In Praise of Pippi Longstocking:

How Implicit Gender Cues Relate to Perceptions of Power

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Abstract

Researchers investigated whether children (Study 1) and adults (Study 2) associated gender with body posture in alignment with traditional gender stereotypes. Implicit gender cues in the form of gendered names were used to convey gender in the studies, and body postures were varied in their expansiveness/contractiveness. In Study 1, the data did not indicate a significant relationship between gender and body posture. In Study 2, the same survey was completed by adults. The responses of adult participants showed a significant relationship between gender and body posture, X^2 (1, N = 3120) = 166.63, $p < .01$. Of all 3120 responses in Study 2, 693 were female-expansive, 867 were female-contractive, 1051 were male-expansive, and 509 were male-contractive. These frequencies are in alignment with traditional gender stereotypes, but the current data analysis cannot determine if the male-expansive relationship is stronger than the female-contractive relationship. Further analysis is needed to fully understand these results, and further research is needed to understand the mechanism underlying these effects.

Keywords: gender bias, implicit gender cues, expansive posture, contractive posture, power, gender stereotypes

Introduction

To understand the importance of a relationship between gender and body posture, it is vital to first establish context. After examining how gender stereotypes are learned, this introduction will describe how the negative effects of traditional gender stereotypes are tied to the consequences of feeling powerless. The broader implications of this connection will be illustrated by various of examples of continued gender inequality in the workplace.

Gender Stereotypes and Social Learning

The media children are exposed inform how they understand gender roles (Hentges & Case, 2013). Potential theories that explain this are Cultivation Theory and Social Learning Theory (Gerbner et al., 2002; Bandura, 2002). When operating under the assumptions of Cultivation Theory, television is considered a "source of social information" (Hentges & Case, 2013). Thus, the more children are exposed to television programs, the more they understand the social world through the lens of those programs (Hentges & Case, 2013). Similarly, Social Learning Theory proposes that television can influence how children understand gender (Bandura, 2002). Under Social Learning Theory, children learn what it means to be male or female by observing others of the same gender (Bandura & Bussey, 2004). These theories are both models of socialization, a process described by Patricia Lengermann in 1985 (Leigh Green, 1997). Socialization, which is believed to begin at birth, is "the process by which individuals internalize group attitudes such as the perception of gender roles" (Leigh Green, 1997). According to Lengermann's research, social learning can take place in microsocial contexts, "such as family and friends", or macrosocial contexts, "such as schools and other large organizations" (Leigh Green, 1997). Mass media effects are considered to be included in macrosocial framework, and there is no doubt that television plays a central role (Leigh Green,

1997). Thus, it is logical to assume that the impact of gender bias in media is even greater when considering the role of informal socialization. If adults are socialized as children to think of gender roles in a certain way, it is possible that they pass these ideas onto their children, advertently or inadvertently. When the macrosocial realm is included, it becomes clear how susceptible children are to internalizing gender stereotypes.

Gender Stereotypes in Children's Media

Astrid Lindgren's Pippi Longstocking has long been recognized as a unique children's character (Meri, 2016; Frasher, 1977). Rebellious, rambunctious, and the strongest girl in the world, Pippi provides a different picture of what young girls can look like (Frasher, 1977). However, Pippi represents a minority of female children's characters. In fact, a 2011 survey of 5,618 children's books published in the United States in the 20th century found that title characters were 2 times as likely to be male (McCabe, Fairchild, Grauerholz, Pescosolido, & Tope, 2011). Similarly, central characters were 1.6 times as likely to be male (McCabe et al., 2011). Other forms of children's media reflect these trends as well. For example, a 2004 study of children's television programs found that while there was increasing gender neutrality, "male characters were still more likely than female characters to answer questions, boss or order others, show ingenuity, achieve a goal, and eat" (Aubrey & Harrison). These findings echo earlier research analyzing popular children's television characters that found significant differences in gender representation and behavior (Sternglanz & Serbin, 1974). Researchers found that "males...were more often portrayed as aggressive...and constructive (e.g. building, planning) than females, while females were more likely to be shown as deferent" (Sternglanz & Serbin, 1974). Furthermore, males were more often rewarded for "emitting behavior", and "females were more often punished for high levels of activity than were males" (Sternglanz & Serbin, 1974). These

trends align with the gender stereotypes of the passive female and the active male (Richardson, 2005; Bakan, 1966).

Nonverbal Communication and Expressed Power

Assertive behavior, as depicted in the male children's characters above, is often linked to feelings of power (Bos & Cuddy, 2013). A wealth of literature exists on the effects of feeling powerful (Keltner, Gruenfeld, & Anderson, 2003; Andersen & Galinsky, 2006; Carney, Cuddy, & Yap, 2010; Mehta & Josephs, 2010 ; Fischer, Fischer, Englich, Aydin, & Frey, 2011). Feeling powerful is associated with "positive affect", "attention to rewards", "automatic information processing", "disinhibited social behavior", and improved performance in job interviews (Keltner et al., 2003; Cuddy, Wilmuth, Yap, Carney, 2015). These effects can lead individuals to seek out opportunities and help them to accomplish their goals (Cuddy, 2015). Feelings of powerlessness, however, are correlated with "negative affect", "attention to threat", "controlled information processing", and "inhibited social behavior" (Keltner et al., 2003). These characteristics can prevent individuals from completing tasks or pursuing opportunities (Cuddy, 2015).

For example, one experiment found that participants who completed a task on an iMac desktop computer displayed more assertive behavior than participants who completed the same task on an iPod Touch (Bos & Cuddy, 2013). Participants who completed the task on smaller electronic devices were less assertive, waiting significantly longer to alert the research assistant that they had finished the task, and some did not alert the research assistant at all, despite being instructed to do so after 5 minutes had passed (Bos & Cuddy, 2013). This study shows that the expansive posture induced by working on a larger device led participants to feel more powerful, while the contractive posture induced by working on a small device led participants to feel less

powerful (Bos & Cuddy, 2013). The subsequent behavior of participants highlights how feelings of power are linked to assertive actions.

The mechanisms behind these phenomena are thought to be physiological (Mehta & Josephs, 2010; Carney et al., 2010). Research has shown that high testosterone and low cortisol are positively associated with dominance and more expansive body posture (Mehta & Josephs, 2010; Carney et al., 2010). In addition, expansive body posture has been shown to increase testosterone, decrease cortisol, and increase feelings of power in both men and women (Carney et al., 2010).

Gender Stereotypes and Structural Power

One element of traditional gender stereotypes is that women are passive/communal and that men are active/agentic (Richardson, 2005; Bakan, 1966). These patterns were alluded to earlier when examining the gender stereotypical behavior of various children's characters (Sternglanz & Serbin, 1974). The Stereotype Content Model further builds on these ideas (Cuddy, Fiske, & Glick, 2008). It proposes that there are two universal axes of social perception, warmth and competence (Cuddy et al., 2008). Generally speaking, women are traditionally stereotyped as being warm and not competent, while men are traditionally stereotyped as being competent but not warm (Eagly & Mladinic, 1993). These patterns can create unique problems for women in the workplace.

For example, the literature suggests "a strong consensus about the differing characteristics of men and women exists across groups which differ in sex, age, religion, marital status, and educational level" (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972). Research has shown that the characteristics associated with men are viewed more positively than those associated with women and that this trend is robust across different cultures (Broverman et

al, 1972; Cuddy, Wolf, Glick, Crotty, Chong, & Norton, 2015). In the Western world, positively viewed masculine traits include "competence, rationality, and assertion" while positively viewed feminine traits relate to "warmth and expressiveness" (Broverman et al.,1972; see also Bakan, 1966; Eagly & Mladinic, 1994). Research has shown that it is a common belief that effective managers possess these stereotypically masculine qualities (Powell, Butterfield, & Parent, 2002; Powell & Butterfield, 1989; Powell & Butterfield, 1979). However, there is not research to indicate that this belief is true (Pounder & Coleman, 2002; Bass & Alvolio, 1994). There is a general tendency for women to have a more democratic approach to leadership and for men to have a more autocratic approach (Eagly, Makhijani, & Klonsky, 1992). However, when women lead in a manner contrary to their gender stereotype they tend to be judged unfavorably (Heilman, Block, Martell, & Simon, 1989).

Women are still largely underrepresented in both political and business leadership positions in the United States (Brown, 2017). In 2015, "fewer large companies [were] run by women than by men named John" (Wolfer, 2015). Currently, only 20.2% of Fortune 500 board members and 5.4% of Fortune 500 CEOs are women (Brown, 2017). There are many thoughts as to why such deep inequality persists, and one explanation is gender stereotypes (Cuddy, Fiske, & Glick, 2004). Two common stereotypes of working mothers are "homemakers--viewed as warm but incompetent, or female professionals--characterized as competent but cold" (Cuddy et al., 2004). Researchers found that when working women became mothers, their perceived warmth increased and their perceived competence decreased (Cuddy et al., 2004). In addition, participants reported "less interest in hiring, promoting, and educating working moms relative to working dads and childless employees", and "competence ratings predicted interest in hiring, promoting, and educating workers" (Cuddy et al., 2004).

Nonverbal Communication, Power, and Gender Stereotypes

As indicated by previous sources (Keltner et. al, 2003; Cuddy, 2015; Carney et. al, 2010), feeling powerless can have negative consequences. Further research has shown that feelings of power are connected to elevated status (Huang, Galinsky, Gruenfeld, & Guillory, 2010; Leffler, Gillespie, & Conaty, 1982). Historically, men have held greater status than women, and this has led to them generally being more powerful in society (Carli, 2001). However, statistics presented earlier in this paper suggest that this gendered discrepancy in status and influence continues to exist (Brown, 2017). Thus, it is not surprising that research indicates that powerful nonverbal communication is also gendered (Leffler et al., 1982; LaFrance & Mayo, 1979; Briton & Hall, 1995). Men generally tend to exhibit more dominant nonverbal and verbal communication than women do (Leffler et al., 1982; LaFrance & Mayo, 1979; Briton & Hall, 1995; Frances, 1979).

When examining these findings in the context of Social Learning Theory (Bandura, 2002), persistent structural gender inequality (Brown, 2017), and negative gender stereotypes in the workplace (Cuddy et al., 2004), one must wonder when these internalized beliefs and subsequent behaviors (Leffler et al., 1982; LaFrance & Mayo, 1979; Briton & Hall, 1995; Frances, 1979) begin to take hold. Research has found that children associate masculinity with dominant body language by the age of 4 and that this association is stronger by age 6 (Hoffman, Cuddy, Schultz, Thornley, & Wertz, in prep). In the study, children were presented with images of gender neutral dolls in expansive (high power) and contractive (low-power) positions and were then asked to decide if the doll was a boy or a girl (Hoffman et al, in prep). The data showed that 73% of four year-olds already held a male-power bias and that this proportion increased to 85% for six year-olds (Cuddy, 2015). Furthermore, research conducted by Bauer & Coyne indicated that 3.5 year-olds "reliably associated feminine-stereotyped names with pictures

of girls and masculine-stereotyped names with pictures of boys" (1997).

Names as Implicit Gender Cues

This paper seeks to add to the existing research on body posture and gender by exploring the use of implicit gender cues, specifically names. Names often play a key role in gender perception (Bauer & Coyne, 1997). There are several studies examining what makes a name masculine or feminine. Much of the research on gendered names has found inspiration in the Bouba/Kiki effect proposed by Wolfgang Köhler in 1929 (Sidhu & Pexman, 2015). In the Bouba/Kiki effect, "nonwords like *bouba* are associated with round shapes while nonwords like *kiki* are associated with sharp shapes" (Sidhu & Pexman, 2015). Though the Bouba/Kiki effect was established using nonwords, research has shown that similar sound symbolism applies to names and their associated gender (Sidhu & Pexman, 2015). An association was found between the "round-sounding phonemes" and perceived femaleness (Sidhu & Pexman, 2015). In addition, an association was seen "between femaleness and round shapes, and maleness and sharp shapes" (Sidhu & Pexman, 2015). The researchers also found that these associations were not superficial and extended to judgments about personality (Sidhu & Pexman, 2015). Specifically, "adjectives previously judged to be either descriptive of a figuratively 'round' or a 'sharp' personality were associated with names containing either round- or sharp-sounding phonemes, respectively" (Sidhu & Pexman, 2015).

Other phonological predictors of gender include initial phoneme, number of consonants, and final phoneme (Slepian & Galinsky, 2016). Researchers found that "voiced phonemes are associated with male names and unvoiced phonemes are associated with female names" (2016). This effect was well documented through 11 studies and more than 250 million names (Slepian & Galinsky, 2016). Prior linguistic research shows that "male names tend to have fewer

consonants, whereas female names have more consonants" and that "female names are far more likely to end in a schwa vowel [i.e. 'Maria' or 'Amanda']" (Slepian and Galinsky, 2016). One explanation for the connection between voiced phonemes and gendered names is that "names pronounced with an initial voiced phoneme sound 'harder,' and names pronounced with an initial unvoiced phoneme sound 'softer,' and because women are stereotypically described as being more 'soft' and tender than men, and men are stereotypically described as more 'hard' and tough than women" (Slepian & Galinsky, 2016). Lastly, earlier research found that traditionally female English first names tend to have "significantly more sounds and syllables, more frequently vary the position of stressed syllable, and more often conclude in a vowel or sonorant sound than male names" (Slater & Feinman, 1985; see also Cutler, McQueen, & Robinson, 1990).

Hypotheses

The current studies seek to understand how children (Study 1) and adults (Study 2) associate gender and body language when presented with implicit gender cues in the form of gendered names. Based on the literature previously presented, we hypothesize that:

1) The responses of 4 year-olds and 6 year-olds will show a relationship between gender and body posture that aligns with traditional gender stereotypes.

2) The responses of 6 year-olds will indicate a stronger relationship between gender and body posture than the responses of 4 year-olds.

3) The responses of adults will show a relationship between gender and body posture that aligns with traditional gender stereotypes.

4) The responses of adults will indicate a stronger relationship between gender and body posture than those of 6 year-olds or 4 year-olds.

Study 1

Method

Participants

37 children participated in the study. There were 23 4 year-old participants (12 girls, 11 boys) and 14 6 year-old participants (8 girls, 6 boys). Participants were recruited by researchers at the Boston Children's Museum, predominantly on weekday afternoons. Researchers approached the parents of potential participants first, explaining that they were conducting a brief study with children ages 4 and 6. If the parent(s) were interested, they were directed to the research station to give formal written consent and conduct the study. Participants also gave verbal consent.

Materials

Name Selection

To identify and select gendered names, real-world name data was sourced from the Social Security baby name database, aggregating the most common boys' and girls' names from 2009-2013. These five years were selected because it seemed logical that children born in those years would presently be between three years of age and seven years of age, and thus representative of participants' peers.

From the most frequent names, the most gendered were selected using the findings on gendered name phonology presented earlier (Slepian & Galinsky, 2016; Sidhu & Pexman, 2015; Slater & Feinman, 1985; Cutler, McQueen, & Robinson, 1990). A point-system was established based on the research, and names gained or failed to gain points based on their linguistic structure. All of the male names selected began with a voiced initial consonant or vowel, and all of the female names began with an unvoiced initial consonant. This distinction was made using the guide presented in Figure 1. Female names gained a point for each small vowel they

contained, and male names lost a point for each small vowel they contained (see Figure 2 for examples of large and small vowels). Lastly, female names gained a point for ending in a vowel, and male names gained a point for ending in a consonant. The resulting scores paired with the frequency were used to select the final names. Despite being popular and being linguistically gendered, some names were removed from the selection based on the researcher's' discretion. For example, Serenity (female) and Savannah (female) are both nouns, and Blake (male) is the name of a well-known female celebrity (Blake Lively). See Figure 3 for the final names used in the study.

Images

The participants were presented with one slide at a time. Each slide included two images of identical gender-neutral dolls. One of the dolls was in an expansive (high-power) posture and the other was in a contractive (low-power) posture. These images were based on those used in the study conducted by Hoffman et al. (2015) which revealed a male-power bias in 4 and 6 year-olds. However, the stimuli were altered so that low power dolls were scaled up 10%, and the legs were uncrossed. The scaling up of the low power dolls addressed a potential problem with original images, where participants could interpret the low power figures as being female based on the appearance that they were physically smaller. See Figure 7 for the four expansive (high-power) and four contractive (low-power) postures used in the study.

Questions

Participants were asked to answer the questions in a Qualtrics survey. The sequence of dolls and names was randomly assigned by Qualtrics, and the question accompanying these images was “How do you think someone named _____ would stand?”. Participants answered this question for 8 male names and 8 female names. The last two questions asked for the

participant's gender and age.

Procedure

After providing written and verbal consent, participants then sat with the researcher and completed the study on an iPad. The researcher read each question out-loud to the participant. On average, participants spent about 3 minutes completing the survey. Upon completion of the study, the participants received a sticker and a high-five as compensation for their participation in the study.

Results

Neither the responses of 4 year-olds nor the responses of 6 year-olds showed a significant relationship between gender and body posture, so the hypothesis was not supported. In order to analyze the data, the frequencies of responses in alignment with traditional gender stereotypes (male-expansive, female-contractive) and not in alignment with traditional gender stereotypes (male-contractive, female-expansive) were calculated. Using these frequencies, the relationship between gender and body posture was assessed by conducting a chi-square test of independence with SPSS.

The responses of 4 year-olds did not indicate a significant relationship between gender and body posture, X^2 (1, N = 368) = .394, p = .530. See Figure 4 for the distribution of responses in the sample of 4 year-olds. Furthermore, the responses of 6 year-olds did not indicate a significant relationship between gender and body posture either, X^2 (1, N = 224) = .645, p = .422. See Figure 5 for the distribution responses in the 6 year-old sample.

In addition, the performance of each name was also assessed. A gender bias score was computed for each name by averaging the responses to it. Every response that associated a male name with an expansive pose or a female name a contractive pose (in alignment with traditional

gender stereotypes) was coded as 1. Every response that associated a male name with a contractive pose or a female name with an expansive pose (not in alignment with traditional gender stereotypes) was coded as 0. The coded responses for each name were averaged, and the resulting value was the gender bias score. A gender bias score of 0 would indicate that a name never received a response in alignment with traditional gender stereotypes; the name would have a perfect gender bias opposite of the predicted direction. A gender bias score of 0.5 would indicate that a name received equal proportions of responses in alignment and not in alignment with traditional gender stereotypes; this would indicate no gender bias. A gender bias score of 1 would indicate that all of the responses for a name were in alignment with traditional gender stereotypes; this would indicate a perfect gender bias in the predicted direction. 6 male name and 9 female names had gender bias scores greater than 0.5, indicating some gender bias in alignment with traditional gender stereotypes; the remaining 17 names had gender bias scores less than or equal to 0.5, indicating no gender bias or some gender bias not in alignment with traditional gender stereotypes (female-expansive, male-contractive). For a visual representation of how individual names performed in Study 1, see Figure 8.

Discussion

This study sought to further examine social development in children, specifically looking at when they learn implicit gender cues. Because neither age group displayed a significant association between gender and body posture, the hypothesis was not supported.

There are several potential limitations that could explain the results of Study 1. First, it is possible that the social understanding tested in this study was too complex for the age groups studied. Thus, one possible explanation is that gender stereotypes are not triggered by implicit cues until children are older because it is more cognitively difficult to make judgments about

individuals than groups. Future research might want to examine how older children, for example 8 year-olds and 11 year-olds would perform on this task. Another potential limitation of this study was that it did not include a trial section where participants could practice the activity. Therefore, it is possible that the data was skewed by incomplete understanding of the task during the first few questions. If this study were to be repeated with the same age groups, it could be improved by adding a practice section. A third limitation of this study was the difficulty of recruiting participants; both samples were under 30. Because data collection was on weekday afternoons, there were fewer museum visitors, and potential 6 year-old participants were likely at school. Thus, if this study were to be reproduced or continued at the Boston Children's Museum, it should be run on weekends to recruit more participants. A fourth limitation is the study design itself; because participants were only given one name per slide, the study design could have allowed for a positivity bias. It is possible that participants selected the high-power postures because they looked happier. If this study is to be replicated, the study design should be altered to include both a male and female name on each slide to account for this.

Study 2

Method

Participants

195 adults (75 women, 120 men) participated in the study, with a median age of 31.5 years and a mean age of 34.2 years. Participants were recruited using Amazon MTurk, and they completed the survey remotely on their own computer. They were given $1 as compensation. Participants had to be in the United States, and they had to have completed 100 previous HITs with a HIT approval rate of 95% or greater.

Materials

The Qualtrics survey from Study 1 was repurposed to use with adults on MTurk. The only changes made were to the consent section, which was modified to apply to adults. In addition, the demographics section was expanded to include ethnicity, nationality, education level, and income range. Questions were also added to examine what participants thought the study was about, if they found the task confusing, and if they had completed any similar tasks before.

Procedure

Participants completed the Qualtrics survey on a computer. If participants gave their consent and affirmed that they were a U.S. resident who was 18 or older, the survey assessed whether their browser and device were supported. Participants attempting to complete the study on a mobile device were not allowed to complete that attempt. After providing their Amazon MTurk Worker ID, the participants were given instructions on how to complete the task. They were provided a general summary of the survey format (e.g., they would see a series of images and each image had two human figures adopting a series of poses) before answering the survey questions. Once the participants had completed the study, they provided demographic information and answered standard questions about their understanding of the study. These questions asked whether the participant knew what the study was about, if they were confused, and if they had completed a similar task before. Participants received compensation after completing the study.

Results

The same methodology used in Study 1 was repeated. The frequencies of responses in alignment with traditional gender stereotypes (male-expansive, female-contractive) and not in alignment with traditional gender stereotypes (male-contractive, female-expansive) were

calculated. Using these frequencies, the relationship between gender and body posture was assessed by conducting a chi-square test of independence with SPSS. The responses of adults indicated a significant relationship between gender and body posture, X^2 (1, N = 3120) = 166.631, $p < .01$. Of all 3120 responses in Study 2, 693 were female-expansive, 867 were female-contractive, 1051 were male-expansive, and 509 were male-contractive. These frequencies are in alignment with traditional gender stereotypes, but the current data analysis cannot determine if the male-expansive relationship is stronger than the female-contractive relationship. See Figure 6 for the distribution of responses for all adults in Study 2.

Because there was an unequal distribution of male and female participants in Study 2, chi-square tests for independence were also performed on the responses for male participants and for female participants. Gender of participants did not appear to be a moderator; the relationship between gender and body posture was significant across the responses of female participants, X^2 (1, N = 1200) = 79.692, $p < .01$, and across the responses of male participants, X^2 (1, N = 1335) = 12.788, $p < .01$. Among the 1200 responses from female participants, 279 were female-expansive, 321 were female-contractive, 431 were male-expansive, and 169 were male-contractive. Among the 1335 responses from male participants, 414 were female-expansive, 329 were female-contractive, 387 were male-expansive, and 205 were male-contractive. All of these frequencies were in alignment with traditional gender stereotypes, however, the current data analysis cannot determine if the male-expansive relationship is stronger than the female-contractive relationship. See Figure 10 for the distribution of female participants' responses, and see Figure 11 for the distribution of male participants' responses.

In addition, because the sample of adult participants had a wide age-range, chi-square tests for independence were conducted on the responses of different age segments. Age did not

appear to be a moderator either; the relationship between gender and body posture was significant across the responses of 20-29 year-olds, X^2 (1, N = 1184) = 52.449, $p < .01$, 30-39 year-olds, X^2 (1, N = 1042) = 104.178, $p < .01$, and participants older than 40 years, X^2 (1, N = 848) = 46.498, $p < .01$. Among the 1184 responses from 20-29 year-olds, 263 were female-expansive, 329 were female-contractive, 387 were male-expansive, and 205 were male-contractive. Among the 1042 responses from 30-39 year-olds, 233 were female-expansive, 311 were female-contractive, 369 were male-expansive, and 129 were male-contractive. Among the 848 responses from participants older than 40 years, 197 were female-expansive, 227 were female-contractive, 295 were male-expansive, and 129 were male-contractive. All of these frequencies are in alignment with traditional gender stereotypes, but the current data analysis cannot determine if the male-expansive relationship is stronger than the female-contractive relationship. For visual representations, see Figures 12, 13, and 14.

In addition, the performance of each name was also assessed. A gender bias score was computed for each name by averaging the participant responses to each name. Every response that associated a male name with an expansive pose or a female name a contractive pose (in alignment with traditional gender stereotypes) was coded as 1. Every response that associated a male name with a contractive pose or a female name with an expansive pose (not in alignment with traditional gender stereotypes) was coded as 0. The coded responses for each name were averaged, and the resulting value was the gender bias score. A gender bias score of 0 would indicate that a name never received a response in alignment with traditional gender stereotypes; the name would have a perfect gender bias opposite of the predicted direction. A gender bias score of 0.5 would indicate that a name received equal proportions of responses in alignment and not in alignment with traditional gender stereotypes; this would indicate no gender bias. A

gender bias score of 1 would indicate that all of the responses for a name were in alignment with traditional gender stereotypes; this would indicate a perfect gender bias in the predicted direction.1 male name and 5 female names had gender bias scores less than or equal to 0.5; the remaining 26 names had gender bias scores above 0.5, indicating some gender bias. See Figure 9 for a visual representation of each name's performance.

Discussion

The goal of this study was to gain insight into how adults associate expansive (high-power) or contractive (low-power) body posture and gender when exposed to implicit gender cues in the form of gendered names. The results of the chi-square test of independence indicate that the responses of adults did indicate a relationship between name gender and body posture in alignment with traditional gender stereotypes. Thus, the third hypothesis was supported. Because the responses of children in both age groups did not indicate a relationship and the responses of adults did, the fourth hypothesis was also supported.

Despite significant results, there were definite limitations to this study. First, the current data analysis is limited in scope. While it was able to determine that a significant relationship exists, further tests are required to understand the direction of these relationships. The current data analysis cannot determine if the male-expansive association is stronger than the female-contractive association. Second, participants conducted the study remotely. Thus, the study environment was not controlled. While participants were required to have completed 100 previous HITs with a HIT approval rate of 95% or greater, it is possible that the environment in which they completed the study affected their responses. Lastly, because the hypothesis check was self-reported, it is possible that participants were not honest when explaining what they thought the study was about. If they did understand, they may have been dishonest to avoid

appearing sexist. The significant results of Study 2 should be further investigated. If other researchers decide to replicate the experiment, it would be wise to ensure equal gender representation and to conduct the study in a controlled environment.

General Discussion

Studies 1 and 2 sought to add to the existing literature on nonverbals, power, and gender stereotypes by examining how children and adults relate gender and body posture when presented with implicit gender cues in the form of gendered names. In Study 1, neither the 4 year-old participants nor the 6 year-old participants displayed a significant gender bias. Thus, the first and second hypotheses were not supported. In Study 2, participants demonstrated a significant gender bias. Thus, the third and fourth hypotheses were supported.

There are shared limitations for Studies 1 and 2 because the same survey and stimuli were used. First, while the male and female names in the study were sourced from the Social Security lists of their respective gender and the names were narrowed down based on linguistic research, participants were not asked to rate how masculine or feminine they thought the names were. Thus, it is possible that despite the rigorous name selection process, the internal validity of name gender was not strong enough. Second, this was not a longitudinal study. The current research cannot confirm if children's traditional gender biases strengthen as they get older because the participants in both studies are not representative of the same generation.

Nonetheless, the non-significant results of Study 1 and the significant results of Study 2 provide interesting leads for future research. One potential explanation for the discrepancy between the results of Study 1 and the results of Study 2 is that changing social values are actually leading to weaker traditional gender biases in children born after 2009. Because the youngest participant in Study 2 was born in 1996, it is possible that there are generational

differences between the participants in Study 1 and the participants in Study 2. Another potential explanation for the discrepancy between the results of Study 1 and the results of Study 2 is Social Learning Theory (Bandura, 2002). The results of Hoffman et al. (in prep) suggest that this could be the explanation because participants of the same age groups examined in Study 1 demonstrated a significant male-expansive bias when presented with explicit gender cues. By ages 4 and 6, implicit gender cues may not fully trigger gender stereotypes. Thus, the results of Study 1 and Study 2 could further indicate that biases about gender and body language that are gleaned from cultural stereotypes are strengthened as people age. Ideally, a longitudinal study would be conducted to assess if this phenomenon exists.

If the explanation for the results of Study 1 and Study 2 is that gender stereotypes about body language are learned and subsequently strengthened over time, further research could lead to interventions that would reduce the impact of gender stereotypes on subjects and targets. For example, if the stereotyped associations between men-expansive body posture and women-contractive body posture are learned, teachers, parents, mentors, and other caregivers could encourage children to physically hold themselves in ways that defy these stereotypes. Not only would children benefit from the positive effects of expansive body posture (Keltner et. al, 2003; Cuddy, 2015; Carney et. al, 2010), but the gender stereotyped associations could be weakened over time. A second potential intervention would be to encourage producers of children's media (books, television shows, movies, etc.) to be mindful of how male and female characters are portrayed. Advocating for strong female children's characters that are active, ambitious, and powerful and for male characters that respect the autonomy of these female characters could help to change the way children understand what it means to be a boy or a girl.

Some children's shows are already implementing similar tactics. Lego and Disney

recently collaborated to create a television special entitled "Frozen Northern Lights", which brings back the main characters from *Frozen* (Pittman, 2017). In one scene, Anna uses a map to navigate for the group before announcing, "This is my department--I think we can kayak farther north" (Pittman, 2017). Kristoff promptly responds by disagreeing and then restating Anna's suggestion that they kayak further north (Pittman, 2017). Kristoff's reindeer Sven calls Kristoff out on his faux-pas with "She literally just said that. Stop mansplaining" (Pittman, 2017). Momentarily taken aback, Kristoff concludes the scene by praising Anna for her good idea (Pittman, 2017). This scene is an excellent example of a potential intervention because it depicts a strong female character who confidently shares her ideas, and it simultaneously encourages the male character in the scene to respect the expertise of the female character. As one of the top-grossing films of all time (Konnikova, 2014), *Frozen*'s success provides it with a platform to reach children and adults all over the world. If more children's media franchises intentionally use their visibility to challenge traditional gender stereotypes and subsequent gendered behaviors, it is possible to influence the attitudes of people for the better.

Conclusion

Even though the results of Study 1 were not significant, the importance of strong female children's characters remain. Perhaps the data was not significant because of an increasing presence of characters that defy gender stereotypes. Perhaps the significant results of Study 2 illustrate the consequences of a shortage of powerful female characters present in popular culture during the participants' childhoods. Though the mechanisms behind the results of Study 1 and Study 2 are not clear, the persistence of negative gender stereotypes (Broverman et al., 1972; Cuddy et al., 2015; Powell et al., 2002; Powell & Butterfield, 1989; Powell & Butterfield, 1979; Cuddy et al., 2004) and a lack of women in leadership positions are (Brown, 2017).

A particularly relevant final example is the 'Fearless Girl' statue that recently debuted on Wall Street (Mettler, 2017). The four foot-tall statue of a girl with her hands on her hips stands in opposition to the famous 'Charging Bull' statue (Mettler, 2017). The 'Fearless Girl' was installed to call attention to the persistent lack of gender equality in the corporate world, and many are critical of the new statue's presence (Mettler, 2017). The backlash prompted by the 'Fearless Girl' leads one to question why so many people were angry about the likeness of a girl taking up space in a traditionally masculine domain. Such outrage makes it clear that gender stereotype-defying icons like the 'Fearless Girl' and Pippi Longstocking continue to be necessary.

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Voicing of English Consonants			
Voiced Consonants		Voiceless Consonants	
/b/	*b*ig	/p/	*p*en
/d/	*d*og	/t/	*t*op
/g/	*g*ive	/k/	*c*at
/v/	*v*ote	/f/	*f*ood
/ð/	*th*is	/θ/	*th*ick
/z/	*z*oo	/s/	*s*un
/ʒ/	bei*g*e	/ʃ/	*sh*ip
		/h/	*h*ouse
/dʒ/	*j*uice	/tʃ/	*ch*ip
/m/	*m*an		
/n/	*n*ow		
/ŋ/	si*ng*		
/l/	*l*ove		
/r/	*r*un		
/w/	*w*et		
/y/	*y*es		

Figure 1. Visual representation of voiced and voiceless English consonants. Reprinted from The consonants of American English by M. Yoshida. http://ocw.uci.edu/upload/files/consonants.pdf

Phoneme	Example	Most often associated size
/I/	b*i*d	small
/iː/	r*e*gal	small
/e/	s*e*ll	small
/aI/	f*i*nd	small
/ɒ/	sm*o*ck	small
/ʌ/	m*u*st	small
/uː/	st*u*pid	large
/ə/	b*i*rd	large
/æ/	br*a*nd	large
/eɪ/	fr*a*il	large
/aʊ/	c*o*w	large
/aː/	m*o*ttled	large
/o/	b*o*ne	large

Figure 2. Visual representation of large and small vowels. Reprinted from Sex-Biased Sound Symbolism in English-Language First Names. By B.J. Pitcher, A. Mesoudi, & A.G. McElligott A.G. (2013) PLOS ONE 8(6): e64825. doi: 10.1371/journal.pone.0064825

Set 1 Female Names	Set 2 Female Names	Set 1 Male Names	Set 2 Male Names
Camila	Charlotte	Jason	Jacob
Penelope	Hannah	Robert	Owen
Stephanie	Sarah	Daniel	Mason
Kylie	Kayla	James	Austin
Samantha	Chloe	Luke	David
Sophia	Hailey	Xavier	Joseph
Kimberly	Kaylee	John	Nathan
Stella	Caroline	Oliver	Lucas

Figure 3. Names used in Studies 1 and 2.

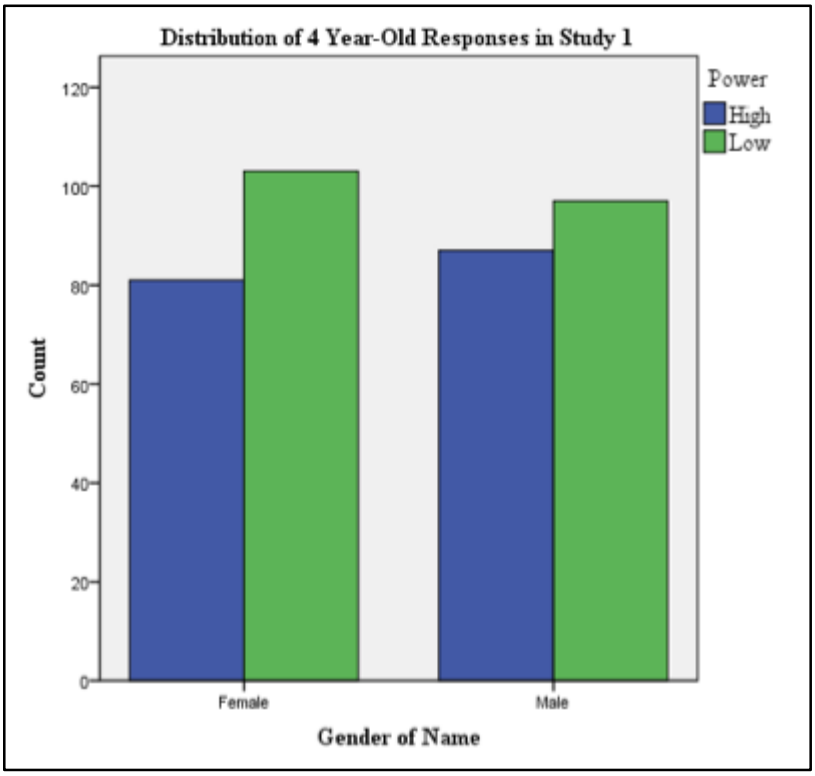

Figure 4. The distribution of responses in the 4 year-old sample.

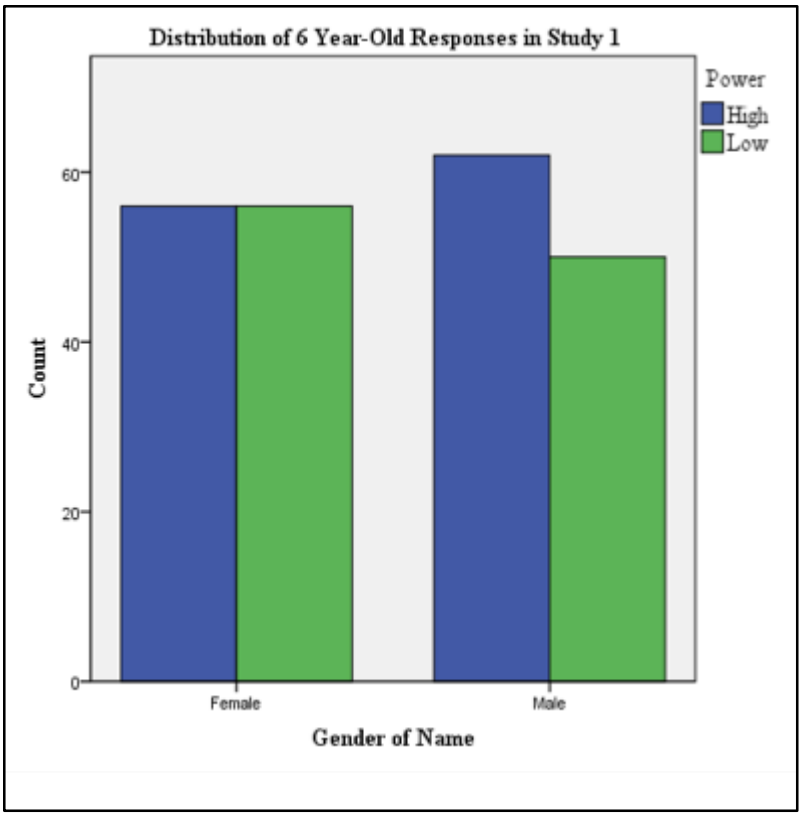

Figure 5. The distribution of responses in the 6 year-old sample.

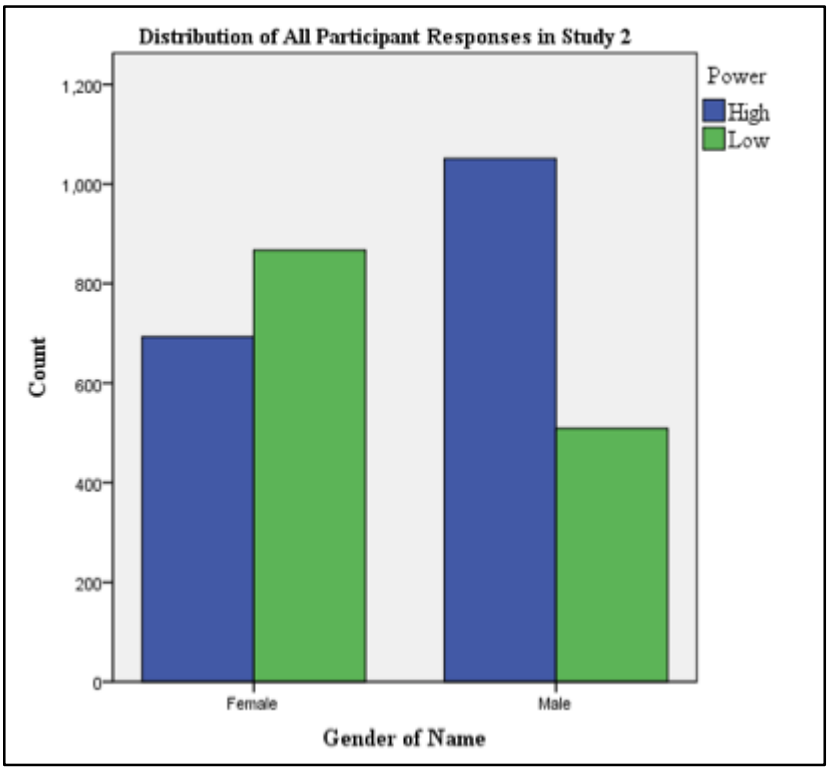

Figure 6. Visual representation of the distribution of responses in Study 2.

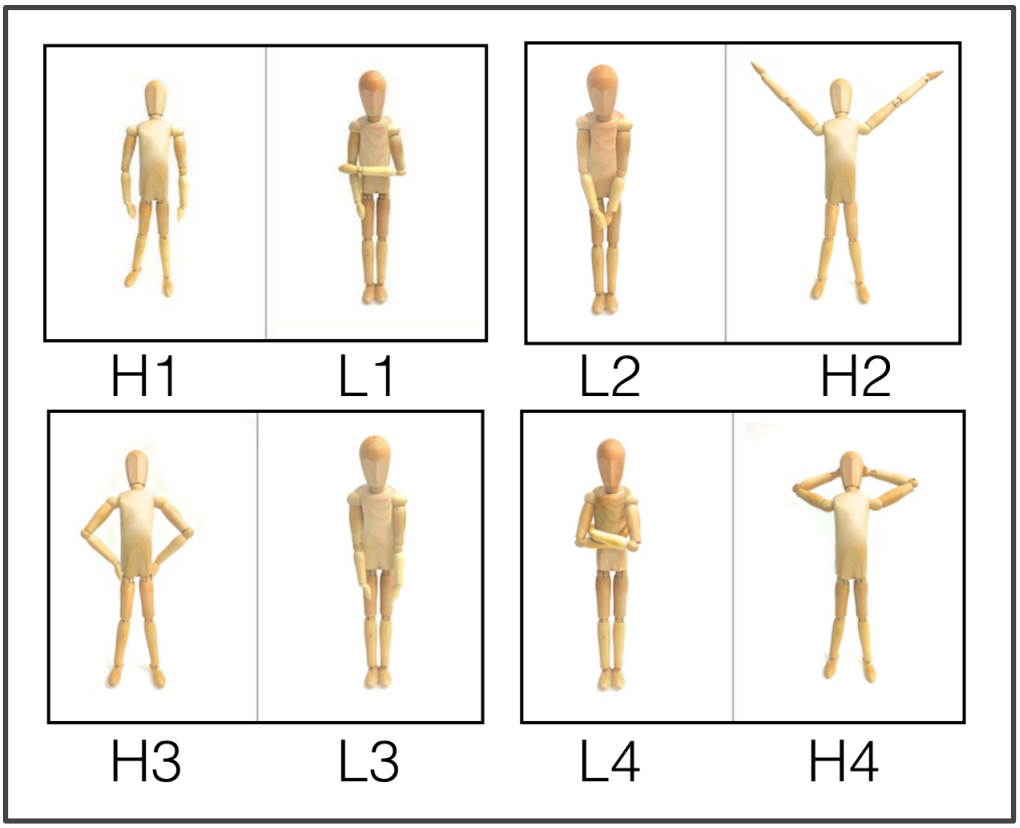

Figure 7. The four expansive (high-power) and the four contractive (low-power) poses used in various combinations throughout the survey used in Study 1 and Study 2.

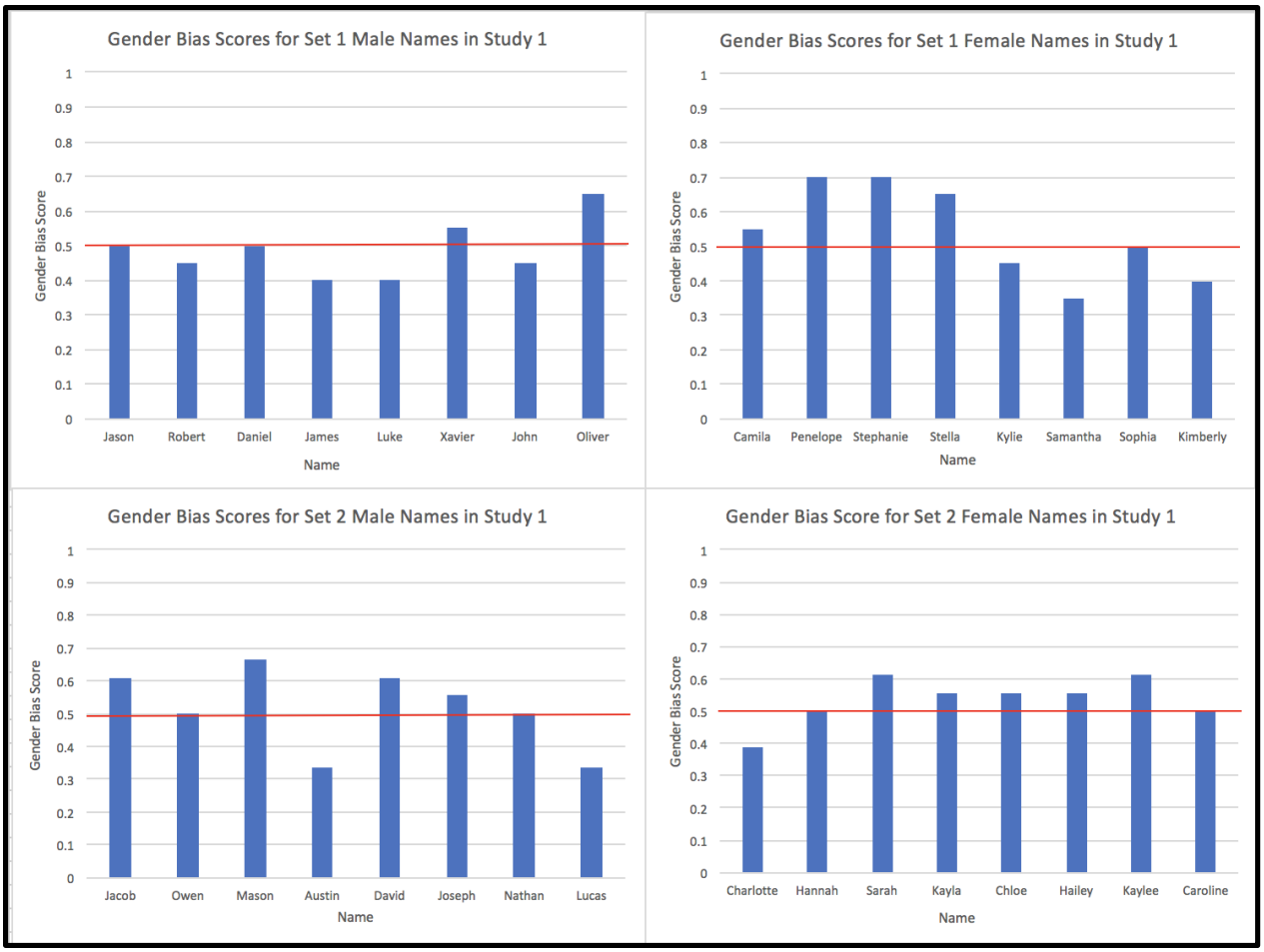

Figure 8. A visual representation of the gender bias scores for each name in Study 1. A gender bias score of 0 would indicate that a name never received a response in alignment with traditional gender stereotypes; the name would have a perfect gender bias opposite of the predicted direction. A gender bias score of 0.5 would indicate that a name received equal proportions of responses in alignment and not in alignment with traditional gender stereotypes; this would indicate no gender bias. A gender bias score of 1 would indicate that all of the responses for a name were in alignment with traditional gender stereotypes; this would indicate a perfect gender bias in the predicted direction. 6 male name and 9 female names had gender bias scores greater than 0.5, indicating some gender bias in alignment with traditional gender stereotypes; the remaining 17 names had gender bias scores less than or equal to 0.5, indicating no gender bias or some gender bias not in alignment with traditional gender stereotypes (female-expansive, male-contractive).

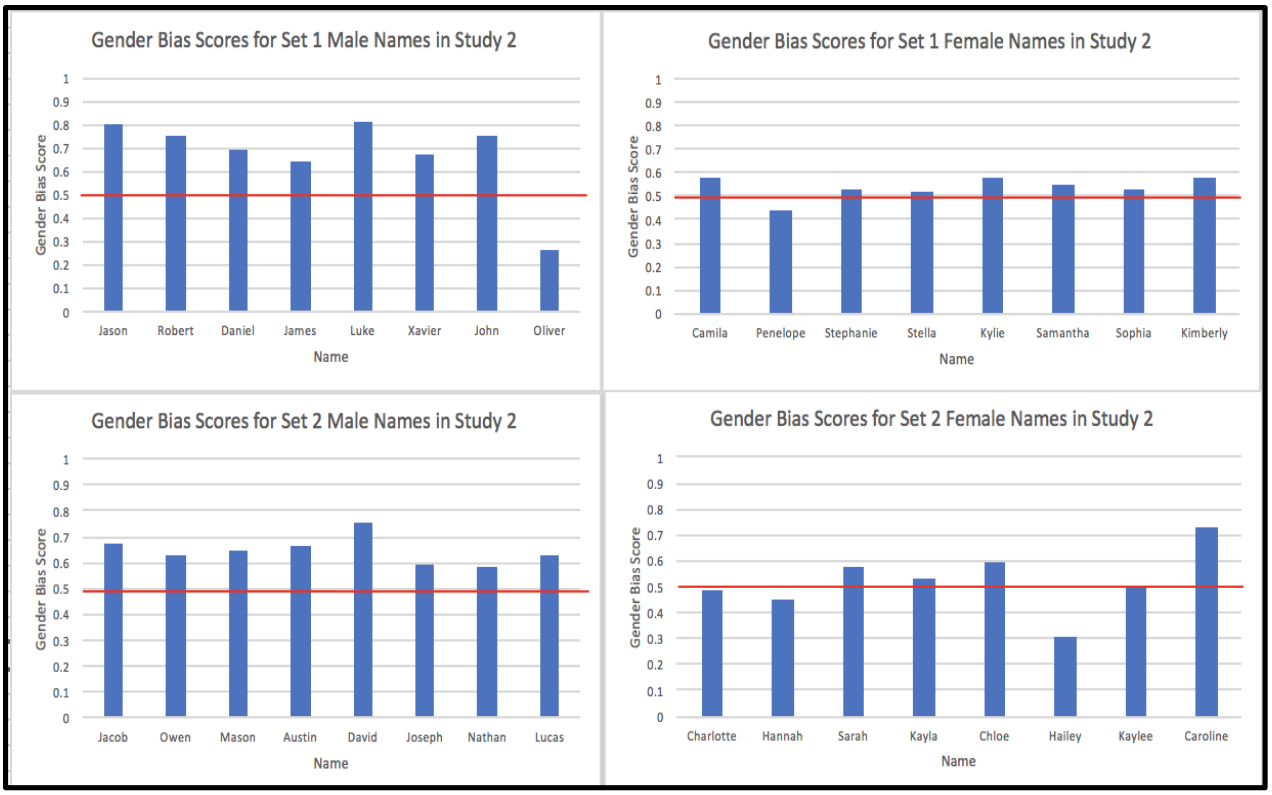

Figure 9. A visual representation of the gender bias scores for each name in Study 2. A gender bias score of 0 would indicate that a name never received a response in alignment with traditional gender stereotypes; the name would have a perfect gender bias opposite of the predicted direction. A gender bias score of 0.5 would indicate that a name received equal proportions of responses in alignment and not in alignment with traditional gender stereotypes; this would indicate no gender bias. A gender bias score of 1 would indicate that all of the responses for a name were in alignment with traditional gender stereotypes; this would indicate a perfect gender bias in the predicted direction. 1 male name and 5 female names had gender bias scores less than or equal to 0.5 ; the remaining 26 names had gender bias scores above 0.5, indicating some gender bias in alignment with traditional gender stereotypes.

Figure 10. A visual representation of the responses of female participants in Study 2.

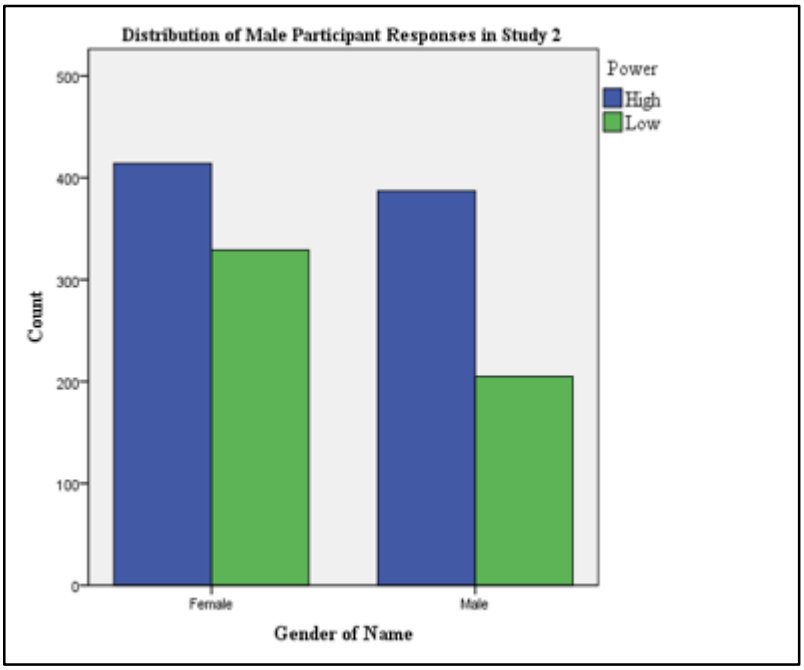

Figure 11. A visual representation of the responses of male participants in Study 2.

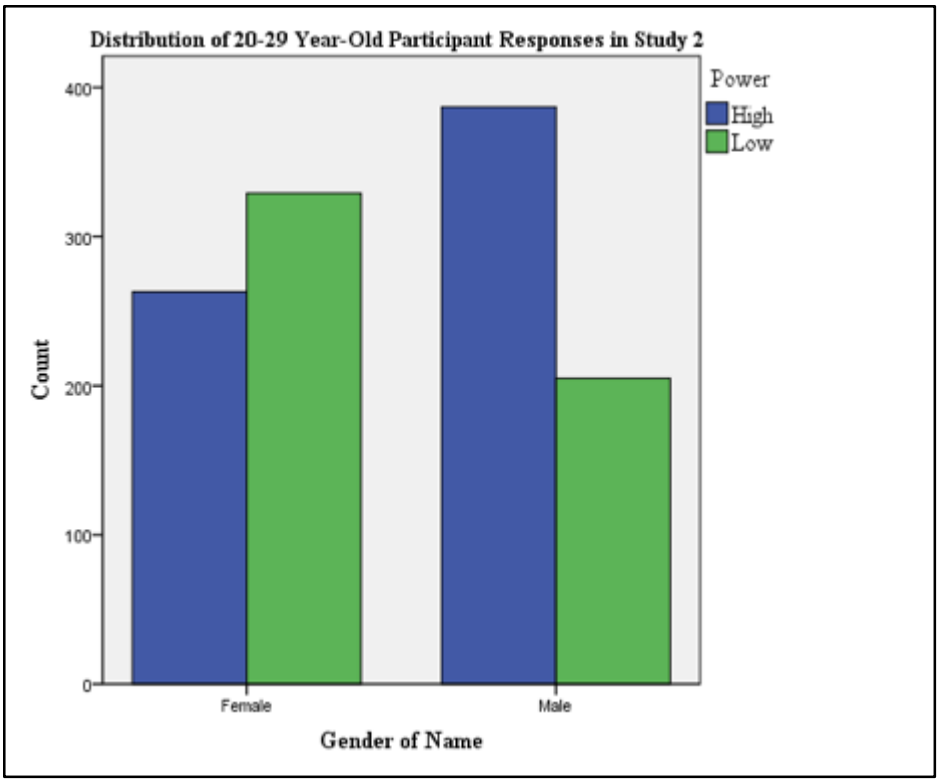

Figure 12. A visual representation of the responses of 20-29 year-old participants in Study 2.

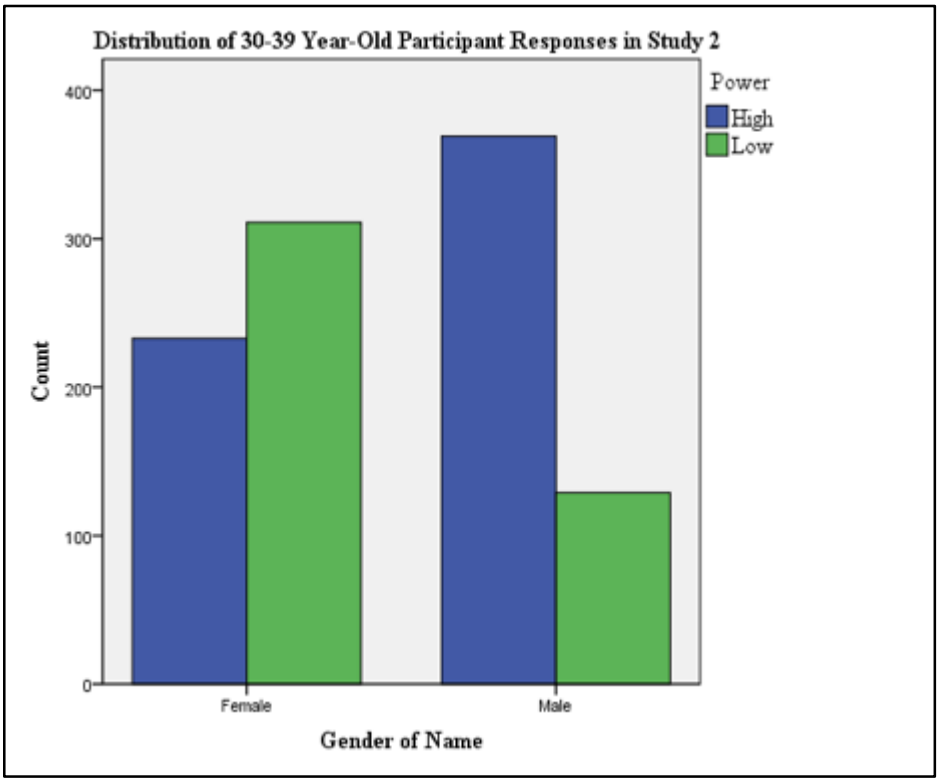

Figure 13. A visual representation of the responses of 30-39 year-old participants in Study 2.

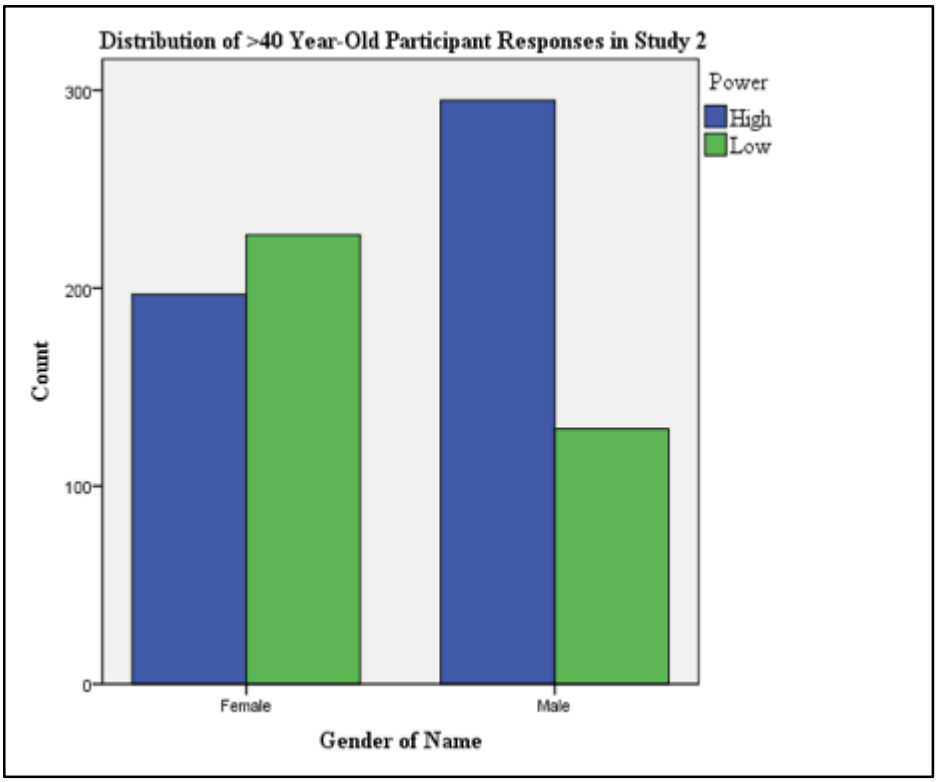

Figure 14. A visual representation of the responses of participants aged 40 years and higher in Study 2.