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CAN IT BE DONE? EXAMINING STEREOTYPE THREAT WITH FAKE STEREOTYPES

Jessica Hodges

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**CAN IT BE DONE? EXAMINING STEREOTYPE THREAT WITH FAKE
STEREOTYPES**

A Thesis

Presented to

The Faculty of the Department of Psychology

Murray State University

Murray, Kentucky

In Partial Fulfillment

of the Requirements for the Degree

of Masters in Experimental Psychology

by Jessica Michelle Hodges

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Abstract

Stereotype threat refers to the risk of conforming to a stereotype regarding a group one belongs to. This threat has been heavily studied with negative stereotypes on performance-based tasks (e.g., math), and encompasses the anxiety one may feel due to being associated with the negative stereotype (Steele & Aronson, 1995). The present project sought to expand upon current literature in several ways. First, this project sought to assess whether fake stereotypes elicit stereotype threat like real stereotypes do. Second, this project examined whether fake stereotype threat works with positive stereotypes as well as negative. Third, this study examined how group identification influenced the effects of stereotype threat. This was accomplished via a controlled experiment with random assignment. It was expected that stereotype threat would work with fake stereotypes, and that performance would vary based on which stereotype the participant was presented with (positive or negative). Additionally, it was expected that identification would exacerbate the effects of stereotype threat on the performance-based task. Results indicated that there was no significant difference between stereotype conditions on reading comprehension performance, and that there was no moderating effect of identification.

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Chapter 1: Review of the Literature

Stereotypes

Stereotypes are positive or negative beliefs, theories, or attitudes an individual hold about groups or members of those groups (Czopp et al., 2015; Czopp & Monteith, 2006; Eagly & Mladinic, 1989; Hilton & von Hippel, 1996). Moreover, an individual can even form self-stereotypes, where one's in-group stereotypes are enmeshed into their self-concept and identity (Burkley & Blanton, 2009; Oswald & Lindstedt, 2006). Self-stereotypes can be chronic (dispositional and unchanging across situations) or functional (changes based on the situational context), and, just like the group stereotypes that these stem from, can be either positive or negative (Burkley & Blanton, 2009), though there is debate about whether positive and negative stereotypes are mutually exclusive (Cheryan & Bodenhausen, 2000; Czopp & Monteith, 2006; Hilton & von Hippel, 1996; Smith & Johnson, 2006). Arguably, not all stereotypes are negative; positive stereotypes have been defined as "subjective favorable beliefs" about individuals of a group(s) that may infer, either directly or indirectly, "domain-specific advantage, favorability, or superiority" based on those target individual's membership to the target group (Czopp et al., 2015, p. 451). The other aspect of that argument, however, is that the groups not associated with the positive stereotype are then associated with the negative (Czopp et al., 2015; Czopp & Monteith, 2006; Smith & Johnson, 2006). For example, the stereotype that men perform better at math is a positive stereotype, but also means that women perform worse at math, which is the negative stereotype juxtaposed to the positive. Early stereotype/stereotype

threat research used the stereotype that black people perform worse on academic tests than white people (Steele & Aronson, 1995), which is clearly a negative stereotype. However, there are positive stereotypes about black people, such as they are athletic, muscular, rhythmic, and are skilled both socially and sexually (Czopp et al., 2015; Czopp & Monteith, 2006).

It is important to understand where these positive stereotypes stem from, since they may come from previous negative events or attitudes about groups. For example, Czopp and Monteith (2006) discuss how history played a role in the formation of these positive stereotypes about black people; athleticism and muscle may stem from history of slavery, while rhythm may stem from jazz. Similarly, positive stereotypes about women (they are empathic, warm, and nurturing) may stem from, and reinforce, viewpoints endorsed by a patriarchal society (Eagly & Mladinic, 1989).

According to social identity theory, people identify with categories they choose (e.g. career) or are born into (e.g. ethnicity), or even experiences they might share with others (Coats & Smith, 1999; Stets & Burke, 2000). These groups that are part of one's identity constitute their in-groups, whereas all other groups that are not part of one's identity constitute their out-groups (Brewer, 1979, 1991; Castano et al., 2002; Galinsky & Moskowitz, 2000; Stets & Burke, 2000). Consequently, people tend to have more positive biases toward their in-group members and more negative biases toward out-group members (Brewer, 1979; Hilton & von Hippel, 1996). It is also important to note that stereotypes about outgroups will tend to be more negative than stereotypes about one's ingroups (Hilton & von Hippel, 1996), and that majority groups tend to have more

positive stereotypes, while minority groups tend to have more negative stereotypes (Smith & Johnson, 2006).

Regardless of the type of stereotype (positive or negative), performance is impacted when the stereotype is made salient to an individual of the targeted group (Banchefsky & Park, 2018; Cheryan & Bodenhausen, 2000; Czopp et al., 2015; Kay et al., 2013; Kiefer & Sekaquaptewa, 2007; Shih et al., 1999; Smith & Johnson, 2006). Stereotypes can relate to worse performance due to stereotype threat (Banchefsky & Park, 2018). Stereotype threat occurs when an individual's performance on a task is impacted after hearing about a negative stereotype regarding their in-group (Aronson et al., 1998; Steele & Aronson, 1995). Some research suggests this can occur with positive stereotypes as well, or when an individual is told of a negative stereotype pertaining to the out-group, providing what is known as a stereotype lift effect (a boost to performance; Danaher & Crandall, 2008; Walton & Cohen, 2003).

Interestingly, the effects of stereotype threat can be exacerbated if the individual more highly identifies with the targeted group instead of the targeted skill (Kiefer & Sekaquaptewa, 2007; Smith & Johnson, 2006). That is, if the individual is highly identified with the skill, they are less susceptible to stereotype threat (less likely to fulfill the assumption the stereotype is making; Smith & Johnson, 2006). For example, telling a female that women are worse at math will not elicit the same effects if the female participant is more highly identified with being a math student, than with being a female (Kiefer & Sekaquaptewa, 2007; Schmader 2002).

When examining self-stereotypes, or stereotypes an individual maintains about themselves, Burkley and Blanton (2009) discuss that maintaining these self-stereotypes

may be a function of Cooley's looking glass effect (Cooley, 1902). The looking glass effect posits that the way we view ourselves is based on how we think others view us (Cooley, 1902). In this way, negative self-stereotypes may lead to self-handicapping behaviors, or as an excuse to protect the "self" if failure occurs (Burkley & Blanton, 2009), whereas positive self-stereotypes may improve self-esteem or lead to "better" behavior (Oswald & Lindstedt, 2006).

Positive stereotypes can have an impact on performance in two ways. If the individual is presented with a positive stereotype, but is not highly identified with the performance task, they may perform poorly out of fear they are unable to live up to those expectations (Smith & Johnson, 2006). Additionally, there can be role conflict with stereotypes; when Asian women were presented with math problems, their performance increased when reminded of their ethnicity, but decreased when reminded of their gender (Shih et al., 1999). Thus, it is important to understand how stereotypes, whether positive or negative, can impact performance. It is not simply that negative stereotypes relate to worse performance, and positive stereotypes relate to better performance. People respond to stereotypes in different ways depending on which group membership is made salient, and how identified the individual is to that group.

Stereotype Threat

Stereotype threat (ST) refers to the effect hearing about a stereotype can have on a performance-based task (Aronson et al., 1998; Aronson et al., 1999; Leyens et al., 1994; O'Brien & Crandall, 2003; Schmader, 2002; Spencer et al., 2016; Spencer et al., 1999; Steele & Aronson, 1995). This occurs because an individual is made aware, or reminded of, a negative stereotype regarding their in-group (e.g. race, sex, age; Bedyńska et al.,

2018; Blascovich et al., 2001; Flore & Wicherts, 2015; Hess et al., 2003; Spencer et al., 2016; Steele & Aronson, 1995). The individual may experience anxiety about being associated with the negative stereotype. Given a performance-based task (e.g. math test) after receiving the stereotype, these individuals experiencing ST will perform worse than individuals who are not associated with the stereotype (Aronson et al., 1999; Steele & Aronson, 1995). The first study on this phenomenon was conducted by Steele and Aronson (1995) who examined, through several studies, the differences in standardized test performance between White and Black individuals. They told participants that the test they were about to receive was “diagnostic of intellectual ability”, which would make racial stereotypes about academic performance salient to Black participants (Steele & Aronson, 1995, p. 799). Overall, their results indicated that Black participants did perform significantly worse in the stereotype conditions than the control conditions. This initial study inspired decades of research seeking to understand how and why ST may be occurring.

Several studies initially following Steele and Aronson’s (1995) work examined this same effect on women’s performance in academic areas (Aronson et al., 1998; Spencer et al., 1999). There exists the stereotype that women do not perform as well as men in mathematical domains. When this stereotype was presented to women before completing a math test, similar effects were reported as that in Steele and Aronson’s (1995) study. Women performed significantly worse in the condition where they were presented with the negative stereotype than the condition without the stereotype (Aronson et al., 1998; Spencer et al., 1999). Interestingly, when compared to the men, women in

the stereotype condition performed worse, but in the non-stereotype condition, there were negligible differences between male and female performance.

Positive and negative stereotypes elicit different effects when used in ST research. While negative stereotypes tend to harm performance for the target group, positive stereotypes can provide a boost to performance, which is called stereotype susceptibility (SS; Cheryan & Bodenhausen, 2000; Czopp et al., 2015; Schmader et al., 2008; Shih et al., 1999; Walton & Cohen, 2003). An important caveat to SS is that too much positive pressure could lead to the *choking under pressure effect*, where the positive stereotype leads to a decline in performance (Czopp et al., 2015; Schmader et al., 2008). Participants explicitly presented with a positive stereotype were much more likely to experience the effects of choking under pressure than when they were presented with implicit positive stereotypes (Schmader et al., 2008). However, performance can also be boosted when individuals are reminded of a negative stereotype pertaining to their out-group (Danaher & Crandall, 2008; Walton & Cohen, 2003). This effect, called stereotype lift, is due to the self-efficacy or self-esteem boost the individual feels because they are engaging in downward social comparisons with the out-group (Walton & Cohen, 2003, p. 456).

The effects of ST, while mainly examined in academic performance settings, have implications for performance in other areas as well, including athletics or the workforce (Beilock et al., 2006; Roberson & Kulik, 2007; Stone et al., 1999). For example, professional golfers, who have practiced golfing for a long enough period of time that the action of golfing requires more passive cognitive functioning than active, were presented with negative stereotypes (e.g. White males perform worse than Black males in sports). They then experienced a decline in performance compared to their performance before

hearing about the stereotype (Beilock et al., 2006). This is important, because it reveals how the cognitive aspect of being aware of a stereotype can impact physical performance, or work efficacy (Beilock et al., 2006; Roberson & Kulik, 2007; Stone et al., 1999).

Research examining ST also branched out to examine the symptoms and the mechanisms underlying why this phenomenon may be occurring. There are several factors that have been studied and relate to ST, including issues with working memory (WM) and executive control (Beilock et al., 2007; Gimmig et al., 2006; Hutchison et al., 2012; Johns et al., 2008; Régner et al., 2010; Schmader, 2010; Schmader & Johns 2003; Schmader et al 2008), anxiety (Gimmig et al., 2006; Osborne, 2007; Schmader, 2010), stress (Blascovich et al., 2001), and physiological responses, which are a subset of anxiety and stress (Blascovich et al., 2001; Johns et al., 2008; O'Brien & Crandall, 2003).

The relationship between ST and task performance has been studied extensively in an effort to identify potential mediators or moderators. Many have been assessed, including anxiety/arousal (Ben-Zeev et al., 2004; O'Brien & Crandall, 2003; Osborne, 2001; Spencer et al., 1999), group-identification (Bedyńska et al., 2018; Cadinu et al., 2003; Schmader, 2002; Shih et al., 1999), self-affirmation/intervention strategies (Good et al., 2003; Martens et al., 2006), negative thinking (Cadinu et al., 2005), and expectancy (Cadinu et al., 2003), though few have been shown to consistently influence this relationship.

One consistent mediator is group identification (Bedyńska et al., 2018; Cadinu et al., 2003; Schmader, 2002; Shih et al., 1999). An individual will already have a certain level of identification with their group before the stereotype is presented, which can impact the efficacy of ST. Specifically, individuals who highly identify with the

stereotyped group will report greater ST effects than those who are less identified (Bedyńska et al., 2018; Cadinu et al., 2003; Schmader, 2002; Shih et al., 1999).

Individuals who are highly identified with the target group will have a greater drive to refute the negative stereotype and maintain a positive group-image, since they would not want to be identified with negative qualities or traits (Schmader, 2002). Interestingly, identity can impact ST, due to how individuals feel their performance is representative of their group's ability (Schmader, 2002). This can incite additional anxiety, if they are worried that the image of the group lies heavily upon their shoulders. Additionally, individuals can report differing effects of ST when one aspect of their identity is targeted versus another (Shih et al., 1999). Shih and colleagues (1999) discovered that Asian women performed better on a math test when reminded of their identification to the Asian in-group and performed worse on a math test when reminded of their identification to the female in-group. This effect was mentioned previously in the stereotype section; however, it is important to mention again now that ST has been discussed in detail.

Fake Stereotypes

This project was focused on the effects of ST with fake stereotypes, but it is important to note that there has been very little conducted on the topic. The only known study that seems to mention “fake stereotypes” was conducted by Aronson and colleagues (1999). Specifically, their goal was to test ST “with participants for whom no stereotype of low ability exists in the domain we tested” (Aronson et al., 1999, p. 29). They sought to discover whether the effects of ST could occur for anyone, regardless of minority or majority status, and without being regularly bombarded by these stereotypes (e.g. hearing “women are bad at math” for years). However, they chose to provide a

majority status group (White males) with the stereotype that Asian students perform better on math tests than Caucasian students (Aronson et al., 1999). There already exists a stereotype that men perform better than women at math, so this would be competing with the stereotype that Asians are better at math than White males. Although no stereotype exists that Asians are specifically better than Caucasians, it may be too close to the real stereotype that Asians are good at math to be considered a “fake” stereotype. Additionally, both studies in the article were underpowered, with Study 1 being severely underpowered (12 participants in each condition). Aronson and colleagues (1999) do report ST effects in this project, though a replication study with sufficient power is necessary to form a more complete picture.

The Current Project

Upon reviewing the literature and results of past research, there were two questions this project sought to address. Firstly, is it possible to elicit stereotype threat with fake stereotypes on a performance-based task? Secondly, could performance be improved with positive fake stereotypes? There were three hypotheses associated with this project.

Hypothesis 1 (H1): Participants in the negative stereotype condition would report lower reading comprehension scores than those in either the control or positive stereotype conditions. This targeted the effects of stereotype threat.

Hypothesis 2 (H2): Participants in the positive stereotype condition would report higher reading comprehension scores than those in either the control or negative stereotype conditions. This targeted the effects of stereotype susceptibility.

Hypothesis 3 (H3): Participant's identification with being a Murray State student would moderate the relationship between the experimental conditions on reading comprehension scores. Specifically, it was expected that high identification would exacerbate the stereotype threat/stereotype susceptibility.

Chapter 2: Methodology

Participants

In an effort to try to ensure the safety of university students, faculty, and researchers, all studies at MSU were to be conducted online only. Thus, this was an online experiment, and participants were recruited from a convenience sample of undergraduate students ($N = 81$). Participants were recruited to complete this survey through SONA, a software program used by the psychology department for research purposes. This study appeared with the title “Academic Skills” alongside other potential research studies.

An a-priori power analysis using G*Power revealed that 111 total participants was the minimum requirement for the planned analyses ($F = 0.3$, $\alpha = 0.05$, $\beta = 0.80$). There were three conditions, thus, 37 participants minimum were required for each condition. There were fewer participants collected than the minimum due to unforeseen low enrollment in all research studies through the department for the spring semester of 2021.

An attention check was included to ensure participants had noticed the stereotype relevant to their condition. This was embedded as one of the questions in the condition paragraph in the reading comprehension section. Ten participants were removed from the analyses for failing the attention check, which reduced the final sample to 71 participants. In the final sample there were 19 participants in the positive condition, 22 in the negative condition, and 30 in the control condition.

Demographics revealed that 15.5% of participants identified as male, 80.3% identified as female, and 4.2% identified as non-binary. Age ranged from 18 to 24 years ($M = 19.15$, $SD = 1.36$), and participants were predominantly freshmen (62%), with the rest of the sample reporting sophomore (21.1%), junior (12.7%), and senior (4.2%). Additionally, the sample was predominantly Caucasian (84.5%), with 12.7% African-American and 2.8% Native American also represented.

Materials and Procedures

There were three separate versions of the survey available on SONA, though participants were randomly assigned to view only one, based on the last digit of their University identifier number. Upon choosing to participate in the study, participants were presented with an online consent form. Upon consent they were presented with measures in the following order: group identification, reading comprehension (which included a paragraph regarding the stereotype condition), and demographics.

Collective Self-Esteem Scale (Luhtanen & Crocker, 1992; Appendix A)

This scale contained four items assessing participants' identification to a group. The items were altered to make the target group Murray State students (e.g. "Being a Murray State student is an important part of my self-image."). Participants recorded their responses on a five-point Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree). Responses were averaged, where a higher score indicated greater identification to being a Murray State student ($M = 3.08$, $SD = 0.91$, $\alpha = 0.73$). Responses on this scale were not significantly skewed (-0.21) nor kurtotic (-0.75).

Reading Comprehension (Reading Comprehension Practice, 2018; Appendix B)

As there is no known stereotype regarding a specific school's performance in this subject, the fake stereotype that the participants (Murray State students) "perform better/worse on reading comprehension tests" was presented. The reading comprehension section appeared in the following order regardless of condition: assessment-manipulation-assessment. Each assessment section contained a paragraph followed by five questions regarding information from that paragraph. The manipulation section either contained a paragraph which claimed that "Murray State Students perform better/worse (depending on their condition) than Western Kentucky University Students", followed by two questions, or it contained an unrelated control condition paragraph (Accuplacer Test) followed by two questions.

A pilot study assessed which sections would be appropriate to use for reading comprehension test. Even though questions were used from a college-placement test (Reading Comprehension Practice, 2018), the pilot study ensured that the questions were not too difficult or too easy. Participants of the pilot study were given five sections that each contained a different paragraph along with five questions pertaining to that paragraph. The two sections with the most variability in response were used, since the task for this experiment needed to be a challenge for college students. Thus, there were ten questions for the reading comprehension section (not including the condition questions), with correct responses summed such that higher scores indicated better reading comprehension performance ($M = 5.15$, $SD = 2.14$). Additionally, participants answered half of the questions before and after the manipulation. This provided performance information pre-stereotype ($M = 2.44$, $SD = 1.18$) and post-stereotype ($M = 2.72$, $SD = 1.39$).

Demographics

Participants were asked a few demographic questions regarding their age, gender, race, and year in college. This was used to describe the sample and investigate potential covariates.

Upon completion of the survey, participants were thanked for their time and debriefed by reading an explanation of the goal for this study.

Chapter 3: Results

This study examined the differences between stereotype condition on reading comprehension task performance. A correlation revealed that none of the demographic variables were significantly related to identification or performance in reading comprehension. Thus, none of the demographic variables were included as covariates in the analyses. Any missing data from an individual participant was minimal, so listwise deletion was used in each analysis. Additionally, the identification measure and reading comprehension performance in pre- and post- manipulation did not significantly deviate from normality, so no transformations were made.

Hypotheses 1 and 2

Hypotheses 1 and 2 predicted differences between the three conditions (positive, negative, control) on reading comprehension scores. Specifically, H1 predicted lower scores for participants in the negative stereotype condition compared to the other groups, and H2 predicted higher scores for participants in the positive stereotype condition compared to the other groups. A singular one-way ANOVA with Tukey's HSD planned comparisons was used to examine both hypotheses.

A repeated measures ANOVA was conducted to examine whether there was a significant difference between participant reading comprehension scores before and after the stereotype was presented, as well as determine if this difference differed by condition. The results indicated that there was no significant difference between the pre- and post-scores (*Wilks' λ* = 0.96, partial eta squared = 0.04, $F(1, 68) = 2.57$, $p = 0.113$). There was

no main effect of condition either (partial eta squared = 0.01, $F(2, 68) = 0.46$, $MSE = 2.33$, $p = 0.631$).

Additionally, there was no interaction between condition and the pre-/post- scores (*Wilks' λ* = 1.00, partial eta squared = 0.002, $F(2, 68) = 0.06$, $p = 0.942$). See Table 1 for the descriptive information of scores in pre-/post- by condition.

Table 1

Descriptive Statistics of Reading Comprehension Scores by Condition

	Pre-test: Mean (SD)	Post-test: Mean (SD)
Positive Condition	2.58 (1.17)	2.79 (1.55)
Control Condition	2.30 (1.26)	2.57 (1.43)
Negative Condition	2.50 (1.10)	2.86 (1.21)

Hypothesis 3

Hypothesis 3 predicted that identification with the in-group would exacerbate the relationship between the condition and reading comprehension scores. A moderated regression using the macro PROCESS (Hayes, 2018) was conducted to examine the influence that participants' identification with their in-group (i.e., Murray State students) had on the relationship between stereotype condition and reading comprehension performance after the stereotype was presented. Results, with bootstrapping of 10,000 samples, indicated that the overall model was not significant [$F(5,65) = 0.59$, $p = 0.705$, $r = 0.21$], and there was no significant main effect of the identification moderator ($\beta = -0.35$, $SE = 0.28$, $CI[-0.91, 0.22]$, $p = 0.222$). There was no significant interaction effect

between condition and identification, $F(2,65) = 0.77$, $p = 0.467$. See Table 2 for a full list of the results from this analysis.

Table 2

Model of the Relationship between Condition and Performance, Moderated by Identification

	Coeff.	SE	<i>t</i>	<i>p</i>
Model $R^2 = 0.04$, $MSE = 1.98$				
Constant	3.66	0.92	3.97	<0.001
Positive (Pos.)	-1.46	1.42	-1.03	0.306
Negative (Neg.)	-0.02	1.48	-0.01	0.988
Identification (ID)	-0.35	0.28	-1.23	0.222
Pos. x ID	0.56	0.46	1.21	0.229
Neg. x ID	0.11	0.45	0.24	0.815

Chapter 4: Discussion and Limitations

This project sought to determine whether individuals would experience the effects of stereotype threat and stereotype susceptibility when presented with fake stereotypes. To test this, an experiment was conducted that randomly assigned participants to one of three conditions, which determined the type/presence of a stereotype. The positive condition received a positive stereotype about reading comprehension; the negative condition received a negative stereotype about reading comprehension; the control condition did not read about a stereotype. Results indicated no support for the hypotheses, in that the participants in this experiment did not experience stereotype threat or susceptibility.

The first and second hypotheses suggested that there would be a difference in reading comprehension scores based on the condition participants were placed. Specifically, participants in the negative stereotype condition would experience stereotype threat and report lower reading comprehension scores than the other two conditions. Alternatively, participants in the positive stereotype condition would experience stereotype susceptibility and report higher reading comprehension scores than the other two groups. Results showed that there was no significant difference in performance between the groups, which is contrary to what the hypotheses predicted and the literature suggested. Also, the relationship between condition and performance became even weaker when only the performance after the manipulation was included. This could be due to psychological reactance--perhaps participants are upset about being

labeled with a stereotype, and are putting in more effort for their performance. However, performance improved from pre-post manipulation in every condition, which means that psychological reactance is not a viable explanation. Perhaps the reading comprehension questions post-manipulation were easier than the ones pre-manipulation. The pilot study was conducted in an attempt to ensure that the questions were of comparable difficulty, but this may not have been accurate enough.

The third hypothesis addressed the addition of a moderator in this relationship. It was hypothesized that identification with the in-group would exacerbate the ST and SS effects. Someone who is highly identified with the in-group which is the target of a negative stereotype may feel even stronger anxiety and report even worse performance on a task than would someone who does not identify strongly with the target group. Similarly, someone highly identified with the target group of a positive stereotype may feel a boost in confidence, and report better performance on the target task than someone less identified (Bedyńska et al., 2018; Cadinu et al., 2003; Schmader, 2002; Shih et al., 1999). However, the results did not support this hypothesis or the literature behind it. Perhaps the ST and SS effect was so negligible that moderating or mediating variables would not show an effect. Additionally, there were very few highly identified participants in this study. In order to see the effects of identification, there would need to be a much larger number of people who report high identity with the in-group.

Also, it is important to consider the “stereotype” included in this project. The stereotype mentioned that one school’s students performed differently than another school’s students. This is more of a fake fact being presented to participants instead of a fake stereotype. Perhaps in order for the fact to be a stereotype, it needs to be associated

with negative or positive attitudes or beliefs from other individuals in order for the stereotype to have an impact. Or perhaps it simply cannot be done, and the stereotype must be real/well-known in order to elicit any sort of effect. Since the fact/stereotype presented to participants lacked this affective and social component that would make it more believable, did they even believe what they were reading? The manipulation was written such that it would appear to be about a recently published article with new findings about reading comprehension. However, it would be important for future research to determine the believability of the stereotype statements/manipulations presented to participants, especially if they are fake stereotypes.

Limitations & Future Directions

There are a few limitations that would be good/necessary to address in future research conducted on this topic. The first, and arguably largest, limitation was that this was conducted as an online study. Due to COVID-19, all research had to be conducted online. This study would have been better presented in-person, as there can be many issues with online research (Gosling & Mason, 2015). For example, participants may be paying less attention while completing the research, they may get distracted more easily, they are more likely to skip through or rush questions without fully reading them (Gosling & Mason, 2015). This is especially relevant as this was a reading comprehension test, and the average rate of correct responses was approximately 50%. There were also concerns that too many reading comprehension questions presented online would lead to participant fatigue, so this study was kept as concise as possible. Future research would benefit from assessing this phenomenon in-person, making the

performance task longer, and examining anxiety and psychological reactance after presenting participants with a stereotype.

Other limitations include the choice of in-group and the lack of a representative sample. Original research looked at in-groups that would be inherent to the participant (e.g., race/gender) and are not necessarily groups that they chose to be a part of (i.e., college attendance). However, this may have been too different from the types of in-groups used in original research. The demographics for this study revealed that participants were mostly white, female, and freshmen around 19 years of age. This is an accurate representation of individuals at the introductory level in the psychology department at Murray State, but it is not a representative sample outside of this context. The demographics also did not assess whether the participants transferred to Murray State from Western Kentucky University. While this study collected predominantly from freshman participants, it is possible that the participant or someone they know attends the other school. If that is the case, those participants may interpret the stereotype about reading comprehension differently. Perhaps what should be a negative stereotype condition (Murray performs worse than WKU) would actually be a positive stereotype for this individual. Future research could examine partnering with other universities across the country to examine this topic.

Conclusion

Stereotype threat is the risk of adhering to a stereotype regarding one's in-group (Steele & Aronson, 1995). This study attempted to examine whether fake stereotypes, both positive and negative, could elicit stereotype threat and stereotype susceptibility effects. A controlled experiment with random assignment revealed that there was no

difference between the positive, negative, and control conditions on reading comprehension performance. Additionally, identification with the in-group did not have a moderating effect on this relationship. It is important to continue examining the topic of stereotype threat, and how it might emerge in other situations, like when one is presented with a fake stereotype. With the rise in biased and untrustworthy information in news and media, it is vital to understand the threat “fake” stereotypes may pose, and the responses we may have when presented with these stereotypes.

Appendix A: Collective Self-Esteem Scale

Please rate the degree to which you agree or disagree with the following statements.

1. Overall, being a Murray State Student has very little to do with how I feel about myself. (*R*)
2. Being a Murray State Student is an important reflection of who I am.
3. Being a Murray State Student is unimportant to my sense of what kind of person I am. (*R*)
4. In general, being a Murray State Student is an important part of my self-image.

Appendix B: Reading Comprehension Task

This test measures your ability to understand what you read. Some questions will ask you to read a statement or passage and then choose the best answer to the questions, based on what is stated or implied in the passage.

Directions: Read the passages and answer the questions that follow:

Assessment Section 1

The victory of the small Greek democracy of Athens over the mighty Persian empire in 490 B.C. is one of the most famous events in history. Darius, king of the Persian empire, was furious because Athens had interceded for the other Greek city-states in revolt against Persian domination. In anger the king sent an enormous army to defeat Athens. He thought it would take drastic steps to pacify the rebellious part of the empire. Persia was ruled by one man. In Athens, however, all citizens helped to rule. Ennobled by this participation, Athenians were prepared to die for their city-state. Perhaps this was the secret of the remarkable victory at Marathon, which freed them from Persian rule. On their way to Marathon, the Persians tried to fool some Greek city-states by claiming to have come in peace. The frightened citizens of Delos refused to believe this. Not wanting to abet the conquest of Greece, they fled from their city and did not return until the Persians had left. They were wise, for the Persians next conquered the city of Etria and captured its people. Tiny Athens stood alone against Persia. The Athenian people went to their sanctuaries. There they prayed for deliverance. They asked their gods to expedite their victory. The Athenians refurbished their weapons and moved to the plain of Marathon, where their little band would meet the Persians. At the last moment, soldiers from Plataea reinforced the Athenian troops. The Athenian army attacked, and Greek

citizens fought bravely. The power of the mighty Persians was offset by the love that the Athenians had for their city. Athenians defeated the Persians in archery and hand combat. Greek soldiers seized Persian ships and burned them, and the Persians fled in terror. Herodotus, a famous historian, reports that 6400 Persians died, compared with only 192 Athenians.

1. Athens had ____ the other Greek city-states against the Persians.
 - a. refused help to
 - b. intervened on behalf of
 - c. wanted to fight
 - d. given orders for all to fight
 - e. defeated

2. Darius took drastic steps to ____ the rebellious Athenians.
 - a. weaken
 - b. destroy
 - c. calm
 - d. placate
 - e. answer not available

3. Their participation ____ to the Athenians.
 - a. gave comfort
 - b. gave honor
 - c. gave strength
 - d. gave fear
 - e. gave hope

4. The people of Delos did not want to ___ the conquest of Greece.
- a. end
 - b. encourage
 - c. think about
 - d. daydream about
 - e. answer not available
5. The Athenians were ___by some soldiers who arrived from Plataea.
- a. welcomed
 - b. strengthened
 - c. held
 - d. captured
 - e. answer not available

Positive/Negative Condition Manipulation

A recent study was conducted and published by psychologists working together at both Murray State and Western Kentucky University to assess student performance in academic subjects by region (Cushen, Wallis, & Hackathorn, 2020). This study reveals that where someone attends school can be a strong predictor of performance in various academic subjects. Interestingly, their findings indicated this is especially true for reading comprehension tasks. Specifically, it is mentioned that Murray State Students tend to perform *better/worse* than Western Kentucky University Students. Cushen, Wallis, and Hackathorn (2020) assessed student academic performance at both universities in multiple areas including math, reading comprehension, and science for three semesters. For each semester, they were able to replicate their findings; while there was not a large

difference between schools in math performance, and there was no difference in science performance, there was consistently a large difference in reading comprehension performance, with Murray State Students consistently performing much *better/worse* (Cushen, Wallis, & Hackathorn, 2020). This research is interesting and necessary because it is “important to understand factors that may impact an individual’s performance in a variety of academic subjects” (Cushen, Wallis, & Hackathorn, 2020:32).

1. It can be implied by the passage that:
 - a. Cushen, Wallis and Hackathorn are not interested in gender studies
 - b. Cushen, Wallis and Hackathorn recommend taking a reading comprehension course
 - c. Cushen, Wallis and Hackathorn are criticizing standardized tests evaluating reading comprehension
 - d. Cushen, Wallis and Hackathorn want to understand how gender can impact academics

2. Which of the following findings was true for the paragraph?
 - a. Murray State Students perform better than Western Kentucky University Students in vocabulary understanding
 - b. Murray State Students perform worse than Western Kentucky University Students in reading comprehension
 - c. There is no difference between Murray State Students and Western Kentucky University Students in reading comprehension performance
 - d. Murray State Students perform better than Western Kentucky University Students in reading comprehension

Control Condition Manipulation

A special hidden surprise in a movie is called Easter Eggs. These are “extra features” that are placed in the movie by the people who make them. Although they do not add to the plot or flow of a movie, they can have a significant meaning to the director or even to fans who seek them out. In many Pixar movies, fans seek out a Pizza Planet Pizza delivery truck (they have appeared in every Pixar full-length movie since the first Toy Story movie). Or if you are observant, you can usually find an “A113” emblazoned on something because it is an insider’s reference to the animation classroom at California Institute of the Arts (many Pixar animation artists attended school there). An easy to spot Easter Egg can be seen in the Pixar movie UP when Carl’s house first takes flight, and the little girl notices it aloft outside of her window. In the bedroom, there are toys scattered around including the Luxo ball (the same ball in Pixar’s first short film). Often Easter Eggs appear on the DVD release of movies where short movies can even be hidden in the actual DVD menus. Many Pixar DVDs have these embedded in their menus. Perhaps with a keen eye, you can find one in a movie.

1. Which of the following is considered an Easter Egg?
 - a. When a pizza is delivered to a character’s home.
 - b. When a character’s home is untidy.
 - c. A secret short movie clip placed in a DVD menu that can be accessed by clicking on a hidden icon.
 - d. When the DVD menu repeats over and over.
2. According to the passage which is true about Easter Eggs?
 - a. They are beautifully decorated to celebrate the arrival of spring and new

movie releases.

- b. They are not important for the flow of the movie or the plot line.
- c. They are distracting to the casual viewer.
- d. They appear in every movie ever made.

Assessment Section 2

Many great inventions are greeted with ridicule and disbelief. The invention of the airplane was no exception. Although many people who heard about the first powered flight on December 17, 1903, were excited and impressed, others reacted with peals of laughter. The idea of flying an aircraft was repulsive to some people. Such people called Wilbur and Orville Wright, the inventors of the first flying machine, impulsive fools. Negative reactions, however, did not stop the Wrights. Impelled by their desire to succeed, they continued their experiments in aviation. Orville and Wilbur Wright had always had a compelling interest in aeronautics and mechanics. As young boys they earned money by making and selling kites and mechanical toys. Later, they designed a newspaper-folding machine, built a printing press, and operated a bicycle-repair shop. In 1896, when they read about the death of Otto Lilienthal, the brother's interest in flight grew into a compulsion. Lilienthal, a pioneer in hang-gliding, had controlled his gliders by shifting his body in the desired direction. This idea was repellent to the Wright brothers, however, and they searched for more efficient methods to control the balance of airborne vehicles. In 1900 and 1901, the Wrights tested numerous gliders and developed control techniques. The brothers' inability to obtain enough lift power for the gliders almost led them to abandon their efforts. After further study, the Wright brothers concluded that the published tables of air pressure on curved surfaces must be wrong.

They set up a wind tunnel and began a series of experiments with model wings. Because of their efforts, the old tables were repealed in time and replaced by the first reliable figures for air pressure on curved surfaces. This work, in turn, made it possible for them to design a machine that would fly. In 1903 the Wrights built their first airplane, which cost less than one thousand dollars. They even designed and built their own source of propulsion--a lightweight gasoline engine. When they started the engine on December 17, the airplane pulsed wildly before taking off. The plane managed to stay aloft for twelve seconds, however, and it flew one hundred twenty feet. By 1905 the Wrights had perfected the first airplane that could turn, circle, and remain airborne for half an hour at a time. Others had flown in balloons or in hang gliders, but the Wright brothers were the first to build a full-size machine that could fly under its own power. As the contributors of one of the most outstanding engineering achievements in history, the Wright brothers are accurately called the fathers of aviation.

1. The idea of flying an aircraft was ___to some people.
 - a. boring
 - b. distasteful
 - c. exciting
 - d. needless
 - e. answer not available

2. People thought that the Wright brothers had _____.
 - a. acted without thinking
 - b. been negatively influenced
 - c. been too cautious

- d. had not given enough thought
 - e. acted in a negative way
3. The Wright's interest in flight grew into a ____.
- a. financial empire
 - b. plan
 - c. need to act
 - d. foolish thought
 - e. answer not in article
4. Lilienthal's idea about controlling airborne vehicles was ____the Wrights.
- a. proven wrong by
 - b. opposite to the ideas of
 - c. disliked by
 - d. accepted by
 - e. opposed by
5. The Wrights designed and built their own source of ____.
- a. force for moving forward
 - b. force for turning around
 - c. turning
 - d. force to going backward
 - e. none of the above

Appendix C: IRB Approval Letter



Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916 • msu.irb@murraystate.edu

TO: Jana Hackathorn, Psychology
FROM: Jonathan Baskin, IRB Coordinator *JB*
DATE: 2/8/2021
RE: Human Subjects Protocol I.D. – IRB # 21-102

The IRB has completed its review of your student's Level 1 protocol entitled *Academic Skills*. After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.

Your stated data collection period is from 2/8/2021 to 2/7/2022.

If data collection extends beyond this period, please submit an Amendment to an Approved Protocol form detailing the new data collection period and the reason for the change.

This Level 1 approval is valid until 2/7/2022.

If data collection and analysis extends beyond this date, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 2/7/2022. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

**Opportunity
afforded**

murraystate.edu

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