women of the negative gender stereotype. It while also predicted that women would perform worse than men when the experimenter is male. Lastly, researcher’s predicted to find that the state self-esteem performance of women would be comparable to that of the male participants under the condition where the experimenter was female.

The sample of this experiment included 21 female and 22 make students who had identified as having math as an academic domain via an e-mail screening. Each student arrived to the laboratory individually to complete the study and was greeted by an experimenter who was either one of three women or men. The identified experimenter then explained to the student that the purpose of the study was to investigate how well undergraduates perform on math exams. Participants were also told that the test would be and that they would be given immediate feedback concerning their performance. This statement was made in attempt to create the impression of expertise. Students were allowed 25 minutes to complete the exam that modeled the math section of the GRE. Following the exam, performance state-esteem was measured through the State Self-Esteem Scale. This scale measured students’ confidence of their performance on the exam and their sentiments regarding a future similar experiences. Students’ self-esteem was scored on a 5-point item scale. Items on the scale include statements such as
"I feel that I have less scholastic ability right now than others".

The results of this experiment showed that women scored equally as well as men with a female experimenter administered the math exam but underperformed when administered the exam by a male experimenter (Marx & Roman, 2002). Moreover, women achieved lower scores than any other group when administered by a male experimenter. In addition, scores on the State Self-Esteem Scale indicated that women's scores were equally as high as men's scores when a female experimenter administered the exam but achieved lower performance on the self-esteem scale when administer the math exam by a male experimenter.

This section of the literature review is very important to the framework of the current research. It speaks to the strong relationship that exists between the presence of a role model and the self-esteem development of an impacted individual when similarities are shared between one another. As explained in the review of current literature, the ability for role models to have a positive impact on the self-esteem of individuals is highly dependent upon similarly. Moreover, the strongest impacts on self-esteem are found when the role model and the individual share similarity in identity, specifically. Yet, sharing interests with a role model also make self-esteem development even under the potential circumstance that they do not share similarities in their identity.

**Literature Advancement**

Previous research has shown that stereotype threat is a predicament affecting diverse marginalized groups. In fact, for members of all groups of social identity such as gender, age, race/ethnicity, socioeconomic status, disability, it is the specific features of an environment called situational cues that allow for individuals belonging to these groups to either become vulnerable to or protected against stereotype threat (Murphy & Taylor, 2011). In attempt to
further validate the impact of stereotype threat for individuals across marginalized groups, diverse measurements of performance has been explored such as the Advanced Progressive Matrices (APM) task. Moreover, researchers have also begun apply the model of classic stereotype threat, to the exploration of diverse marginalized groups. A particular marginalized group that have been found been express negative similar outcomes to African American students in performance situations are women. Specifically, these two groups have been found to express vulnerability to similar situational cues of threat because they share a common concern of the world: sense of belonging through numerical representation.

With this in mind, the present study sought to further extend the research of stereotype threat by exploring the impacts of role models as a positive situational cue for individuals belonging to these same marginalized groups. Role models are admirable individuals who according to past research play a significant role in protecting the performance of vulnerable in-group members. Specifically, role models have been found to make the most impact for threatened individuals when they are competent members of the same marginalized group and others in the in-group member are made aware of the role model and their success. Role model research also shows that they have the ability to instill self-esteem for marginalized group members, specifically when similarities exist between the role model and their in-group.

The present research considered several of the contributions, which have been made to stereotype threat research over the last decade, in order to facilitate a shift in the exploration of stereotype research for marginalized groups. Specifically, the present study utilized the most modern advancements of stereotype threat research in order to explore stereotype threat at all women’s Historically Black College campus (HBCU). It sought to examine role models as a positive situation cue for the academic performance and subsequent self-esteem of Spelman
College students. Specifically, the present study asked if the specific race of a role model could provide members of this marginalized group with the motivation to withstand potential threats to their identity and maintain the confidence to achieve? This question is important to stereotype threat research because although role models have been found to improve marginalized group outcomes, they have been unsuccessful in suggesting that either race or gender play an impactful role in the relevancy of role models as positive situational cues.

**Hypotheses**

It was predicted that Spelman college participants would perform higher on an academic task if made aware of a role model who is a member of their racial group in the black woman role condition, compared to either the white woman role model condition or the no role model control condition. It was also predicted that Spelman college students who became aware of the black woman role model condition would also evaluate their personal self-esteem in their completion of the task more positively, compared to either the white woman role model condition or the no role model condition.

**Method**

**Participants**

The sample consisted of 50 African-American female college students enrolled in a small predominantly Black women’s college: Spelman College. The sample ranged in age from 18-54 years (M = 20.4, SD=4.974). The students were from varied educational backgrounds but all were currently enrolled at the college. The classification of participants was 28% freshman, 20% sophomore, 34% junior, and 9% senior. Participants of this study were a convenience sample, where students of the college were asked to volunteer in the study. The study lasted approximately one hour and allowed for students who served as participants to be compensated a
check for five dollars as well as refreshments throughout the completion of the study. All participants were treated in accordance with the Institution Review Board (IRB) and the "Ethical specifically, they received an informed consent form to have signed and returned to the researcher, prior to the start of the study.

Materials/Measures

Manipulation Check. To confirm that participants read and comprehended the information shown on the introduction page of the experiment, a manipulation was administered to participants at a particular point in their completion of the study. This questionnaire included questions that tested participant’s knowledge of the aspects of the study which were intentional manipulated such as the race of the female role model and the believability of the cover study. (Appendix E and F).

Advanced Progressive Matrices Task. In order to explore the extent to which participants were able to perform well on an academically challenging task in the presence of a black role model, white role model or of no role model at all, the Set II of the Advanced Progressive Matrices Task was administered to students (Raven, J. et al., 1998). The foundational importance of the task is to measure eductive and reproductive ability. Eductive ability is defined as the ability to make sense out of a confusing situation or object, through the forge of non-verbal constructs. First, a practice version of the APM was administered which includes 12 items (Appendix L). Students were not timed during their completion of this portion, as its purpose is to provide students with an idea of what to expect on the official task. The official APM task includes 36 items and students were allotted only 20 minutes to complete of this version of the task (Appendix M). APM items required participants to find the correct piece to an incomplete puzzle; items become more difficult as the task progresses. Performance on the APM test was
calculated by the total number the questions correct divided by the total number of questions answered.

**Self-Esteem.** In order to explore the extent to which Spelman students evaluated their performance and themselves in a positive manner, after becoming acquainted with a black woman role model and completing the a difficult academic task (APM) the State Self-Esteem Scale was then administered (Heatherton, T. F. & Polivy, J., 1991). The State Self-Esteem Scale is a 20 item self-report instrument that utilizes a 5-point scale: 1= not at all, 2=a little bit, 3=somewhat, 4-very much and 5=extremely. The scale measured participant’s self-esteem at the end of their completion of the examination. The 20 items of the scale included three individual subscales: performance self-esteem, social self-esteem, and appearance self-esteem. Individual items responses include: “I feel confident about my abilities”, “I am worried about whether I am regarded as a success of a failure” and “I feel frustrated or rattled about my performance”. Student’s self-esteem was determined by the total number achieved in each subscale out of 35 possible points (Appendix H).

**Demographic Information.** The last set of questions that students were asked to respond during the study, regarded personal demographics and explored the race, age, classification, major and family structure of each participant (Appendix I).

**Procedure**

**Recruitment of participants.** In order to recruit this sample of participants, five minute recruitment presentations were conducted in lecture classrooms across campus disciplines. A student wide email of a recruitment flyer was also sent to students of all classifications. The two different recruitment approaches increased the likelihood of the sample including a wide range of students of different ages, classifications and majors. In order to successfully recruit participants,
the researcher utilized a cover story called the “Brain-onality Study”. Students were told that an academic lab called the “National Institute for Educational Outcomes” was recruiting Spelman students from all classifications to participate in a national study concerning “the completion of non-traditional academic tasks”. In classroom presentations, a signup sheet was made available for students to sign up to participate (Appendix B). The sign-up requested their name, email address, class schedule and phone number. This same cover story was utilized in the process of recruiting participants electronically (Appendix A). An email of a “Brain-onlaity Study” recruitment flyer was sent out to the student body once a week. In the email, interested students were asked to respond to the “national research assistant” with their availability based upon a list of provided time slots. Participants were scheduled on a first come, first serve basis (Appendix C). However, in order to be scheduled for an appointment to participate in the study, participants had to possess a Spelman College email account.

**Design.** The present research is a between-subjects design. Spelman students were conveniently sampled from the Spelman College student body. Each participant was asked to arrive alone for the completion of the study, at their designated time slot. Prior to their arrival, a number randomizer was utilized in order to randomly assign each participant to one of three conditions of a female role model: a Black woman role model, White role model or no role model. The experimenter then signed each participant into the Media Lab experimentation computer application by typing in a generated participant identification number (PIN) which ranged from 100-150 along with corresponding randomly assigned condition number which ranged from 1-3.

**Study Administration.** Although, there were very minimal risks involved in the study, upon the arrival of each participant to the lab room, they were immediately handed an informed
In each of the three conditions, the first page of the study survey showed an image of either a black female role model, a white female role model or an image of the national foundation logo. On the same page, a paragraph of information was shown. In the two manipulation conditions, this information provided a brief background of either the black or white female role model as well as directions on how to complete the study. The female role models were described as the lead researchers of the study who had earned their doctorate in educational psychology. In attempt to further increase similarity between the images of the female role models and each student participant, the black female role model was also described as a Spelman Alumna and the white female role model was described as an Agnes Scott Alumna. In the control condition where no role model was presented, the introduction page of the experiment only included instructions for completing the study.

Following the introduction page, students engaged in manipulation check of four questions regarding the background information on the study. The purpose of this check was to ensure that participants were actively engaged learning about the background of the research study: this is how the deceptive cover study was used to elicit the manipulation of the research. Following the manipulation check, students were directed to complete a set of 12 practice APM task items. After all items were responded to, the computer screen prompted the participant to notify the "research assistant" before moving on to complete the official APM performance task of 36 items. This point of intermission, allowed for the researcher to time the participant’s completion of the task. Most participants were stopped at the 20 minute mark for completing the
task. However, those participants who completed the official task under 20 minutes were asked to notify me. The time or the number of task items left at the 20 minute mark were then recorded on a Participants Information Sheet (Appendix E). The last portion of the study, involved their completion of the 20 State Self-Esteem scale items. Following their completion of this questionnaire, students were debriefed (Appendix E) on their participation, compensated and dismissed from the lab room. Together, all aspects of the online study helped the researcher to investigate the present research question which sought to determine whether the race of a female role model impacts the academic performance and subsequent self-esteem of Black female college students at Spelman College.

**Images Pre-test.** In order to ensure that the two manipulation condition images of female role models were comparable in their characteristics of a role model, 8 random images of black and white women (Black = 4, White = 4) were compiled and tested in the form of an online Qualtrics survey. This pre-test was administered to ten randomly selected Spelman College students. They were asked to rate all eight images of black and white women based upon a set of role model qualities: age, attractiveness, professionalism and approachability. Participants were also asked to confirm the race of the white and black woman images (Appendix G). From their responses, one image of a black woman and one image of a white woman were selected to be used in the study (Appendix F). These two images most closely resembled one another in their levels of all operationally defined role model qualities.

After rating each of the eight images, students were then directed to answer five brief demographics questions referring to their age, classification, ethnic/racial group, and major. In order to determine which of the Black and White images were most representative of comparable role models of different race, descriptive statistics as well as a paired-samples t-test were ran for
each possible pair of Black and White images. Black woman role model image 1 (B1) was immediately eliminated as a potential option due to missing data from participants for the attractiveness quality. Descriptive statistics were first ran for all eight images. From this preliminary analysis, the Black woman role model image 2 (B2) and White woman role model image 4 (W4) were disregarded due a discrepancy of the race of the female role models, as indicated by the ratings of the pre-test participants. In addition, Black woman role model 3 (B3) and White woman role model 3 (W3) were disregarded due to a discrepancy in their age range, as also indicated by the ratings of the pre-test participants.

Consequently, following the preliminary analysis the only black woman role model image qualified for further analysis and comparison was image B4 with the two remaining white woman role model images W1 and W2. A paired samples t-test was performed to compare image B4 with W1 and B4 with W2. For the comparison between image B4 and W1, it was found that only the difference between the approachability of role-model woman image B4 (M=3.69, SD=.704) and role-model woman image W1 (M=3.88, SD=.719) was not statistically significant t (15) = -.824, p = .423. For the remaining three qualities, the difference between the two images were significant:

- Age: The difference between ages of role-model woman image B4 (M=1.69, SD=.602) and role-model woman image W1 (M=2.13, SD=.500) is statistically significant t (15) = -2.406, p = .029

- Professionalism: The difference between the professionalism of role-model woman image B4 (M=4.63, SD=.500) and role-model woman image W1 (M=3.88, SD=.719) is statistically significant t (15) = 3.000, p = .009
• Attractiveness: The difference between the attractiveness of role-model woman image B4 (M=3.88, SD=.806) and role-model woman image W1 (M=3.19, SD=.655) is statistically significant \( t(15) = 2.711, p = .016 \)

Secondly, for the comparison between the Black woman role model image 4 (B4) and White woman role model image 2 (W2) it was found that only the difference between ages ranges of the black woman role-model image B4 (M=1.69, SD=.602) and the white woman role-model image W2 (M=2.00, SD=.730) were not statistically significant \( t(15) = -1.775, p = .096 \). Similar the previous comparison, differences between the two images in the three remaining qualities were also significant:

• Attractiveness: The difference between the attractiveness of role-model woman image B4 (M=3.88, SD=.806) and role-model woman image W2 (M=3.31, SD=.704) was statistically significant \( t(15) = 3.093, p = .007 \)

• Professionalism: The difference between the professionalism of role-model woman image B4 (M=4.63, SD=.500) and role-model woman image W2 (M=4.06, SD=.680) was statistically significant \( t(15) = 2.764, p = .014 \)

• Approachability: The difference between the approachability of role-model woman image B4 (M=3.69, SD=.704) and role-model woman image W2 (M=3.06, SD=1.124) was statistically significant \( t(15) = 2.611, p = .020 \)

Although, the role model qualities of the randomly selected images were most significant in difference, it is important to note that in addition to race, the age range of the role model images was the second more important characteristic of the operationally defined role model in this study. Therefore, it was concluded that the image B4 and W2 were the two most accurate images for the manipulations condition images of female role models in this study.
Data Reduction

In preparing the raw data of the present research study for analysis, it was important that data treatment be deployed. In order to confirm that participants were intentional in selecting their responses during the study, the manipulation check which tested their knowledge of the background information of the study was scored for accuracy. The purpose of this check was to ensure that participants were reading and paying close attention to the “Brain-onality” cover story of the study. Participants scores on the manipulation check were organized in an excel file. By counting their total number of questions answered correctly, out of four questions, it was decided that participants who did not answer at least 3 of the 4 questions correctly on the check, would be eliminated from undergoing data analysis. Thus, three participants were removed from sample size, for a total of 47 participant’s raw scores to be approved for undergoing sophisticated data analysis.

Moreover, the utilization of the State-Self Esteem Scale measure in the present study called for reserve scoring be completed for 13 of the total 20 item questionnaire. Therefore, the researcher utilized the IBM SPSS function called, “reverse into different variables” to place participant’s responses to negative items on the same scoring scale as their responses to the positive items of the measure.

Results

Preliminary Data Analyses. A preliminary analysis of data was initially performed for the first 12 participants of the study. A one-way ANOVA was calculated for student’s performance on the APM task. The analysis was not significant, $F(2, 9) = .793, p = .482$. The same analysis was also calculated for student’s score on the State Self-Esteem Scale. This analysis was also not significant, $F(2, 9) = .020, p = .98$. Given that the respective analysis was
ran on only 12 participants, the insignificance of the explored variables was expected to be due to a small sample size. Upon achieving 47 qualifying participants, it was expected to find that the independent variable of female role model condition would have a significant impact upon the two dependent variables: performance and self-esteem.

**Primary Analyses**

**Performance Measure**

A one-way ANOVA was performed for student’s performance on the 36 items of the official APM task. Performance on this measure was calculated by dividing the number of items correct by the number of items completed on the task. From the analysis, it was found that the race of the female role model (independent variable) had a no main effect on students’ performance on the APM academic task (Figure 1). Therefore, the analysis of performance was not significant, $F (2, 44) = .678, p = .531$.

**Self Esteem Measure**

Participant outcomes on the 20 items of State Self-Esteem Scale were analyzed by also completing a one-way ANOVA for the three specific subscales of the State Self-Esteem Scale: performance, social and appearance. For the first set of 7 performance self-esteem items, it was found that race of the role model had no main effect on the student’s feelings of their performance self-esteem. Therefore, the analysis of social self-esteem was not significant, $F (2, 44) = 1.035, p = .364$ (Figure 2). These same insignificant outcomes were found for the additional set of 7 social self-esteem subscale items, $F (2, 44) = 1.529, p = .228$ (Figure 3). Lastly, the analysis of the remaining 7 appearance self-esteem subscale items yielded a marginally significant effect of female role model race, $F (2, 44) = 3.024, p = .06$ (Figure 4).
Discussion

The primary goal of the present study was to determine whether the race of female role models impacts the academic performance and self-esteem of Black female college students. Inconsistent with our expectations, the race of a female role model did not have an impact on the performance nor the overall self-esteem of the sample of Spelman College students. However, the race of the female role model was found to have a marginally significant effect on the appearance self-esteem subscale of the state self-esteem scale measure (Figure 1).

Scholars have found that role models are most successful in improving the academic performance of marginalized group members specifically under three conditions: when the role model is competent in the specific academic area being examined, is an in-group member of the threatened individual and when the in-group member is made aware of the ways in which the role model has succeeded in a domain for which their group is normally vulnerable to stereotype threat (Marx & Roman, 2002). This present study attempted to explore under what conditions this impact can exist. However, it was found that in the historically black college environment (HBCU), becoming aware of a Black female role model did not provide the marginalized group with more motivation to withstand potential threats to their identity and maintain their confidence to achieve, in comparison to becoming aware of a White female role model or of no role model. Thus, conflicting with past research, the relatable black female role model in the present study was unsuccessful in improving the performance of her marginalized group members through buffering stereotypical threat in the environment and instilling their self-esteem. Based upon the results of the study, becoming aware of a Black female role model does influence the ability for Spelman college students to perform. This finding shows implies that for
Spelman College students, the race of a female role model does not matter in academic performance situations.

However, the results of the present study also found that becoming aware of a Black female role model marginally influenced the appearance self-esteem of Spelman College students. This trending finding lends new support for past role-model research which suggests that the strongest impacts on self-esteem are found when the role model and the individual share similarity in identity. Specifically, this outcome could potentially suggest that when a Spelman College student becomes aware of a Black female role model in a performance situation, they are able to acknowledge the commonalities they share and subsequently begin to feel more positively about the appearance of their marginalized group as well as themselves as individual black women. However, this positive perception of their group may not be enough to positively impact students’ performance on an academic task nor improve their sense of social and performance self-esteem. Perhaps instead, the students felt pressured to perform well on the academic task in order to further uphold the positive perception of their group as achieved through the professional success, status and appearance of their acquainted in-group role model.

**Limitations/Implications**

The present study included 50 participants with 17 participants in the black woman role condition, and 15 participants in white woman role model condition as well as the [control] no role model condition. In order to achieve significant outcomes for performance and self-esteem, running more participants at an equal number may have vastly impacted the ability to achieve a noteworthy impact of the race of a Black female role model on the performance of their in-group members. Perhaps, the researcher could continue to run participants in order achieve at least 20-30 total participants in each condition.
Another limitation of this study may have lied in the actual manipulation of the experiment. In the classic stereotype threat experiment on Black and White undergraduate students, Steele and Aronson (1995) varied the levels of stereotype threat in conditions for the completion of a verbal task by describing the task as either diagnostic, problem-solving or non-diagnostic. This same model was even utilized in a more modern study where Good and Colleagues (2007) also assigned Black and White participants to one of three conditions of stereotype threat: standard threat, high threat and low threat. These conditions either included or excluded terms related to intellectual ability.

Following a similar methodology in the present study, by creating more direct and specific changes in stereotype threat levels, may have been beneficial to achieving significant outcomes for the impact of the race of a female role model. This suggestion of a limitation stems from the popular belief that HBCU’s are commonly perceived to be eminent communities for creating a safe space for black student achievement. Most of these institutions acknowledge black identity in their mission and in their teaching pedagogies. Thus, the predominately black higher-education environment may allow for marginalized students to feel less vulnerable to stereotype threat in their daily lives as academic scholars, due to the self-awareness that they development through their college culture.

Although the major findings of the present research were not significant, this study is an important step in understanding the availability of stereotype threat for students at HBCU’s or other academic communities where a specific marginalized identity is both held predominately constant and is uplifted in the classroom. In addition to HBCU’s, another example of this kind of academic community is an all-women’s institution like Wellesley College. Provided the outcomes of the present research and its conclusions, a future research question could examine
the potentiality of there being a unique set of situational cues at minority institutions that trigger stereotype threat in performance situations amongst specific groups of in-group members.
References


Table 1

Means, Standard Deviations, and F Values for Main Effects of Role Model Race

<table>
<thead>
<tr>
<th>Variable</th>
<th>Black Woman Role Model n=17</th>
<th>White Woman Role Model n=15</th>
<th>No Role Model n=15</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Performance (APM)</td>
<td>M = .53</td>
<td>M = .51</td>
<td>M = .57</td>
<td>.678</td>
</tr>
<tr>
<td></td>
<td>SD = .24</td>
<td>SD = .20</td>
<td>SD = .16</td>
<td></td>
</tr>
<tr>
<td>Performance Self Esteem</td>
<td>23</td>
<td>22</td>
<td>22.1</td>
<td>1.035</td>
</tr>
<tr>
<td></td>
<td>2.23</td>
<td>1.81</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Social Self Esteem</td>
<td>28.4</td>
<td>27</td>
<td>25</td>
<td>1.53</td>
</tr>
<tr>
<td></td>
<td>4.72</td>
<td>6.1</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Appearance Self Esteem</td>
<td>25</td>
<td>23</td>
<td>21.3</td>
<td>3.024</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
<td>5.4</td>
<td>4.4</td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 47. p<.05

Figure 1. The race of a female role model was found to have no significant effect on the academic performance of Spelman students.
Figure 2. The race of a female role model was found to have no significant effect on the performance self-esteem of Spelman students.

Figure 3. The race of a female role model was found to have no significant effect on the social self-esteem of Spelman students.
Figure 4. The race of a female role model was found to have a *marginally* significant effect of the appearance self-esteem of Spelman students.
Email Subject Line: Opportunity to Participate in Research While Earning Money & Refreshments!

Body Text: Dear Spelman Students,
The National Institute for Educational Outcomes is currently seeking Spelmanites to participate in a study concerning the performance of female students on non-traditional academic tasks. If interested, please email the student Research Assistant, Bianka Charity at bcharity@scmail.spelman.edu to make an appointment to participate along with your availability based upon the following slots:

Monday: 9:30am, 10:30, 11:30, 12:30pm, 1:30, 2:30, and 3:30
Wednesday: 4:30 pm
Thursday: 9:30am, 10:30, 11:30, 12:30pm, 1:30, 2:30 and 4:30pm
Appendix B

Initial Recruitment Presentation Sign-up Sheet: “Brain-onality Study” Recruitment

Interested in participating in research?

**Brain-onality Study**
*Participate to earn $5*

*Study Time: Approximately 1 hour*

<table>
<thead>
<tr>
<th>Mondays</th>
<th>Tuesdays</th>
<th>Wednesdays</th>
<th>Thursdays</th>
<th>Fridays</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 am, 11:15 am, 3:30 pm, 5:30 pm</td>
<td>10:00 am, 11:15 am, 12:30 pm, 2:00 pm, 3:00 pm</td>
<td>3:00 pm, 4:15 pm</td>
<td>10:00 am, 11:15 am, 12:30 pm, 2:00 pm, 3:00 pm, 5:30 pm</td>
<td>12:30 pm, 1:30 pm, 2:30 pm, 3:30 pm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Email Address</th>
<th>Phone Number</th>
<th>Possible Times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

Participant Confirmation Email

Email Subject Line: [Urgent] Please Respond: Brain-onality Study Appointment Confirmation for [Date]

Email Body:

Dear [Participant Name],

Thank you for agreeing to participate in the National Institute for Educational Outcomes "Brain-onality Study" on behalf of the Spelman College sample.

Please confirm or disconfirm the following appointment time/date by responding to this email immediately.

Date:

Time: (the study lasts approximately 1 hour)

Location: Giles Hall, room 1 directly across from the computer lab in room 316. Please knock at the door and the Research Assistant will get you set up for the study.

Compensation: $5 and refreshments during the time of completing the study.

Thank you,

Bianka Charity
Spelman College Research Assistant
TITLE OF STUDY: Brain-onality Study

PRINCIPAL INVESTIGATOR: Dr. Valerie Jones Taylor, Professor, Psychology Department, Spelman College

Purpose

This study examines the ways in which individuals complete a non-traditional academic task. This research seeks to better understand the factors that make people successful at academic work.

Description of Procedures

In this study, you will be asked to utilize your creativity in order to complete a non-traditional academic task. After completing the task, you will answer questions related to the task. One computer laboratory room in the Psychology Department at Spelman College will be accessible for you to complete the task and questions online. The study should take approximately 1 hour to complete.

Risks

There are minimal risks attached to this study. It may cause slight discomfort and frustration, but it should be no different from the everyday discomfort felt when completing an academic task in class. Your survey responses will be kept confidential and will only be available to the research team for analysis purposes. You may stop the study at any time or decline to answer questions without any consequence to you.

Benefits

There is no direct benefit to you for participating in this study.

Economic Considerations/Incentives

Participants will be compensated $5 in exchange for their participation in the study. Light refreshments will also be available to students as they complete the study.

Confidentiality

All survey responses are confidential and will not be linked to your IP address. There will be no follow-up sessions. We do this to ensure your responses remain confidential and that you feel free to respond as freely as possible. You should know that the Spelman College Institutional Review Board (IRB) may inspect study records as part of its auditing program, but these reviews
only focus on the researchers and the study, not on your responses or involvement. The IRB is a committee that reviews research studies to make sure that they are safe and that the rights of the participants are protected.

**Voluntary Participation**

Participation is voluntary. You do not have to participate in this study if you do not want to. If you agree to be in this study, but later change your mind, you may withdraw at any time. There are no consequences of any kind if you decide you do not want to participate or refuse to answer some questions. If you choose to discontinue participation, please simply close your web browser. You will still be compensated.

**Questions**

If you have any questions about this study please contact the principal investigator (Dr. Valerie Taylor, 404-270-6051, vjones.taylor@gmail.com) or the secondary investigator (Dr. Nayena Blankson, anabblankson@gmail.com). If you have questions about your rights as participants in this study, you may contact Dr. Carmen Sidbury, Associate Provost of Research, whose office oversees the protection of human research participants. She can be reached at 404-270-5706 or IRB@spelman.edu.

**Please provide your consent to participate in the study online.**

I consent to participate in the Brain-onality Study.

1☐ Yes, I consent

2☐ No, I do not consent

Signature of participant: ___________________________ Date: ___________
Appendix E

"Brain-onality Study" Experimenter Protocol

Protocol

**Setup** (prior to arrival of participant)

- Log on to Media Lab
- Open experiment and select condition (1, 2 or 3)
- Place 1. A blank consent form and 2. A writing utensil at study desk

**Verbal Script**

Hi, are you here for the Brain-onality Study? I'm Bianka.

Thank you for coming in today.

Please have a seat at this computer.

You can leave your bags on the floor or on the cabinet here.

Are you ready to get started?

The National Foundation for Educational Outcomes is recruiting college students to participate in a study concerning their performance on a non-traditional academic test. Various institutions were selected to participate in the study. Today, you are being asked to complete the test for the Spelman College sample. You will learn more about the national study in just a few moments.

Because I am a research assistant helping to facilitate the study at Spelman, it is important that I refer to a script so that all participants hear the same instructions.

The study lasts about 1 hour and in exchange for your participation, you will be compensated $5. A light refreshment will also be available to you as you complete the study today. Ask preference in snack

Please read over and sign the consent form here, if you agree to participate.

**Collect afterward**

Thank you. Now, we'll begin.

So, here is what you'll be doing today:

- The introduction for the study and all instructions will be presented on this computer. Basically,
- Next, you will then be asked a few questions about the details of this study to verify that you understand the foundation and its goals so please pay careful attention to everything that you read.
- Then, you will complete a practice set of questions to get a feel for the test and then you will complete the real exam
- Lastly, you will complete a few follow-up questions.

Do you have any questions?

Ok. Please follow the directions on the screen to begin.

I will be sitting outside until it is time for you to move forward with the test. Please do hesitate to let me know if you have questions as you complete this portion of the study.

1. They begin by viewing a welcome page
2. Next, the introductions for the task are provided along with one of 3 possible manipulation statements.

3. A manipulation check is then administered to verify the participant's acknowledgement of the role model race and to ask about other details to make sure participants understood the point of the study more generally.

4. The participant is then directed to begin a practice set of the task questions.

5. Following the completion of the practice set, the screen will notify the participant to notify the RA (me)

Are you all finished with the first part? Ok, you will now move on to complete the official test. You will have 20 minutes.

Please press the continue button on your screen to begin.

**Personal Notes:**

- Start timer
- Stop timer at 20 minutes
- Write down the item the participant stopped on and press "skip" for all remaining items (refer to chart)

On the screen - Thank you for completing this study, sponsored by the National Foundation of Educational Outcomes. Please notify the study facilitator of your completion.

Thank you. Finally, you will now complete a brief follow-up questionnaire on the computer and then we will be done.

All finished? That concludes the study. Thank you for your time. I will now take a few moments to explain the study and its goals in detail (refer to debriefing)
Participant Information Sheet

PID #

Manipulation Condition Assigned: 1 2 3

Task
Completed? Yes or No

Yes? Test completion time: __________

No? Item number stopped on at 20-minute timer mark: __________
(Remember to press skip for all remaining items)

Debriefing Statement
Thank you for participating in the Brain-onality Study. First, I would like to ask you a few questions about the study:

1. In your own words, what was the study about?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. Did everything in the study make sense; did anything seem odd to you?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

3. How did you perceive the corporation and/or the people involved in conducting the research?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. What did you think of the pattern completion task?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
The purpose of the study is to explore the impact of the race of female role models on the ability for college Black women to perform well on a difficult intelligence task. In this study, participants were randomly assigned to one of three conditions: a black woman role model image, a white woman role model image or a control image with the corporation logo. In the two manipulation conditions, it is expected to find that Black college women will perform significantly better on the intelligence task when made aware of a role model (LR) who is a member of their own racial group; the Black woman role model (LR). Additionally, you were told that this study was based upon a national research study sponsored by the National Foundation of Educational Outcomes. However, the National Foundation and the images you saw were used for study purposes only and are not real. In reality, I am a senior psychology major completing an Honors Thesis on this topic. Do you have any questions?

- You completed the Ravens Progressive Matrices Task. Have you every completed the task before, or one similar to it?

- Now, that you have heard the goals of the study, did you believe it as you were completing it? (Please explain)

- Do you have any additional comments? I'd appreciate any feedback you may have.

Okay, thank you. I hope that I have clarified the research. As indicated previously, in exchange for your participation, you will be compensated $5. You are now completely finished. However, because the study is still being ran please do not share the details of the study with anyone else. If so, my research efforts will be greatly compromised. If you have any other questions or concerns, you may contact Dr. Valerie Taylor, a professor in the Psychology Department or myself. Thank you, again. Have a great day.
Appendix F

Qualtrics Survey Pre-test Questionnaire Role Model Images

Black Women Images


White Women Images

Appendix G

Qualtrics Survey Images Pre-test Questionnaire

**Items**

**Image Items:**
1. How old does this woman appear to be?
   - 20-30
   - 30-40
   - 40-50
   - 50-60

2. What race do you believe this woman is?
   - White/Caucasian
   - Hispanic
   - Black/African American
   - Native American

3. How attractive is this woman?
   - Very unattractive
   - Unattractive
   - Neither attractive or unattractive
   - Attractive
   - Very attractive

4. How professional is this woman?
   - Not at all professional
   - Unprofessional
   - Somewhat unprofessional
   - Professional
   - Very professional

5. How approachable is this woman?
   - Not at all approachable
   - Not at all approachable
   - Unapproachable
   - Somewhat unapproachable,
   - Approachable
   - Very approachable

**Demographics Items:**
1. What is your age?
2. What is your classification?
   - Freshman
   - Sophomore
   - Junior
   - Senior
3. What is your racial ethic group? (click all that apply)
   - White/Caucasian
   - Black/African American
   - Hispanic
   - Native American
   - Pacific Islander
4. What is your primary racial ethic group?
   - White/Caucasian
   - Black/African American
   - Hispanic
   - Native American
   - Pacific Islander
5. What is your major?
Appendix H

State Self Esteem Scale Items

1. I feel confident about my abilities.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
2. I am worried about whether I am regarded as a success or failure.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
3. I feel satisfied with the way my body looks right now.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
4. I feel frustrated or rattled about my performance.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
5. I feel that I am having trouble understanding things that I read.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
6. I feel that others respect and admire me.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
7. I am dissatisfied with my weight.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
8. I feel self-conscious.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
9. I feel as smart as others.
   1 2 3 4 5
   Not At All A Little Bit Somewhat Very Much Extremely
10. I feel displeased with myself.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
11. I feel good about myself.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
12. I am pleased with my appearance right now.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
13. I am worried about what other people think of me.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
15. I feel inferior to others at this moment.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
16. I feel unattractive.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
17. I feel concerned about the impression I am making.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
18. I feel that I have less scholastic ability right now than others.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
19. I feel like I'm not doing well.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
20. I am worried about looking foolish.
    1 2 3 4 5
    Not At All A Little Bit Somewhat Very Much Extremely
Appendix I

Media Lab “Brain-onality Study” Experiment Demographics Questionnaire Items

1. What is your gender?
   - Female
   - Male

2. What is your age?

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

4. What is your major?

5. What is your family structure?
   - Nuclear
   - Single Parent
   - Extended
   - Stepfamily (mixed)
   - Grandparent

6. What is your ethnicity?
   - Hispanic or Latino
   - Not Hispanic or Latino

7. What is your race? Please indicate all that apply
   - American Indian or Alaskan
   - Asian
   - Black or African American
   - Native Hawaiian or Other Pacific Islander
   - White
   - Other
MediaLab “Brain-onality” Study Experiment Manipulation Check Items

1. What is the purpose of the test that you will be completing?
   - To explore how classification impacts the ability to complete academic tasks.
   - To explore the self-esteem of collegiate women
   - To understand how undergraduate female interpret non-traditional academic tasks
   - To find the best institution in the United States

2. What is the name of the foundation completing this study?
   - Gifted Education Foundation
   - National Foundation of Educational Outcomes
   - The Educational Foundation
   - The Foundation for Undergraduate Leadership and Success

3. Who will be facilitating this study?
   - A lead researcher of the national study
   - A research assistant within the Department of Psychology at Spelman College
   - A student volunteer
   - A faculty member
   - None of the above

4. Who signed the welcome letter for the national study?
   - The foundation
   - The lead researcher
   - The research assistant
   - A faculty member
   - None of the above
Appendix K

Media Lab "Brain-onality Study" Experiment Additional Questions for Role Model Manipulation

1. What undergraduate institution did the lead researcher of the study attend?
   - Georgia State University
   - Agnes Scott College
   - Emory University
   - Spelman College
   - Not applicable

2. What was the race of the lead researcher of the study?
   - Black
   - White
   - Other
   - Not applicable
Appendix L

APM PRACTICE TASK ITEMS (1-12)
Appendix M

APM OFFICIAL TASK ITEMS (1-36)