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The Effects of SES Stereotypes on Hurricane Decision Making

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THE EFFECTS OF SOCIOECONOMIC STATUS STEREOTYPES ON HURRICANE DECISION

MAKING

by

ALEXANDRIA D. BOOTH

(Under the Direction of Lawrence Locker)

ABSTRACT

Despite the severe and often costly consequences associated with severe weather instances, there is a

continuing problem with noncompliance to weather warnings. This issue is pervasive, and research has

shown a number of factors that are related to weather response (Joslyn & LeClerc, 2013). Further,

individuals of a low socioeconomic status (SES) are often disproportionately impacted by severe weather

instances, such as hurricanes (Elliot & Pais, 2006). Past research has shown that individuals of a low

education level do not understand some aspects (e.g., numerical uncertainty) of a weather warning,

suggesting that weather warnings may not be accessible for all people (Grounds & Joslyn, 2018). Further,

research into stereotypes has suggested that when individuals are exposed to stereotypes about their

groups at either an explicit or implicit level, this may cause deficits in task performance (Steele &

Aronson, 1995; Shih, Pittinsky, & Ambady, 1999). Due to the long-held stereotype about individuals of a

low SES as financially irresponsible and the constant reference to the "cost" of a hurricane, the present

research examined the extent to which SES and SES-based stereotypes influenced weather-related

decision making. One-hundred twenty-seven members of the Bulloch County, Georgia and Tift County,

Georgia communities participated in this study, and valid data were collected from fifty-six of these

participants. Participants were randomly assigned to view the study as a financial decision-making task

(task framing condition) or a weather-related decision-making task (control) and were randomly assigned

to complete the MacArthur Scale of Subjective Social Status (an implicit stereotype measure) at the

beginning (identity saliency condition) or the end (control). Participants then completed measures of

weather warning comprehension, self-efficacy, preparedness, and stereotype awareness. Hierarchical moderated regression analyses were conducted for each measure. Results revealed that SES was a significant predictor for self-efficacy and preparedness, such that low SES was predictive of lower self-efficacy and hurricane preparation. This was consistent with my hypothesis. Further, the analyses revealed that task framing, and identity saliency were not predictive of low weather-related decision making. However, it is possible that the stereotype threat manipulation may have not been effective. Future research should consider utilizing the Multi-Threat Framework of stereotype threat to assess stereotype threat in the context of weather-related decision-making.

INDEX WORDS: Weather decision making, Socioeconomic status, Stereotype threat, Identity saliency

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CHAPTER 1: INTRODUCTION

Despite the severe and often costly consequences associated with severe weather instances, and improvements to weather warnings, there is a continuing problem with noncompliance to weather warnings (Joslyn & LeClerc, 2013). These are not storm specific, such that research has shown significant noncompliance in hurricanes, tornadoes, and freeze warnings (Evans, 2015; Joslyn & LeClerc, 2013; Losee, Naufel, Locker, & Webster, 2017). This issue is pervasive, and research has shown a number of factors that are related to weather response. For example, recent research has shown that the inclusion of items, such as uncertainty estimates (e.g., there is a 60% chance the storm will hit a specific area) can help increase accuracy in decision making tasks. These advancements can be advantageous to creating more effective warnings in the future (Joslyn & LeClerc, 2013). However, the field of weather warning research is relatively new, and there are many avenues that have not yet been fully explored. Preliminary research into individual differences has suggested that those of a lower educational level may benefit less from numerical evidence; this effect has been seen in medical as well as weather research (Cokely & Kelley, 2009; Grounds & Joslyn, 2018; Jasper, Bhattacharya, Levin, Jones, & Bossard, 2013).

Weather Warning Compliance

As noted, past research has shown a significant noncompliance rate for weather warnings and these issues can be partially explained and influenced by cognitive factors (e.g., false-alarm effect and processing of numerical uncertainty estimates; Grounds & Joslyn, 2018; LeClerc & Joslyn, 2015). One such study found that exposure to false alarms, defined as being told that temperatures would dip under freezing when they did not, could negatively affect compliance and decision quality. This phenomenon is also referred to as the "cry-wolf" effect. In this study, participants were tasked with determining when to apply salt to roads in freezing conditions. They were randomly assigned to receive advice in favor of salting the roads, even if the temperature was above freezing (false-alarm level) or not (the temperature was below freezing). The results suggest that the "cry-wolf" effect did influence task performance, such that participants in the false-alarm condition were significantly less likely to comply with advice to salt the roads than their counterparts (LeClerc & Joslyn, 2015).

Further research has attempted to analyze weather compliance and decision quality by utilizing numerical uncertainty estimates (e.g., there is a 75% chance that the storm will impact this area), and have found mixed results (Grounds & Joslyn, 2018; Joslyn & LeClerc, 2013; Joslyn, Nadav-Greenburg, Taing, & Nichols, 2009; LeClerc & Joslyn, 2015). Joslyn and colleagues (2009, 2013, 2015, & 2018) have been interested in whether or not individuals can correctly utilize uncertainty estimates in ambiguous situations (e.g., inclement weather scenarios). For example, when participants were given uncertainty estimates, or the percentage chance that temperatures would be below freezing, they were able to make more accurate weather-related decisions (e.g., salting the road appropriately; Joslyn & LeClerc, 2013).

However, another study by Joslyn and colleagues (2009) examined the effectiveness of numerical uncertainty estimates in conjunction with the wording of weather warnings. When numerical uncertainty estimates were used in combination with "less-than wording" participants were less likely to correctly interpret the weather warning. Specifically, participants who were told there was a 90% chance that wind speed would be LESS than 20 knots incorrectly interpreted this to mean that wind speed would be GREATER than 20 knots. The researchers believed this occurred because participants would commit reversal errors, such that it was difficult for participants to correctly interpret the warnings because of the opposite nature of the language used (e.g., the use of a high percentage and the phrase less than). These findings suggest that uncertainty estimates, in congruence with "less-than" wording may actually cause participants to perceive the warning incorrectly (Joslyn et al., 2009).

Further, it is unclear the extent to which the additional components of a weather forecast (e.g., uncertainty estimates) are accessible to all in the impacted area. Numeracy, the literary equivalent in the world of numbers, is associated with risk comprehension. Specifically, the literature suggests that individuals who are more numerate are able to make better choices, whereas those with lower numeracy skills engage in greater risk-taking behaviors (Grounds & Joslyn, 2018). This finding posed the question that perhaps not all people are able to utilize weather warning information the same way. Specifically, some individuals may be less likely to comprehend probabilistic forecasts (forecasts with uncertainty estimates) because of individual differences in numeracy (Grounds & Joslyn, 2018). This study sought to

ascertain the extent to which individual differences influenced the ability of participants to utilize

numeracy skills in weather-related decision making. They conducted a study that utilized a Road Salt

Task, in which participants were asked to determine whether or not it was appropriate to salt roads for

upcoming freezing temperatures based on probabilistic forecasts of freezing temperatures (there is a 75%

chance the temperature will be below 32 degrees Fahrenheit). Participants were allotted a certain monthly

budget and were asked to maximize costs, such that they did not unnecessarily allocate funds to salting

roads, but that they were also able to avoid fines for not salting the road. After completing this task,

participants completed a measure concerning individual differences. Participants with higher numeracy

skills did appear to engage in better decision quality, whereas, participants with lower numeracy skills

performed worse. There was also a relationship between numeracy and education, such that those with

lower levels of education also reported lower numeracy abilities. These findings suggest that further

research should be conducted concerning the relationship between education and weather-related decision

making (Grounds & Joslyn, 2018).

　　Other studies have illustrated the potential importance of individual differences in relation to

weather warning perception or compliance (Lazarus, Morss, Demuth, Lazo, & Bostrom, 2016; Morss,

Demuth, Lazo, Dickinson, Lazrus, & Morrow, 2016). Research into hurricane warnings in particular have

examined when, why, and how people respond to evacuation orders during a storm. One such study

examined several factors related to decision accuracy such as uncertainty estimates, storm surge risk,

messages with a serious tone, and cultural worldviews (Morss et al., 2016). Participants were randomly

assigned to receive information about a fictitious upcoming storm. Participants could receive uncertainty

information (e.g., there is a 55% chance the storm will make landfall), information about storm surge

(e.g., storm surge could be up to four feet), or the message could include strong, personal language (i.e.,

failure to evacuate mobile homes may cause certain death). After seeing the message, participants

completed measures assessing their perceptions of safety and home exposure as well as knowledge of

evacuation barriers, cultural worldviews, and previous experience with hurricanes (Morss et al., 2016).

There was an interaction between messages conveying a serious tone and cultural worldviews, such that

individuals with a more individualistic worldview were more likely to see these messages as overzealous and were consequently more likely to disregard the information (Morss et al., 2016). Participants with a more collectivist worldview were more likely to positively respond to weather information due to their care for the environment. This suggests that there may be some type of relationship between cultural worldviews and weather warning compliance, but more research is needed to examine the relationship (Morss et al., 2016).

The research discussed thus far provides a great deal of information concerning the extent to which internal factors (e.g., numeracy skills, cultural worldview) and information presentation may influence weather warning compliance and decision quality. Significant relationships have been found between educational level and weather-related numeracy skills and cultural worldviews and weather-related decision making. These findings suggest that individual differences play an important role in how a weather warning is understood (Grounds & Joslyn, 2018; Morss et al., 2016).

Decision Making Under Uncertainty

Cognitive abilities, such as efficiently solving problems, encoding important information into long-term memory, and facilitation of information processing are crucial and highly relevant in everyday life. Every day, decisions must be made whether we have the full information necessary to complete the task or not. When we are faced with decisions for which we do not have all of the information readily accessible, we will use heuristic processing to aid in decision making (Forgas, 1999; Tversky & Kahneman, 1974). Heuristic processing utilizes information that is already known about a topic to inform a decision; however, this information can sometimes be influenced by previous experience (e.g., prior experience with a hurricane) as well as the emotional state during both processing recall. When the cognitive capacity for processing has been reached because of overload and distractions, we are likely to rely on heuristic processing because the information is simpler and more ready-made (Forgas, 1999). Heuristic processing, although useful, can be problematic. Specifically, this type of cognitive shortcut may ignore certain aspects of a problem (e.g., base-rate probability) in order to quickly provide an

answer, or it can lead to the use of stereotypes or affect-as-information heuristics (e.g., using emotional state or mood as factual information; Forgas, 1999).

Representativeness Heuristics

Consider the following scenario: while walking along in the town park, Jim comes across a plant he has never seen before. This plant has a green stem, orange petals, and a black center. Though this is a new plant to Jim, it reminds him of a sunflower. Therefore, he categorizes this plant as a sunflower. In the example provided here, Jim is utilizing a representativeness heuristic to make a decision about the plant.

Much like participants in the classic works of Amos Tversky and Daniel Kahneman (1974), he is examining features of an unknown item so that he may categorize it as something he already knows about. A representativeness heuristic is operationalized as a decision-making strategy wherein a decision is reached on the basis of how consistent the object of interest is with similar objects (Tversky & Kahneman, 1974). While this may seem an efficient method for classifying unknown flowers, this type of heuristic can be problematic when making decisions regarding other people. As previously stated, the representativeness heuristic defines properties of an unknown to classify it into a known category. Over reliance on this type of process may lead individuals to ignore base-rate probability, or the chance that something is occurring normally. For example, had Jim been told that the flowers in the parks were 70% Black-eyed Susans and 30% sunflowers, and he still decided that the flower he had seen was a sunflower because it looked like a sunflower, he would be ignoring the 70% chance that it was actually a Black-eyed Susan. In short, Jim is relying on the stereotype he knows about sunflowers to inform his decision about what the orange flower is. Stereotype can be defined to mean an overgeneralization regarding the characteristics of a particular group or person (Snyder, Tanke, & Berscheid, 1977). Use of a representativeness heuristic may involve the use of a preexisting stereotype to inform a final decision. Since stereotypes are often rooted in previous experiences with a particular person, place, or object in some circumstances a stereotype may provide the correct answer (Hall & Carter, 1999; Lee, Jussim, & McCauley, 1995). Although, like a representativeness heuristic, overreliance on a stereotype (particularly about people groups) typically provides an incorrect answer (Tversky & Kahneman, 1974).

Stereotype Formations and Implications

In order to navigate their social surroundings, individuals have a tendency to group others into specific domains based on identifying characteristics about them (Koch, Imhoff, Dotsch, Unkelbach, & Alves, 2016). For example, people use certain dimensions to help distinguish among different social groups. Initial research in this area suggested that stereotypes exist on a continuum of warmth and competence (Fiske, Cuddy, Glick, & Xu, 2002). The idea behind the stereotype content model is that individuals are seen as having an excess or a deficit of warmth or competence, which then causes their behaviors to be consistent with social stereotypes about their group (e.g., business women are seen as highly competent but low in warmth, so they are seen as bossy or conceited; Fiske et al., 2002); however this research was seen as restrictive as it only provided two contexts for social grouping that were predetermined by the researchers. In short, there was no room for participants to divulge other ways by which they might typically group like others (Koch et al., 2016). Follow up research, suggested that the most frequent ways in which people are likely to stereotype or group others are in terms of socioeconomic status (SES)/agency, conservative and progressive beliefs, and communication (Koch et al., 2016). SES is seen as the most frequent identifier for how individuals group people, suggesting that there may be a strong common schema associated with different levels of SES (Koch et al., 2016). While some stereotypes can be positive, often times stereotypes are associated with negative and potentially harmful implications, especially for minority group members (Shih, Pittinsky, & Ambady, 1999).

Stereotype Threat Theory

Stereotype threat theory posits that stereotypes about disadvantaged groups are related to decreased task performance. Specifically, this theory states that when a task is framed as an ability-based assessment, and that ability is related to a known stereotype about the group, the disadvantaged group's members will perform poorly on the task (Steele & Aronson, 1995). This effect was thought to occur in part because people, knowing they are likely to perform poorly on a task, will de-identify with the concept to protect themselves. This can lead to subsequent disinterest, lack of motivation, and low achievement in that area (Steele & Aronson, 1995). It seemed as if bringing a particular stereotype to the

forefront of an individual's thinking could divert cognitive resources away from the task at hand, focusing mental resources on the stereotypic phrase rather than the task (Steele & Aronson, 1995). Steele and Aronson (1995) examined the potential effects of stereotype threat, such that participants were asked to complete a brief task comprised of twenty verbal GRE questions. This was either framed as diagnostic of an ability that Black men were stereotyped to perform poorly on (stereotype threat manipulation) or as a task to understand the psychological factors associated with verbal problems (control condition). Participants in the stereotype threat condition were told that the task was to test their verbal and reasoning skills, whereas participants in the control condition were told that the task was meant to assess personal factors that are involved in reading and verbal reasoning abilities (Steele & Aronson, 1995). This seminal research found that Black men who were told they were completing a measure to assess their reading and verbal reasoning skills performed worse on the same task than White peers in the same condition, when covaried with SAT scores. However, Black and White peers who were told the task was to understand psychological factors associated with verbal problems did not differ significantly on task performance (Steele & Aronson, 1995).

This study launched further exploration of the relationship between task framing, stereotypes, and performance ability. Follow-up studies have found similar effects of stereotype threat for women and individuals of a low SES (Carr & Steele, 2010; Croziet & Clare, 1998). There has been a long-held stereotype that individuals of a low SES are less likely to achieve intellectually, therefore follow up research examined the existence of this effect in low SES groups (Bullock, 2004; Croizet & Claire, 1998). Some theories attribute this to fundamental differences between groups, while others suggest that stereotypes have produced a hierarchy of expectations that is discriminatory towards individuals of a lower SES (Croizet & Clare, 1998). To assess the extent to which stereotype threat may influence task performance, Croziet and Clare (1998) replicated the Steele and Aronson (1995) study, examining high and low SES groups instead of Black and White groups. Consistent with their hypothesis, the research found that, when posed with a task that was diagnostic of an ability upon which individuals of a lower SES were stereotyped to perform poorly, individuals of a low SES performed worse than their

counterparts (Croziet & Clare, 1998). Further examination of this stereotype threat theory also found effects for non-intelligence-based assessments as well; effects of stereotype threat negatively influenced financial decision making for women, stress response for individuals of a low SES, and even basketball ability for White men (Carr & Steele, 2010; John-Henderson, Rheinschmidt, Mendoza-Denton, & Francis, 2014; Steele, 2010).

In recent years, some studies have attempted to replicate stereotype threat research and failed to do so (Flore & Wicherts, 2015). Consequently, further research needs to be conducted to examine whether or not these findings hold up today. Despite the replicability issues, other social psychological research suggests that similar effects do exist. Therefore, it is important to attempt to replicate this effect across a variety of contexts to further explore its viability as an explaining factor. Similar research has been conducted examining the effects of stereotype susceptibility or making an individual aware of their identity prior to task completion. Stereotype susceptibility (identity saliency) is thought to influence task performance at an implicit level. Specifically, indicating one's identity will implicitly activate stereotypes associated with this identity, such that a "positive" stereotype (e.g., Asian Americans are good at math) will boost task performance, while a "negative" stereotype (e.g., women are bad at math) will decrease task performance (Gibson, Losee, & Vitiello, 2014; Shih, Pittinsky, & Ambady, 1999).

The effect of implicit stereotype activation was also observed in seminal works of stereotype threat. In Study four of their classic work, Steele and Aronson (1995) had participants indicate their race prior to task completion. This additional manipulation was also related to an impairment in task performance (lower scores on the GRE measure). Other classic stereotype threat research also examined this finding; Croizet and Clare (1998) asked participants to indicate SES prior to task completion, but this was not related to any significant differences in task performance (the significant differences in this study were related to the explicit activation of the stereotype only). However, since this study was conducted in France, a society not influenced by classism (e.g., social separation by way of fiscal means), the researchers posit that if this study were conducted in a society more influenced by classism perhaps there would be an effect. Notably, their study was replicated with an American participant pool, and effects of

identity saliency (operationalized as placing demographics at the beginning of the study) were significant, such that individuals of a low SES performed poorly on a task when they completed a demographics measure prior to the onset of the task (Spencer & Castano, 2007).

Moreover, further research into stereotype threat postulates the existence of a Multi-Threat Framework of stereotype threat. This explanation of the theory was presented due to the expansive and highly variable explanations of stereotype threat (Shapiro & Neuberg, 2007). Shapiro and Neuberg (2007) posit that six, qualitatively distinct stereotype threat theories exist, and these threats emerge from a dimension of target of threat (self or group) and source of threat (self, ingroup others, or outgroup others). Each of these threats can be evoked by a particular combination of conditions (e.g., awareness of group membership or need to identify with group). The six stereotype threat theories mentioned in this literature are not the only ways in which stereotypes manifest, and a variety of stereotype threats (e.g., black sheep threat) can occur through the combination of these six base theories (Shapiro & Neuberg, 2007). This research suggests that with a variety of different types of stereotype threat theory, there are a variety of explanations for how the effect occurs and a variety of interventions to mitigate stereotype-related deficits in task performance (Shapiro & Neuberg, 2007).

Stereotypes in Low SES Groups

Previous research has indicated that SES is the most frequently used factor in grouping other people, and that stereotypes about this group (explicitly and implicitly activated) can cause impairments in task performance (Croziet & Clare, 1998; Koch et al., 2016). Previous research that examined attributions of poverty can help to explain where these stereotypes come from. There are three primary causal explanations for poverty: structural (the society has caused the poverty), individualistic (responsibility is on the individual), and fatalistic (the person was destined to live in poverty) explanations (Bullock, 2004). Both the individualistic and structural explanations of poverty have been perpetuated since the 1960s, but in the United States individualistic attributions for poverty are favored over the structural argument (Bullock, 2004; Weiner, 1985).

An individualistic attribution of poverty states that poverty is a result of something done by the individual. Often times, this is related to financial irresponsibility, sexual promiscuity, substance abuse, and general laziness (Bullock, 2004). Though this argument has been around since the 1960s, the United States of 2016 still saw individualistic attributions as the primary factors related to impoverished communities (Weiner, 1985); with the development of the Poverty Attribution Survey, individualistic measures had a high internal consistency and threshold, meaning that participants reliably answered individualistic attribution measures similarly (Bennett, Ruiz, & Davis, 2016).

Previous research has shown that society tends to rely on individualistic attributions to poverty for impoverished (or low SES) groups (Bullock, 2004). However, in order to understand how this relates to processing of a stereotype for the low SES group, it is important to examine how low SES groups view themselves. Research has suggested that participants of a low SES were also more likely to blame low SES individuals for their own poverty, suggesting the prevalence of these factors within stereotypes about this group (Cozzarelli, Wilkinson, & Tagler, 2001). Attributing a person's poverty level to their own actions, particularly in a situation where financial decisions are highly visible could certainly be related to lower response ability.

The Costly Implications of Hurricanes for Low SES Areas

As hurricane season approaches and as coastal towns face the potential for severe damage, the news media refers to this disastrous season with one word: cost. Hurricanes are named so that they can be easily referred to in emergency communications, and names are retired if a storm causes a significant cost (e.g., Hurricane Maria in Puerto Rico; Dion, 2019). Cost is referred to in many contexts during a hurricane: the cost of repairs, the cost of the storm, or even the cost related to seemingly unrelated factors. For example, after Hurricane Harvey in 2017 many of the resources in Houston and surrounding areas of Texas had to reallocate funds for repairs. This subsequently impacted (or cost) public education, such that Houston's public education system received less funding in the following fiscal year (Lee, 2019). Government funded programs are not the only things susceptible to a storm; in fact, many of these costs can be personal. For example, after Hurricane Michael in 2018 there was an increase in divorce in the

Panama City, Florida area. These rates are consistent with increased divorce rates after Hurricane Hugo in 1989 and Hurricane Katrina in 2005 (Landeck, 2019).

Natural disasters such as hurricanes are as devastating as they are seemingly arbitrary. At first glance, we may see an area impacted by disaster as simply that- an area that has been hit by the same storm, over the same amount of time, with the same amount of damage in all areas. However, when we dig beneath the surface we see that natural disasters, while random, aren't that simple (Elliot & Pais, 2006). The ways in which people respond in environmentally hazardous situations, such as hurricanes, is greatly influenced by the sociopolitical system surrounding their circumstance and their accessibility to certain resources. For example, individuals in areas such as the Gulf South have been historically predisposed to striking gaps in achievement, such that the wealthy are very wealthy while the poor are very poor. These deep, complex divides cause serious inequalities, particularly for minority groups (Elliot & Pais, 2006). A study conducted in the aftermath of Hurricane Katrina examined the influence that SES played on people's behaviors associated with evacuation, post-disaster relief, and return after the storm. Results indicated that household income played a strong role in predicting evacuation, such that individuals of a lower income bracket were more likely to wait until after the storm to evacuate. Further, home ownership played a strong role in predicting how and where people would be living after the storm, as well as their employment status after the storm (renters were nearly two times as likely to report having lost their job after the storm; Elliot & Pais, 2006). Lastly, homeownership and household income also had a strong relationship to people's likelihood to return after the storm, such that lower income homeowners were most likely to return to pre-Katrina homes, simply because they could not afford to leave (Elliot & Pais, 2006).

The literature discussed above indicates that inequalities are apparent in the abilities of individuals of a lower SES to react appropriately in a disaster situation (Elliot & Pais, 2006). Extreme after effects of severe weather events highlight the severely ignored spaces occupied by low SES groups and reveal the deficit in resources available for low SES areas to prepare for and recover from storms (Ross, 2013).

The Present Study

  The present research aims to further examine the relationship between SES, SES-related stereotype threat, and weather warning compliance behaviors. Research has already shown that there are a number of factors related to weather warning compliance, and these issues have been explained in part by individual differences (e.g., worldview and numeracy skills) and SES (Elliot & Pais, 2006, Grounds & Joslyn, 2018; Morss et al., 2016). Through news media after severe storms, we see that natural disasters are always immediately followed by constant reports related to the "cost" of the storm (Landeck, 2019; Lee, 2019). Further, in research conducted after severe storms such as Hurricane Katrina or Superstorm Sandy, it can be seen that these storms have a significant and life altering impact on individuals, particularly those of a low SES (Elliot & Pais, 2006; Ross, 2013). There are significant financial burdens associated with hurricane preparation and recovery, and low SES is often attributed to poor financial skills (Bullock, 2004; Ross, 2013; Weiner, 1985). Therefore, it could be possible that if a weather warning reminded individuals of a low SES of this disadvantage, their weather-related decision-making skills could be affected.

  This project seeks to ascertain to what extent SES is related to weather warning compliance, particularly in regard to low SES groups. Specifically, participants in the task framing (explicit activation of stereotype threat) condition will have lower comprehension, self-efficacy, and preparedness. Further, participants in the identity saliency (implicit activation of stereotype threat) condition will have lower comprehension, self-efficacy, and preparedness. Also, participants of a lower SES will have lower comprehension, self-efficacy, and preparedness. Finally, I expect an interaction of the three factors such that comprehension, self-efficacy, and preparedness will be lowest for participants of a low SES within the financial task framing and identity saliency conditions.

CHAPTER 2: METHODS

Participants

A G*Power analysis was conducted to determine the number of participants needed for adequate power. In order to achieve adequate power of .80 and a moderate effect size, we aimed to recruit 103 participants for the present study. These participants were recruited from a community sample rather than a convenience sample of college students to reduce the "WEIRDness" of the population; college populations are WEIRD; that is, they are predominantly Western, Educated, Industrialized, Rich, and Democratic. This can often cause a data set to be less representative of a greater population (Henrich, Heine, & Norenzayan, 2010).

The community sample was collected through community outreach via passive recruitment in Tifton, Georgia and via social media groups based in Bulloch and Tift County, Georgia. Specifically, participants were recruited through a flyer advertising the research study either in a local medical clinic or on a Facebook group they were a part of. Participants within this sample lived in areas that had only been residually impacted by hurricanes (e.g., may have only experienced tropical storm force storms as a result of a major hurricane).

One-hundred twenty-seven participants began the study (completed the informed consent). Fifty-six participants completed the study whereas 71 dropped out prior to completion, An independent-samples t-test indicated that there was no significant difference in SES between participants who completed the study (M =5.93, SE = 0.25) and those who dropped out after completing the MacArthur Scale of Subjective Social Status (M = 5.32, SE=0.47), $t(73) = 1.20, p = .236$.. Fifteen participants received the task framing and identity saliency manipulations, twelve participants received the task frame control and the identity saliency manipulation, fifteen participants received the task frame manipulation and the identity saliency control, and fourteen participants received the task framing and identity saliency controls.

The participants were 75% female (42 participants) and 25% male (14 participants). The mean age of participants was 40.07 (range 18-71 years; $SD = 14.55$). In terms of education, 3.6% of participants

(2 participants) reported having less than a high school diploma, 7.1% (4 participants) reported having a high school diploma, 10.7% (6 participants) reported attending some college, 5.4% (3 participants) reported having an associate degree, and 7.1% (4 participants) reported having a technical school degree. Moreover, 30.4% (17 participants) reported having a bachelor's degree, 26.8% (15 participants) reported having a master's degree, and 8.9% (5 participants) reported having a professional (PhD, MD) degree. In terms of employment, 66.1% of participants (37 participants) reported having a full-time position, 14.3% (8 participants) reported having a part-time position, 7.1% (4 participants) reported being retired, 8.9% (5 participants) reported being a student, and 3.6% (2 participants) reported being unemployed.

In terms of income, 1.8% (1 participant) reported having an income lower than $9,999, 14.3% (8 participants) reported an income between $10,000 and $24,999, and 16.1% (9 participants) reported having an income between $25,000 and $49,999. Additionally, 19.6% (11 participants) reported having an income between $50,000 and $74,999, and 7.1% (4 participants) reported having an income between $75,000 and $99,999. Lastly, 10.7% (6 participants) reported an income between $100,000 and $124,999, 7.1% (4 participants) reported an income between $125,000 and $149,999, and 23.3% (13 participants) reported an income above $150,000. Finally, in terms of race: 14.3% of participants (8 participants) identified as Black or African American, 3.6% (2 participants) identified as Hispanic or Latinx, 3.6% (2 participants) identified as Multi-Racial, and 78.6% (44 participants) identified as White or European American. Participant recruitment was terminated on May 10, per the agreed upon stop date set prior to data collection. For the full demographics measure, see Appendix G.

Manipulations

In order to assess the influence that task framing has on weather warning compliance, participants were randomly assigned to view the task in one of two ways. Because individualistic attributions are the most common attributions of poverty and news about hurricanes frequently refers to cost, the stereotype regarding low SES groups that was activated is related to financial decision making (Bullock, 2004; Dion, 2019). Participants were told to read the following instructions carefully; they were informed that they would watch a warning for a fictious upcoming hurricane and were asked to answer the following

questions as if the warning were authentic. In these instructions, participants received the stereotype threat manipulation, specifically they were told that they were about to complete either a financial decision-making task (stereotype threat activation) or a weather-related decision-making task (control; See Appendix B for full manipulation).

To assess the influence that identity salience has on weather warning compliance, participants were randomly assigned to complete the MacArthur scale of subjective social status either before or after completing the dependent measures (Alder, Epel, Castellazzo, & Ickovics, 2000). The Macarthur scale is depicted as a literal ladder; participants are told that the people who make the most money, have the best jobs, and the nicest houses are at the top of the ladder, while the opposite is true for those at the bottom (Alder et al., 2000). Participants who were assigned to have their socioeconomic identity made salient completed the MacArthur scale first, while those in the neutral condition completed the scale just prior to study demographics (See Appendix B).

Measures

Weather warning compliance behaviors are operationalized for the present study as comprehension, self-efficacy, and preparedness. The comprehension measure was comprised of recall questions related to components of the weather warning. Measures of self-efficacy and preparedness are adapted from measures previously used in a community sample within the context of weather decision-making research. Further, stereotype awareness was assessed as via a measure that has been previously used in stereotype susceptibility research (Gibson, Losee, & Vitiello, 2014).

To assess comprehension, participants completed an eight-item multiple choice measure with questions assessing recall of components of the weather warning (See Appendix C). Comprehension of the weather warning was assessed by the number of questions answered correctly. Specifically, each correct answer was coded as a "1" and each incorrect answer was coded as a "0." Then, each correct answer was summed to create one comprehension score per participant. For example, if a participant answered six of the questions correctly, their overall comprehension score would have been six.

Self-efficacy was assessed with a six-item measure, and mean scores were computed. The mean score was comprised of the average of responses to the six items on a 1 to 7 Likert-type scale. This measure is adapted from Miller, Adame, and Moore (2012) and is based on Vested Interest Theory. This measure examined the extent to which participants feel confident about their abilities to prepare for a hurricane, and it has been previously used within a community sample (See Appendix D).

Preparedness was assessed with a thirteen-item measure, adapted from Baker, Baker, and Flagg (2012). Participants indicated whether or not they had completed a preparedness item by selecting yes or no options (e.g., if they had a Family Communication Plan, the participants would select yes). Participants were then assigned a score based on the number of items for which they selected yes (meaning they had engaged in the preparatory action; Baker, Baker, & Flagg, 2012). There was a possible range of 0 to 13 for this measure, and scores were computed for each participant. For example, if a participant had taken eight of the preparatory actions, their preparedness score would be eight (See Appendix E).

An important aspect of stereotype threat is that participants are aware of the stereotype (Shih, Pittinsky, & Ambady, 1999). Stereotype awareness was assessed with a fourteen-item measure. In order to assess whether or not the manipulations were effective stereotype activators, participants completed the Stereotype Awareness Survey (See Appendix F). This is consistent with previous research on identity saliency (e.g., stereotype susceptibility; Gibson, Losee, & Vitiello, 2014; Shih, Pittinsky, & Ambady, 1999).

Procedure

Participants accessed the survey through scanning a QR code or via link on a mobile device, tablet, or a computer. This study was conducted fully online with the Qualtrics software. Participants viewed an electronic copy of the informed consent and indicated consent by beginning the study. Then, participants viewed a screen indicating what type of task they would be completing followed by a hurricane warning video played on the screen. The hurricane warning was adapted from a real hurricane warning and personalized to the Southeast Georgia area. Participants viewed a hurricane warning for a

fictitious category three hurricane (Hurricane Leonard), as if it were appearing on their television screens at home (See Appendix A). Research suggests that perceived severity of a storm can influence weather-related decision making, therefore, all participants in this study viewed the same warning video (i.e., a Category 3 storm; Losee et al., 2017). After watching the warning, participants completed the dependent measures and demographics (see Appendix G). Once the study was completed, participants received a message indicating that their input has been collected for the study. Participants were not compensated for their participation; however, they had the opportunity to be entered into a random drawing for a twenty-five-dollar Visa gift card upon study completion.

CHAPTER 3: RESULTS

Preliminary Analyses

To prepare the data for final analyses, three variables (comprehension, self-efficacy, and preparedness) were created from the raw data set. Within the comprehension measure, participants completed seven multiple choice questions and one short answer question. These questions were coded as "1" for correct, and "0" for incorrect (e.g., if participants correctly answered that the storm was a Category 3 hurricane, the response was coded as a "1"). After the data were coded, reliability analyses were conducted to test for internal consistency. The Cronbach's alpha for the comprehension score was 0.288, which is considered low and unacceptable; therefore, item 8 (the definition of a hurricane warning) was removed from the measure, leaving a Cronbach's alpha of 0.489, an acceptable score (Taber, 2017). The coded responses for the remaining items were then combined into one comprehension score, this score was representative of the overall number of correct items within this measure.

Within the self-efficacy measure, participants completed six items on a 1-7 Likert type scale. Reliability analyses were conducted to test for internal consistency. Since the Cronbach's alpha for this measure was 0.897, an acceptable score, so all items were retained for the final analysis (Taber, 2017). These responses were left as the raw scores and were averaged together to obtain one self-efficacy score for participants. That is, the scores for the six items were added together, and then divided by six to obtain the arithmetic mean of the score. For example, if a participant answered three items with a five and the other three as a six, the average self-efficacy score would be 5.50.

For the preparedness measure, participants completed thirteen questions with "yes" or "no" responses. These questions were coded as a "1" if the response was yes, and "0" if the response was no. For example, if the participant had a first aid kit at home, the response was coded as a "1". After the responses were coded, reliability analyses were conducted to test for internal consistency. The Cronbach's alpha score for this measure was 0.733, an acceptable score, so all items were retained for the final analysis (Taber, 2017). These coded responses were then combined into one preparedness score which indicated an overall preparation score.

Interaction terms were created in order to assess the moderation relationship. To create the interaction terms, new variables were created by multiplying the predictor variables together (task framing x identity saliency, task framing x SES, identity saliency x SES, and task framing x identity saliency x SES). The data were not centered for the final analysis, as this step is not necessary to complete the moderation analyses (Shieh, 2011). Additionally, there were no instances of missing data within this study, therefore none of these practices (e.g., mean imputation or the M-CAR test) were used.

Correlation Results

A correlation analysis was conducted to assess the relationship between the actual SES variables and the MacArthur scale (perceived SES variable). The American Psychological Association (APA) defines SES as: education, income, and employment, therefore these were the SES demographics collected in the present study. There was a significant, positive relationship between income and perceived SES, such that as income increased so did perceived SES, $r(56) = 0.360$, $p= 0.006$. There was also a significant, positive relationship between education and perceived SES, such that education increased so did perceived SES, $r(56) = 0.398$, $p = 0.002$. Finally, there was a nonsignificant relationship between employment and SES, $r(56) = -0.114$, $p = 0.402$. These findings suggest that the perceived SES measure was related to participant's reported SES. For the correlation matrix, see Table 1.

Another set of correlations were conducted to analyze the relationship between perceived SES and weather-related decision making. There was a nonsignificant relationship between SES and comprehension, $r(56) = 0.185$, p = 0.171. Additionally, there was a significant, positive relationship between SES and self-efficacy, $r(56) = 0.469$, $p < 0.001$, such that as SES decreased, so did reported self-efficacy. Finally, there was a significant, positive relationship between SES and preparedness, $r(56) = 0.404$, $p = 0.002$, such that as SES decreased so did reported preparedness. For the correlation matrix, see Table 2.

Weather Warning Comprehension

To test the hypothesis that poor weather-related decision making is a function of SES-based stereotypes, and more specifically whether SES moderates the relationship between stereotype influence

and weather warning comprehension, a hierarchical multiple regression analysis was conducted. In the first step, three variables were included: task framing, identity saliency, and socioeconomic status as predictors with comprehension as the criterion. These variables did not account for a significant amount of variance in weather warning comprehension, $R^2 =. 047$, $F (3,52) =.846$, $p = .475$.

Next, two-way interaction terms were created for the three predictors (task framing x SES, task framing x identity saliency, identity saliency x SES). These two-way interaction terms did not account for a significant proportion of variance when included in the model, $\Delta R^2 = .041$, $\Delta F (3,49) = .734$, $p = .537$. Lastly, a three-way interaction variable (task framing x identity saliency x SES) was entered into the third step. This interaction term also did not account for a significant change in proportion of the variance accounted for, $\Delta R^2 =.021$, $\Delta F (1,48) =1.119$, $p = .295$ (see Table 3 for regression coefficients). The mean score for this measure was 5.02, and the standard error was 0.21.

Self-Efficacy

To test the hypothesis that SES and SES-based stereotypes are predictive of self-efficacy as well as the hypothesis that SES moderates these effects, a second hierarchical multiple regression was conducted with self-efficacy as the criterion. Task framing, identity saliency, and SES were entered into the first step. The model accounted for a significant amount of variance in weather-related self-efficacy, $R^2 =. 223$, $F (3,52) = 4.964$, $p = .004$. Examination of the regression coefficients reveals that SES was the only significant predictor of self-efficacy ($\beta = .465$, $p < 0.001$).

The two-way interaction terms were entered into the second step; these did not account for a significant change in proportion of variance accounted for, $\Delta R^2 = .013$, $\Delta F (3,49) =.279$, $p = .840$. A three-way interaction term (task framing x identity saliency x SES) was entered into the third step. This also did not significantly contribute to the model, $\Delta R^2 = .003$, $\Delta F (1,48) = .166$, $p = .686$. See Table 4 for regression coefficients. The mean score for this measure was 5.38, and the standard error was 0.17.

Preparedness

Finally, in order to test the hypothesis that preparation response is related to SES and SES-based stereotypes as well as any moderation effects, a third hierarchical regression was conducted with preparation as the criterion. Task framing, identity saliency, and SES were entered in the first step. This regression equation significantly predicted preparation, $R^2 = 0.183$, $F(3,52) = 3.895$, $p = .014$. Examination of the regression coefficients revealed that only SES was predictive of the criterions ($\beta = .384$, $p = 0.004$).

For step 2, two-way interaction terms were created and entered into the model. These did not significantly contribute to the model, $\Delta R^2 = 0.082$, $\Delta F(3,49) = 1.833$, $p = .153$. Lastly, a three-way interaction term was created for step 3 and entered into the model. This term also did not account for a significant proportion of change in variance accounted for, $\Delta R^2 = 0.002$, $\Delta F(1,48) = 0.123$, $p = .728$. See Table 5 for regression coefficients[1]. The mean for this measure was 6.93 and the standard error was 0.39.

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[1] Although there was no significance for the task framing or task framing x SES condition within the first step, the coefficient table revealed significance for task framing and task framing x SES within step 2 ($p < 0.05$). Since these were not significant in Step 1 or Step 3, this effect should be treated with caution.

TABLE 1

Table 1

Correlation Between Perceived SES, Education, Employment, and Income

	Social Ladder	Employment	Education	Income
Social Ladder	-	-0.114	0.398**	0.360**
Employment	-0.114	-	0.039	0.068
Education	0.398**	0.039	-	0.387**
Income	0.360**	0.068	0.387**	-

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

TABLE 2

Table 2

Correlation Between SES and Comprehension, Self-Efficacy, and Preparedness Outcomes

	Social Ladder	Comprehension	Self-Efficacy	Preparedness
Social Ladder	-	0.185	0.469**	0.404**
Comprehension	0.185	-	0.010	0.365**
Self-Efficacy	0.469**	0.010	-	0.441**
Preparedness	0.404**	0.365**	0.441**	-

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

TABLE 3

Table 3

Regression coefficients for regression equation predicting weather warning comprehension.

Predictors	B	SE B	B	p-value
Step 1				
Constant	4.16	0.73		0.00
Task Framing	0.93	0.42	0.03	0.83
Identity Saliency	-0.33	0.42	-0.11	0.43
SES	0.16	0.11	0.20	0.15
Step 2				
Constant	4.32	1.05		0.00
Task Framing	1.26	1.47	0.41	0.40
Identity Saliency	-2.24	1.56	-0.73	0.16
SES	0.15	0.16	0.18	0.36
Task Framing X Identity Saliency	0.39	0.87	0.11	0.66
Task Framing X SES	-0.25	0.24	-0.52	0.31
Identity Saliency X SES	0.30	0.25	0.64	0.23
Step 3				
Constant	4.70	1.11		0.00
Task Framing	0.16	1.80	0.05	0.93
Identity Saliency	-3.70	2.08	-1.20	0.08

SES	0.09	0.17	0.11	0.62
Task Framing X Identity Saliency	3.48	3.05	1.00	0.26
Task Framing X SES	-0.05	0.30	-0.16	0.87
Identity Saliency X SES	0.55	0.34	1.61	0.12
Task Framing X Identity Saliency X SES	-0.52	0.50	-1.06	0.30

$R^2 = .047$ in Step 1; $\Delta R^2 = .041$ in Step 2; $\Delta R^2 = .021$ in Step 3

TABLE 4

Table 4

Regression coefficients for regression equation predicting self-efficacy.

Predictors	B	SE B	β	p-value
Step 1				
Constant	3.43	0.54		0.00
Task Framing	0.11	0.31	0.04	0.73
Identity Saliency	0.05	0.32	0.02	0.89
SES	0.32	0.08	0.47	0.00
Step 2				
Constant	3.51	0.79		0.00
Task Framing	-0.34	1.11	-0.13	0.76
Identity Saliency	0.35	1.18	0.14	0.77
SES	0.32	0.12	0.47	0.01
Task Framing X Identity Saliency	0.49	0.66	0.17	0.46
Task Framing X SES	0.04	0.18	0.11	0.82
Identity Saliency X SES	-0.10	0.19	-0.25	0.61
Step 3				
Constant	3.40	0.85		0.00
Task Framing	-0.02	1.38	-0.01	0.99
Identity Saliency	0.78	1.59	0.31	0.63

SES	0.34	0.13	0.50	0.01
Task Framing X Identity Saliency	-0.42	2.33	-0.15	0.86
Task Framing X SES	-0.02	0.23	-0.04	0.95
Identity Saliency X SES	-0.17	0.26	-0.44	0.52
Task Framing X Identity Saliency X SES	0.15	0.38	0.36	0.67

$R^2 = .223$ in Step 1; $\Delta R^2 = .013$ in Step 2; $\Delta R^2 = .003$ in Step 3

TABLE 5

Table 5

Regression coefficients for regression equation predicting preparation.

Predictor	B	SE B	β	p-value
Step 1				
Constant	2.89	1.26		0.03
Task Framing	0.32	0.73	0.06	0.66
Identity Saliency	0.76	0.73	0.13	0.30
SES	0.59	0.20	0.38	0.00
Step 2				
Constant	0.42	1.76		0.82
Task Framing	5.79	2.47	1.00	0.02
Identity Saliency	1.21	2.63	0.21	0.65
SES	0.97	0.27	0.63	0.00
Task Framing X Identity Saliency	-0.54	1.46	-0.08	0.71
Task Framing X SES	-0.88	0.40	-0.99	0.03
Identity Saliency X SES	0.03	0.42	0.03	0.95
Step 3				
Constant	0.63	1.88		0.74
Task Framing	5.17	3.06	0.89	0.10
Identity Saliency	0.40	3.53	0.07	0.91

SES	0.93	0.29	0.61	0.00
Task Framing X Identity Saliency	1.20	5.18	0.18	0.82
Task Framing X SES	-0.77	0.52	-0.86	0.14
Identity Saliency X SES	0.17	0.58	0.19	0.76
Task Framing X Identity Saliency X SES	-0.29	0.84	-0.31	0.73

$R^2 = .183$ for Step 1; $\Delta R^2 = .082$ for Step 2; $\Delta R^2 = .002$ for Step 3

CHAPTER 4: DISCUSSION

The results from the current study did partially support the hypotheses in regard to the predicted relationship between SES and responses to weather warnings. However, the results did not provide evidence that stereotype threat, whether implicit or explicit influenced responding nor that SES moderated these effects. These findings do mirror the current research in that these results suggest that SES itself seems to be the critical predictor for low weather warning response. This could be due in part to severe weather preparation being driven heavily by their actual or perceived access to hurricane preparation materials. Specifically, individuals of a low SES have less disposable income, such that they are less able to sustain an emergency fund in case of a hurricane. Therefore, the significance of SES within the context of preparation may be more practically driven by access or resources than stereotypic beliefs.

Weather Warning Comprehension

There were no significant predictors or interactions regarding the comprehension variable. Stereotype threat theory was initially found (and has been successfully replicated) within college samples. But, due to the "WEIRD" nature of college samples, it has been suggested that theories and measures that are used within a college sample may not transfer to a community sample (Shepperd, Emanuel, Dodd, & Logan, 2016). Since the present study utilized a community sample, it is possible that this is why there were no effects of stereotype threat.

Further, research in working memory suggests that individuals may only be able to accurately hold five plus or minus two items in working memory at any given time (Miller, 1956). This finding seems to be supported by the current research, such that participants, regardless of condition, answered, on average 5.02 of the comprehension questions correctly. The weather warning that participants viewed in this study had more items that were important, presented via the text and through spoken word. Perhaps the impact of cognitive capacity and potential for overload from a wealth of information were at ceiling, therefore rendering SES and related stereotypic effects less relevant or available to processing.

As previously noted, research suggests that individuals tend to rely on cognitive shortcuts known as heuristics when making a decision. Since there was more information than was able to be held in

working memory disseminated through this warning, it is possible that participants latched onto key terms that were repeated throughout the warning, instead of noting other specific points. For example, many participants incorrectly responded to question 2 (where will the storm make landfall) with a response along the lines of Southeast Georgia and South Carolina. This could be because these locations are repeated while the correct answer to this question (Tybee Island, GA) is only noted once. Herein, we see that participants may be relying on an availability heuristic, a type of heuristic where decision making relies on immediately available examples (Tversky & Kahneman, 1974).

Further, in stereotypic situations, individuals tend to rely on more generalized thinking (Tversky & Kahneman, 1974). Therefore, it is possible that many participants incorrectly answered the question regarding landfall location with Southeast Georgia and South Carolina, because they were encoding the general aspects of the warning, rather than the specific aspects. However, because it is commonplace for weather warnings to include a specific landfall location, this answer was still coded as incorrect.

Self-Efficacy

SES was a significant predictor in the analysis with self-efficacy as the criterion, although there were no other significant effects or moderating effects. The SES effect was in the predicted direction such that lower SES was related to lower self-efficacy. This may be attributable to a relative lack of resources that stems from less disposable income, such that individuals of a low SES do not have the means to effectively prepare for a storm. In the present study, self-efficacy was measured as it relates to hurricane preparation (e.g., how easy would it be for you to prepare an emergency kit in the event of a hurricane). Therefore, it is possible that persons of a low SES reported lower self-efficacy because they did not have access to certain materials. Since these individuals are unable to prepare for the storm, it seems to follow that they would then report lower belief in themselves to be able to prepare for a storm, or lower self-efficacy.

Preparation

Low SES was predictive of low preparedness, and this relationship is also consistent with previous literature (e.g., Elliot & Pais, 2006; Morss et al., 2016). Previous research found a significant

negative correlation between preparation and lower education level, and the present research supports this finding by indicating a predictive relationship between preparation and SES (Grounds & Joslyn, 2018). This could be further evidence of the importance of available or perceived availability of resources. Because low SES is often synonymous with low income, individuals of a low SES may have less income available to spend on preparatory materials. Further, these families may not be able to afford costs associated with evacuation (e.g., hotel rooms, gas for a vehicle).

Regardless of condition participants scored an average of 6.93 on the preparation measure. This suggests that participants had previously engaged in only half of the noted preparation measures. Further, since the participant pool was comprised of individuals who had only experienced residual effects of lower category storms, there may be a lack of awareness surrounding certain preparatory actions (e.g., having a designated meeting place outside of the neighborhood) for more severe storms.

In the present study, neither task framing or identity saliency were significant predictors of preparedness. This could be due to the fact that the preparedness measure was not a true dependent measure for these variables. The questions on the preparedness measure (see Appendix E) were diagnostic of past behaviors (e.g., My family has a first aid kit in the home), and the task framing and identity saliency measures had no bearing on what happened in the past. Therefore, future research could modify these questions, such that they are written in a future tense (e.g., My family will have a first aid kit in the home) or could assess knowledge related to preparing for a storm (e.g., rating importance of a first aid kit with a Likert-type scale).

Stereotype Threat and The Multi-Threat Framework

Future research could utilize the Multi-Threat Framework to better ascertain the relationship between stereotype threat and weather-related decision making. The Multi-Threat Framework allows the opportunity to derive focused hypotheses regarding specific threats that particular groups may face (e.g., low SES communities; Shapiro & Neuberg, 2007). For example, future research could examine the extent to which a Self-Concept threat may influence weather-related decision making.

A Self-Concept threat is characterized by the fear that an individual's performance will confirm that a negative stereotype about their group is true about them (Shapiro & Neurberg, 2007). An example of this would be an individual of a low SES fearing that poor performance on a finance task will confirm the stereotype that they are less financially responsible than a high SES counterpart. In order for this Self-Concept threat to occur, the individual must: identify with the stereotyped domain, believe the stereotype may be true, care about how stereotype-relevant actions influence perception of self, recognize that they belong to a group, and awareness that the stereotype-relevant action is linked to themselves (Shapiro & Neuberg, 2007). Individuals of a low SES may be more susceptible to the self-as-source threat type, because their stigmatized identity is typically concealed (e.g., individuals cannot easily group others based on SES) and they could be more susceptible to negative stereotypes about their group (e.g., SES is an identity that is often used to group people, therefore related stereotypes could be common knowledge; Koch et al., 2016).

Further, the Self-Concept threat could persist for individuals of a low SES within a weather-related scenario. Specifically, if a task is explicitly framed and diagnostic of weather-related finances (e.g., giving participants a specific budget to create a hurricane preparedness kit and telling them that it is a financial decision-making task), this could produce conditions necessary for Self-Concept threat to occur. Specifically, the participants could identify with the stereotype relevant action (they may have a desire to prove themselves in a financial scenario); the direct nature of the financial task may allow anxieties about financial decision making to manifest (they believe the stereotype may be true and they may feel as if they are a "person of low SES"); since this task is related to preparing for a major storm, it is possible that the participants may feel as if there is something to be gained in the task (they care about the implications of their actions), and since they are completing the task at hand, they believe the action is linked to their behavior. Essentially, it is possible that each required condition for Self-Concept threat may be activated through a weather-related financial decision-making task, and it is possible that such an activation may cause performance deficits.

Limitations and Future Research

The present study had a relatively low sample size. Therefore, it may be beneficial to replicate the current study with the proposed sample size, to ensure that the lack of findings concerning stereotype threat are not due to lack of power. Furthermore, future replication should also include a sample with a broader range of storm experience. As noted, the participants in the present study were individuals from areas that had not been directly impacted by a severe hurricane. Since previous research has indicated that participants with previous hurricane experience are able to more correctly comprehend a warning and prepare for a storm (Morss et al., 2016), perhaps the lack of direct hurricane experience caused an overall lower comprehension and preparation response rate. Along this same vein, it is possible that lack of previous experience is also related to a lack of understanding proper hurricane preparation protocol. For example, during severe weather instances (e.g., hurricanes, snowstorms) news media will often comment on empty shelves of milk, bread, bottled water, and alcohol in grocery stores (Peralta & Purvis, 2018). This suggests that individuals who do not often experience severe weather (e.g., hurricanes) do not know the proper methods of protocol.

Within the stereotype threat literature, most often participants are asked to complete a task that is explicitly related to the stereotype that is activated (e.g., a stereotype regarding verbal reasoning abilities was activated for Black men, who then completed questions from the verbal section of the GRE; Steele & Aronson, 1995). In the current study, the aim was to activate a stereotype regarding financial decision making, however the measures used only indirectly related to financial decision making, and there was not a directly finance-related measure. Therefore, future research should aim to include a measure or task that explicitly assess financial decision making in the context of weather-related decision making. An example of this measure could be a budgeting task, wherein participants are asked to allocate a specific percentage of monthly income to various expenses (e.g., rent, bills, groceries, childcare, weather-related emergencies) without going over their monthly budget.

Task framing was not a significant predictor for comprehension, self-efficacy, or preparedness in the present study, and it is possible that this occurred because participants did not sufficiently attend to the manipulation. This manipulation (see Appendix B) was only present once within the study as participants

saw it just before viewing the weather warning. In order to ensure that participants attend to this manipulation, future research may want to include this manipulation multiple times throughout the study and include a manipulation check that asks what type of task the participant completed (either a financial or a weather decision-making task).

Another important aspect of stereotype threat is ensuring that participants understand cultural stereotypes. Further, an important aspect of stereotype threat is ensuring participants understand the specific stereotype being activated within a study. A limitation of the present research is that the stereotype awareness measure that was used did not include questions regarding SES stereotypes related to financial decision making. Future research should include stereotype awareness measures that are related specifically to SES and financial decision making to ensure that participants understand the stereotype the study is attempting to activate.

In the present study, participants were asked to indicate their family's perceived social status using the MacArthur Scale, commonly referred to as the social ladder (see Appendix B). The image of the social ladder used within the present study numbered the rungs on the ladder in descending order (the top of the ladder was indicated with a 10 and moved down to a 1). However, the multiple choice options were listed in ascending order (the first, or top answer was a 1 and moved down to a 10). Future research should ensure that the social ladder image and the multiple choice options are shown to participants in the same order; doing this will avoid the potential for participants to incorrectly place themselves at the wrong end of the scale (e.g., a person who identifies as a high SES placing themselves on the lower end of the ladder).

Future research should also further explore the relationship between SES and weather warning compliance. Previous research has indicated severe disparities between high- and low-income areas in the aftermath and in the preparation stages of hurricanes (Grounds & Joslyn, 2018; Elliot & Pais, 2006). This research contributes to the literature by examining the relationship between SES and weather-related decision making as measured by self-efficacy and preparatory actions taken. Future research could also examine whether or not previous experience serves as a moderator for weather-related decision making

for individuals of a low SES, such that previous experience could potentially boost or lower response rates for these marginalized individuals. Future studies could also utilize a weather warning with less information or ask fewer questions regarding the weather warning to mitigate the effects of potential cognitive overload. In summary, the present study provides additional evidence that SES is a critical variable that should be considered in relationship to issues concerning weather-related decision-making.

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APPENDIX A

Weather Warning Video

https://youtu.be/nIQbf5xAU-0

Weather Warning Text

Rotating Text

The National Weather Service has issued a ***Hurricane Warning*** for the following counties: Bryan - GA, Bulloch - GA, Camden - GA, Chatham - GA, Effingham - GA, Glynn - GA, Liberty - GA, McIntosh - GA, Beaufort - SC, Hampton - SC, Jasper - SC.

Voice Recording

3 medium length beeps, 1 long & high-pitched beep

A hurricane warning remains in effect for the Southeast Georgia and the South Carolina coast. Hurricane Leonard, a major and extremely deadly hurricane is expected to make landfall on Tybee Island, GA around 5:45pm tomorrow evening. This storm is expected to be a Category 3 hurricane with winds up to 125mph. Evacuation orders are currently in effect for the following counties: in GA: Bulloch, Bryan, Camden, Chatham, Glynn, Liberty, and McIntosh. In SC: Beaufort, Hampton, and Jasper. If you live in the listed areas, and have not done so, evacuate now. Follow the most designated evacuation routes set up by your local authorities. All residents of Southeast Georgia and Coastal South Carolina are advised to remain in their homes, avoid traveling, and stay off telephones and cell phones in case of emergencies. Stay tuned your local weather station for further updates and information on this situation.

3 short beeps

APPENDIX B

Task Framing Manipulation

Stereotype Threat Condition

Please read the following directions carefully. You are about to view a weather warning for a fictional upcoming hurricane. Please watch and listen to the warning carefully.

After viewing the warning, you will complete a brief financial decision-making task. Please complete the task as if the weather warning is authentic.

Control Condition

Please read the following directions carefully. You are about to view a weather warning for a fictional upcoming hurricane. Please watch and listen to the warning carefully.

After viewing the warning, you will complete a brief weather-related decision-making task. Please complete the task as if the weather warning is authentic.

Identity Saliency Manipulation

MacArthur Scale of Subjective Social Status

At the top of the ladder are the people who are the best off – those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off – who have the least money, the least education, and the least respected jobs or no jobs.

Please select a number that best represents your perception of your family's placement on this scale.

o 1
o 2
o 3
o 4
o 5
o 6
o 7
o 8
o 9
o 10
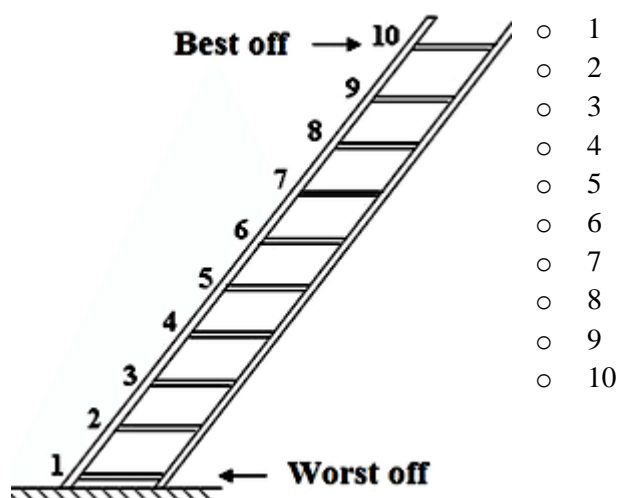
APPENDIX C

Comprehension Measure

1. Which of the following Georgia counties are NOT under the hurricane warning?
   a. Candler
   b. McIntosh
   c. Glynn
   d. Bryan

2. Where is the hurricane expected to make landfall?

3. When is the storm expected to make landfall?
   a. 2:30am tomorrow
   b. 5:45am tomorrow
   c. 2:30pm tomorrow
   d. 5:45pm tomorrow

4. What category is the storm classified as?
   a. Category 1
   b. Category 2
   c. Category 3
   d. Category 4

5. What is the maximum expected wind speed?
   a. 115mph
   b. 125mph
   c. 135mph
   d. 145mph

6. Is there a mandatory evacuation in effect for Bulloch County?
   a. Yes
   b. No

7. Did the warning recommend sheltering in place (e.g., remaining at home)?
   a. Yes
   b. No

8. The warning video said that Southeast Georgia and South Carolina are under a Hurricane Warning. This means that:
   a. Conditions are appropriate for a hurricane.
   b. Hurricane-force storms have been located in the area.

APPENDIX D

Self-Efficacy Measure

From Miller, Adame, & Moore (2013)

Self-efficacy is defined as your ability to effectively produce a desired result. Please answer the following questions regarding how effective you think you can be at preparing for and responding to a hurricane.

1. How capable are you at effectively preparing an emergency kit to help respond to a hurricane?
   Not Capable 1   2   3   4   5   6   7 Highly Capable

2. How able are you to take the time to prepare an emergency kit for use in the event of a hurricane?
   Not Able 1   2   3   4   5   6   7 Highly Able

3. Can you afford to buy the items needed for an emergency kit in case of a hurricane?
   Cannot Afford 1   2   3   4   5   6   7 Can Easily Afford

4. How easy would it be for you to prepare an emergency kit for a hurricane?
   Not Easy 1   2   3   4   5   6   7 Very Easy

5. How much knowledge do you have about using an emergency kit in response to a hurricane?
   No Knowledge 1   2   3   4   5   6   7 Great Knowledge

6. How effective are you at using an emergency kit in case of a hurricane?
   Not Effective 1   2   3   4   5   6   7 Highly Effective

APPENDIX E

Preparedness Measure

1. My family has a written Family Emergency Communication Plan in case we are separated during a disaster.
    a. Yes
    b. No

2. My family has a designated meeting place outside of the home.
    a. Yes
    b. No

3. My family has a designated meeting place outside of the neighborhood.
    a. Yes
    b. No

4. My family has a fire escape plan for the home.
    a. Yes
    b. No

5. My family keeps emergency supplies in each of our vehicles (e.g., blankets, flashlights).
    a. Yes
    b. No

6. My family has three gallons of water stored for each person in the household (three-day supply).
    a. Yes
    b. No

7. My family has enough stored food that does not need refrigeration or preparation than can sustain the family for three days.
    a. Yes
    b. No

8. The stored food is separated from the regular food supply.
    a. Yes
    b. No

9. I have a working flashlight with an extra set of batteries in the home.
    a. Yes
    b. No

10. I have a first aid kit in the home.
    a. Yes
    b. No

11. I have a container that is both fireproof and waterproof for storing important papers in the home.
    a. Yes
    b. No

12. All family members over fourteen years old know how to turn off the gas, power, and water to our household in case of an emergency.
    a. Yes
    b. No

13. All children over five years old in our house are able to state their full name, address, and phone number.
    a. Yes
    b. No

APPENDIX F

Stereotype Awareness Measure

Answer the following questions regarding cultural stereotypes. Do not answer based on your personal beliefs, but what you know about general, societal stereotypes.

1. Cultural stereotypes exist that men are better than women in:
   a. Verbal ability (e.g., as measured by English proficiency and/or ability to give a well-executed speech)
   b. Mathematical ability (e.g., as measured by the SAT or in Math classes)

2. Cultural stereotypes exist that women are better than men in:
   a. Verbal ability (e.g., as measured by English proficiency and/or ability to give a well-executed speech)
   b. Mathematical ability (e.g., as measured by the SAT or in Math classes)

3. Cultural stereotypes exist that older adults are better than younger adults in:
   a. Memory performance (e.g., as measured by remembering names, places, etc.)
   b. Decisions requiring Wisdom (e.g., as measured by riskiness of decisions, etc.)

4. Cultural stereotypes exist that younger adults are better than older adults in:
   a. Memory performance (e.g., as measured by remembering names, places, etc.)
   b. Decisions requiring Wisdom (e.g., as measured by riskiness of decisions, etc.)

5. Cultural stereotypes exist that Asians are better than Caucasians in:
   a. Verbal ability (e.g., as measured by English proficiency and/or ability to give a well-executed speech)
   b. Mathematical ability (e.g., as measured by the SAT or in Math classes)

6. Cultural stereotypes exist that Caucasians are better than Asians in:
   a. Verbal ability (e.g., as measured by English proficiency and/or ability to give a well-executed speech)
   b. Mathematical ability (e.g., as measured by the SAT or in Math classes)

7. Cultural stereotypes exist that Democrats are better than Republicans in:
   a. Expanding the role of government
   b. Increasing the amount of security for the country

8. Cultural stereotypes exist that Republicans are better than Democrats in:
   a. Expanding the role of government
   b. Increasing the amount of security for the country

9. Cultural stereotypes exist that men are better than women in:
   a. Empathy/Caring
   b. Individual achievement/Leadership

10. Cultural stereotypes exist that women are better than men in:
    a. Empathy/Caring
    b. Individual achievement/Leadership

11. Cultural stereotypes exist that African Americans are better than Caucasians in:
    a. Athletic ability (e.g., as measured by amount of participation in various sports)
    b. Academic performance (e.g., as measured by performance on standardized tests)

12. Cultural stereotypes exist that Caucasians are better than African Americans in:
    a. Athletic ability (e.g., as measured by amount of participation in various sports)
    b. Academic performance (e.g., as measured by performance on standardized tests)

13. Cultural stereotypes exist that cat people are better than dog people in:
    a. Being outgoing/Making friends
    b. Reading/Indoor activities

14. Cultural stereotypes exist that dog people are better than cat people in:
    a. Being outgoing/Making friends
    b. Reading/Indoor activities

APPENDIX G

Demographics Measure

1. What is your gender?
2. What is your age?
3. What is the highest level of education you have completed?
   a. Less than high school diploma
   b. High school diploma or equivalent
   c. Some college
   d. Associate degree
   e. Technical degree
   f. Bachelor's degree
   g. Master's degree
   h. Professional (PhD, MD) degree

4. Which of the following best describes your employment status?
   a. Full-time
   b. Part-time
   c. Retired
   d. Student
   e. Unemployed

5. What is your household income?
   a. $0 to $9,999
   b. $10,000 to $24,999
   c. $25,000 to $49,999
   d. $50,000 to $74,999
   e. $100,000 to $124,999
   f. $125,000 to $149,999
   g. $150,000 or higher

6. What is your race?
   a. Asian or Asian American
   b. Black or African American
   c. Hispanic or Latinx
   d. Native American
   e. Multi-Racial
   f. White or European American