Does This Bumper Sticker Make Me Look Reckless?

Stereotypes About Driving Ability Based on Perceived Gender

Lydia Helton

Department of Psychology, Milligan University

Abstract

Driving has traditionally been viewed as a masculine activity, producing gender stereotypes in driving. For example, Pravossoudovitch et al. (2015) found that participants evaluated males' driving skills higher than those of females, but evaluated females' courtesy, risk avoidance, and compliance with traffic rules higher than those of males. In an attempt to indirectly study gender stereotypes in driving and activate implicit biases, the present study examined participants' stereotypes of male and female drivers based on their perceptions of gendered bumper stickers. Two hundred Amazon Mechanical Turk workers were shown an image of a car with either masculine, feminine, or neutral bumper stickers and were asked to rate a hypothetical driver on traffic rule compliance, courtesy behind the wheel, risk avoidance, and overall driving skills. We hypothesized that participants would be more likely to perceive drivers of cars with masculine bumper stickers as more reckless than drivers with feminine bumper stickers. We found significant differences between the hypothetical male and female drivers in regards to risk avoidance in driving, $t(198) = -2.64$, $p = .009$, but no significant differences between the other variables. Thus, participants were more likely to rate female drivers ($M = 20.31$, $SD = 4.07$) as more risk avoidant than drivers presumed to be male ($M = 18.84$, $SD = 3.54$). Significant interactions were found between the gender of the participants and the perceived gender of the hypothetical driver in regards to law compliance ($p = .02$), risk avoidance ($p = .04$), and courtesy ($p = .05$). Additional analyses indicated that perceptions of the driver were also affected by the number of traffic violations participants had in the last five years, suggesting that gender stereotypes are not the only important factor in risk perceptions.

Keywords: gender stereotypes, bumper stickers, driving

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Stereotypes About Driving Ability Based on Perceived Gender

Records of monumental events often reveal beliefs and values of the represented time period, illustrating how certain views can influence significant decisions. Critical beliefs may include stereotypes about specific groups of individuals, which have the ability to become the driving force behind crucial choices and ideas. Gender stereotypes maintain a long-standing history across the globe, affecting how men and women behave, speak, think, and dream. Traditional gender expectations have the power to restrict individuals from pursuing certain careers, talents, hobbies, or goals. While many cultures have abandoned such beliefs and expanded their roles beyond the confines of gender, such as women choosing to work outside of the home and pursuing male-dominated careers, stereotypes that developed long ago, including stereotypes in driving, still linger throughout societies and often dictate how certain people are perceived.

Gender Stereotypes

Gender stereotypes fall on a continuum between two prominent forms: implicit stereotypes and explicit stereotypes (Pardal et al., 2020). Implicit stereotypes are beliefs that involve automatic processing, meaning they often occur unconsciously and require less attention from the individual. Implicit stereotypes may express themselves through nonverbal behaviors that arise somewhat automatically. On the other hand, explicit stereotypes involve more intentional control from the individual, meaning the individual is aware that they hold the belief, and the stereotypes are revealed through purposeful behaviors such as verbal expressions.

Since gender stereotypes are prevalent across cultures, individuals tend to learn gender expectations from a young age and begin implementing those ideas into their own lives. Most

children determine their own gender by the age of two, and they use gender to guide their behavior and categorize others (Murnen et al., 2015). Gender stereotypes are conveyed to youth through media, traditional school and work practices, and the influence of family and friends (Goldstein-Schultz, 2016). An analysis of advertisements revealed that women are often depicted as weak, emotional, and scared, while also exhibiting beauty and attractiveness (Heathy, 2020). Advertisements often neglect female achievements and strengths, as they tend to focus on women in domestic situations. On the other hand, men are often shown as independent, powerful, and breadwinners of their households, acting as a reasonable and important source of strength to others. Characters in books or movies, as well as toys labeled for certain genders, can influence children's interests and hobbies. Murnen et al. (2015) examined popular Halloween costumes, dolls and action figures, and Valentines, noticing similar differences between female and male characters. Female characters were dressed in decorative and revealing clothing, while male characters were dressed in functional clothing and hyper-masculine accessories, such as weapons or armor. Goldstein-Schultz (2016), who analyzed gender stereotypes across adolescents in the United States, argues that "many of the gender roles that we are taught from birth remain unquestioned and unchallenged into adulthood," and they often have the power to affect children's academic performance, self-confidence, and cognitive development (p. 56; Weisgram, 2016).

Eagly et al. (2020) conducted a meta-analysis on gender stereotypes across the United States from 1946 to 2018. Public opinion polls regarding communion, agency, and competence were utilized to determine whether each trait was believed to be more descriptive of women, men, or equally of both genders. Women were increasingly rated higher than men in communion, and men were consistently rated higher than women in agency (Eagly et al., 2020).

However, the belief that men and women are equal in competence increased through the years. For those that reported a difference in competence between men and women, their evaluation of female superiority increased over time. Eagly et al. (2020) offers an explanation for the change in public opinion, discussing how women traditionally had roles in the home, while men worked. However, as women have advanced in their levels of education and careers to become more equal to men, opinion about women's competency has increased as they have had expanded opportunities to publicly prove their knowledge and abilities.

Stereotypes About Driving

While beliefs regarding women's competency and performance have increased over the last several decades, stereotypes remain based on traditional opinions, including beliefs about driving. Since women often held domestic roles before entering the workforce, men had a greater need than women to drive vehicles and travel around town as they worked outside of the home. Lezotte (2015) discusses gender stereotypes in driving, specifically how driving came to be considered a masculine activity and how the history of automobiles affects stereotypes today. When vehicles were first manufactured and marketed to the public, the perceived role of women as homemakers and caretakers of children influenced the development of cars for women that reflect their household duties, the delay of women's ability to drive, and the depictions of female drivers as nervous, distracted, emotional, and accident-prone (Lezotte, 2015). As gender roles have transformed throughout the course of history, women have just recently, within the past few decades, begun to enter the realm of driving and automobile owning (Segura et al., 2009).

Research conducted by Granié and Papafava (2011) on 599 French preadolescents and adolescents between the ages of ten and sixteen years suggests that gender stereotypes in driving begin forming around age ten, most likely from the social expectation that risk-taking is a

masculine trait (Granié & Papafava, 2011). Male stereotypes in driving are consistent at this age, while female stereotypes in driving continue to develop over time. Females in the study also exhibited in-group bias, meaning females tended to favor and rate their own gender more preferably than males. Gender stereotypes suggest that females are "unable to manage stressful situations requiring rapid decision-making" (Granié & Papafava, 2011, p. 5). Thus, youth in the study appeared to associate men with a natural ability to drive well, which allows them to take risks in driving regarding speed and aggressiveness.

Dontsov and Kabalevskaya (2013) compared driving behavior between males and females and identified existing gender stereotypes and contributing factors. The first part of the study involved analyzing stereotypes of male and female drivers in 142 road users, with varying levels of driving skill, via websites, surveys on automobile forums, focus groups, and interviews. Additionally, detailed interviews were conducted with 40 male and female drivers, addressing their typical behavior and their evaluation of various accidents and driving situations. The study revealed that drivers, police officers, and pedestrians perceived female drivers as incompetent, hesitant, unpredictable, egocentric, and lacking self-confidence (Dontsov & Kabalevskaya, 2013). While women shared these perceptions, men tended to emphasize and include additional negative aspects of female stereotypes. Male drivers were perceived as the model driver, exhibiting self-confidence, obtaining pleasure from driving, and being pragmatic, impulsive, nervous, non-observant of traffic rules, and unsafe (Dontsov & Kabalevskaya, 2013). However, Segura et al. (2009) note that gender stereotypes associated with driving are often paradoxical. For instance, women are thought to have inferior driving skills, such as difficulty maneuvering the vehicle, but they are also considered to be more cautious. Additionally, men are said to have

more traffic accidents, while women are labeled as easily distracted. Contrasting stereotypes may lead to difficulties in conducting research since participants' views may be misrepresented.

In the second part of the study, Dontsov and Kabalevskaya (2013) analyzed video recordings of actual driving behavior in six female and six male drivers, finding that female drivers spend almost three times as much time on a driving maneuver due to gender differences in distribution of attention, which may provide an explanation for stereotypes regarding females' hesitancy and lack of self-confidence. While females consider both main and secondary variables during the preparatory stage of the maneuver, males only focus on the main item, which includes vehicles in their own and opposite lanes. Additionally, 12 male and female participants were shown the recorded videos and asked to characterize the driver in the video, finding that 66% of the participants' comments, which addressed driving speed, roughness, intensity, and time and spatial characteristics, were related to gender, correlating to the behaviors revealed in the video recordings. Therefore, individuals tend to form stereotypes of driving ability based on gender, as well as stereotypes of gender based on driving ability.

Perepjolkina and Renge (2011) illustrated gender stereotypes through data of actual individuals' past driving experiences to determine potential predictors of aggressive driving behavior. Participants included 91 female and 137 male drivers who completed an online questionnaire. The questionnaire inquired about the participants' sex, age, estimated annual driving distance, and the amount of time they have possessed a license. Additionally, participants filled out Latvian versions of the Buss-Perry Aggression Questionnaire, which measures physical aggression, anger, and hostility, and the Aggressive Driving Scale, which conveys their self-reported likeliness to commit aggressive behaviors on the road. The results revealed that males, younger individuals, and those with more driving experience were correlated with higher

aggressive driving scores. Moreover, males tended to be involved in more traffic violations and accidents, specifically lethal accidents that resulted from speeding and driving under the influence of alcohol, than females.

While the number of deaths related to vehicle accidents are less than they were two decades ago, data from the National Highway Traffic Safety Administration (2019) of the United States Department of Transportation aligns with the findings of Perepjolkina and Renge (2011). Based on data from 2018, the age group with the largest number of vehicle fatalities includes individuals between the ages of 25 and 34 years. Additionally, out of the 36,560 total vehicle-related deaths in 2018, 25,841 were male and 10,676 were female. While the Insurance Institute for Highway Safety (2020) notes that the annual differences between male and female fatalities have decreased since 1975, the gap remains notable between genders.

As suggested by prior research, men tend to exhibit aggressive behaviors on the road, specifically in regards to ignoring traffic rules or acting on their hostile emotions. The increased willingness to behave aggressively may lead males to commit riskier acts that place the lives and property of themselves and others in danger. Females tend to exhibit opposite characteristics in driving, as they are more likely to consider how their actions might affect others. In order to further study gender stereotypes, Pravossoudovitch et al. (2015) examined participants' sex and age differences in their endorsement of sex stereotypes in driving. Participants were given a questionnaire that asked about male's driving skills and female's compliance with traffic rules, courtesy behind the wheel, and risk avoidance in driving. Female participants were more likely than male participants to rate women as risk avoidant, and male participants were more likely to rate males' driving skills as superior to females. Since participants promoted their in-group over their out-group, group dynamics appear to play a role in gender stereotyping. Additionally,

participants endorsed males' superior driving skills less with age, but female participants endorsed females' compliance with traffic rules more with age. Both male and female participants reported believing that females are more compliant with traffic rules and more courteous in driving than males, which is consistent with the results of Dontsov and Kabalevskaya's (2013) research.

Typically, fellow drivers and pedestrians are unaware of a driver's gender, especially if they are viewing a car from the rear point of view. Individuals can, and often do, make assumptions about a driver's gender, age, income, or other characteristics based on the style of their car and the driver's behavior. Most of the time, they cannot be certain of any characteristic unless they pass the driver with a side view glance or stop beside the vehicle at the next red light. However, bumper stickers and other car decals may provide a glimpse into the driver's identity.

Bumper Stickers

Bumper stickers are cheap and easy to obtain and purchase, allowing individuals to place them on the back of their cars, whether on their actual bumper or on their rear windshield, for passing drivers or pedestrians to view. Since a car owner's identity is masked from the rear view of the car, bumper stickers convey information to other drivers that otherwise might not be known. Limited research, particularly in the United States, has been conducted on the psychology of bumper stickers, including lack of research on the types of individuals that own bumper stickers, the effects of bumper stickers on their owners, and the effects of bumper stickers on those around the car. However, as noted by Stern and Solomon (1992), bumper stickers are durable and long-lasting and have the potential to convey messages with either words or symbols, making them a beneficial medium through which to study expressions of identity.

Since bumper stickers provide an instant message to passing drivers and pedestrians, they allow for vast miscommunication, as contradictions can exist between the intended meaning of a bumper sticker and how it is interpreted by others (Haynsworth, 2008). Bumper stickers as a form of communication occur without human connection, meaning individuals are not afforded the opportunity to further explain, discuss, or argue the message of a bumper sticker with others. Therefore, the driver is susceptible to falling into others' exhaustive list of stereotypes, including gender stereotypes, to characterize their personality or driving ability based on their automobile appearance (Haynsworth, 2008). Research has suggested the prominent existence of gender stereotypes in driving, but there seems to be little or no research on the effects of gendered bumper stickers and whether or not assuming a driver's gender from a car decal would affect the degree of stereotypes applied.

In order to analyze gender stereotypes in driving while utilizing an experiment that is representative of reality, my study measured the degree of participants' gender stereotypes based on their perceptions of a hypothetical car with gendered bumper stickers. Participants viewed one of three pictures, exhibiting the rear of a car with either female, male, or neutral bumper stickers. Then, participants completed a modified version of the questionnaire developed by Pravossoudovitch et al. (2015), which analyzed their views of males' driving skills and females' compliance with traffic rules, courtesy behind the wheel, and risk avoidance in driving. In this experiment, reckless driving was defined as noncompliance with traffic rules, lack of courtesy behind the wheel, tendency to participate in risk-taking, and seemingly confident driving abilities. Noncompliance with traffic rules is a driver's tendency to ignore laws such as speed limits, road signs, or prohibition of drug and alcohol use. Courtesy behind the wheel pertains to a driver's politeness to other road users and pedestrians, which might entail exhibiting patience

with slow drivers, maintaining a safe distance between vehicles, and driving cautiously to accommodate others on the side of the road. Risk-taking might involve driving at high rates of speed, submitting to distractions, or neglecting appropriate driving tasks, such as checking blind spots before changing lanes. Driving skills encompasses an individual's ability to control their vehicle and perform successful maneuvers, including gradual stops, quick reactions, and steady driving. Past studies have attributed these characteristics to the confident and aggressive tendencies of male drivers that may put themselves and others at risk of harm.

The purpose of my study was to assess gender stereotypes in driving without directly inquiring about male or female driving abilities. Since participants based their perceptions of the hypothetical drivers on the content of bumper stickers rather than their explicit views, the results are more likely to be based on their implicit stereotypes of the driver. In other words, the nature of the study encouraged participants to answer the questionnaire based on their unconscious, automatic impulses to stereotype the driver, offering a more accurate examination of implicit gender stereotypes. I hypothesized that if participants were shown images of cars portraying gendered bumper stickers, then they would be more likely to perceive drivers of cars with masculine bumper stickers as more reckless than drivers with feminine bumper stickers.

Method

Participants

Participants were 200 Amazon Mechanical Turk workers who agreed to complete the survey for $0.35. Participants who completed the survey were 58% male and 42% female. The ethnicities of the participants included 86% White, 7.5% Black or African American, 1% American Indian or Alaska Native, 2.5% Asian, and 3% other or multiple ethnicities. The mean age of the participants was 35.3 years, and 97.5% of participants claimed to have a valid driver's

license. Regarding traffic violations, including either traffic tickets or warnings from police within the last 5 years, 25.5% of participants reported zero traffic violations, 56% reported one to two violations, and 18% reported three or more violations.

Apparatus and Materials

The experiment was conducted through a Qualtrics survey provided to participants through Amazon Mechanical Turk, a crowdsourcing platform. Qualtrics is an online program that can be utilized to develop and distribute surveys. Each participant received a survey that featured one of three pictures, each depicting the back of a car with either masculine, feminine, or neutral bumper stickers, which coincide with the three conditions in the experiment (see Appendix A for photos). The neutral condition presented four gender-neutral bumper stickers. The two experimental conditions included the same four bumper stickers of the neutral condition with an additional sticker that suggested gender. The bumper stickers were acquired online and electronically added to a photo of a car.

Procedures

The participants were invited to participate in the survey in exchange for payment via Amazon Mechanical Turk. After consenting to the study, participants completed a demographics survey that included questions regarding age, gender, ethnicity, and driving history. Then, the participants were assigned to three groups randomly. One group received the control condition, which presented a photo of a car with four gender-neutral bumper stickers that were chosen based on results from a pilot survey conducted on the campus of Milligan University. One of the experimental groups viewed an identical car with the same four gender-neutral bumper stickers and one additional bumper sticker that reads “Keep Calm and Grow a Beard,” intended to suggest that the driver is a male. The other experimental group received the same photo except

the additional sticker reads “Keep Calm I’m a Princess,” intended to suggest that the driver is a female. The two additional bumper stickers were also chosen based on results from the pilot survey in order to present stickers with a high likelihood of participants correctly assuming the suggested gender of the driver.

After viewing the image, each participant answered the question “How many bumper stickers are on the car pictured below?” Participants were required to select the correct number of stickers from the multiple-choice options in order to continue the survey, encouraging them to pay attention to every sticker. Then, all three groups received the same Likert-type questionnaire, modified from a pre-existing questionnaire that measured participants’ views of female or male drivers’ driving skills (Cronbach’s $\alpha = .93$), courtesy (Cronbach’s $\alpha = .95$), compliance with traffic rules (Cronbach’s $\alpha = .88$), and risk avoidance (Cronbach’s $\alpha = .94$). The questionnaire of the present study measured participants’ perceptions of the hypothetical driver based on the content of the presented car’s bumper stickers, specifically regarding the suggested gender of the driver (see Appendix B for survey). Questions were divided into four subscales, including compliance with traffic rules, overall driving skills, risk avoidance, and courtesy on the road, each of which are elements of gender stereotypes in driving. At the end of the questionnaire, participants were asked to choose the gender of the driver. After the study, participants were given the option to request a summary of the study’s results.

Results

Participants’ responses to the questionnaire were analyzed in two separate manners, one of which was based on the intended gender of the driver and the other based on the participants’ perception of the driver’s gender, regardless of whether it was correct in the context of the experiment. For the first method, participants were analyzed based on the experimental group to

which they were randomly assigned at the beginning of the experiment, as they were shown either female, male, or neutral bumper stickers. When removing 52 participants who reported the incorrect gender of the driver for the presented bumper sticker, one-way ANOVA was conducted to determine differences between the three groups of 148 participants for law compliance ($F(2,145) = 1.860$, $p = .159$), driving skills ($F(2,145) = 3.177$, $p = .045$), risk avoidance ($F(2,145) = 1.392$, $p = .252$), and courtesy ($F(2,145) = .174$, $p = .840$). The 148 participants included 52 participants in the male group, 28 in the female group, and 68 in the neutral group. There was a statistically significant difference in the driving skills subscale between participants in the masculine bumper sticker condition ($M = 18.14$, $SD = 3.50$) and participants in the neutral condition ($M = 19.87$, $SD = 3.19$), but there were no significant differences between the feminine bumper sticker condition ($M = 19.40$, $SD = 2.57$) and the other two conditions.

Participants' responses to the questionnaire were also analyzed based on the perceived gender of the driver. Thus, all participants, regardless of the group to which they were randomly assigned, were divided into two groups based on the gender of the driver that they reported in the survey. In this case, no participants were omitted since the intended gender of the driver was not taken into account, and participants were no longer grouped based on the gendered bumper stickers they viewed. Using two groups of 133 participants that perceived the driver to be male and 67 participants that perceived the driver to be female, an independent samples t-test was conducted on law compliance, $t(198) = -1.30$, $p = .194$, driving skills, $t(198) = -.05$, $p = .964$, risk avoidance, $t(198) = -2.64$, $p = .009$; $d = 0.385$, and courtesy, $t(198) = -1.28$, $p = .203$. There were significant differences between participants' views of hypothetical male and female drivers in regards to risk avoidance in driving, but no significant differences between the other variables. Thus, participants who were shown images of cars which portrayed gendered bumper stickers

were more likely to rate drivers perceived to be female (M = 20.31, SD = 4.07) as more risk avoidant than drivers presumed to be male (M = 18.84, SD = 3.54).

Importance of the Participant's Gender

Univariate analysis of variance was conducted to determine interaction effects between the gender of the participants and the perceived gender of the hypothetical driver. Regarding the subscale of law compliance, there was a significant interaction (p = .02) between the gender of the participants and the perceived gender of the driver. Female participants were more likely to rate male drivers as higher in law compliance, and male participants were even more likely to rate female drivers as higher in law compliance. The main effect that males were rated significantly lower in risk avoidance (M = 18.87, SD = 3.53) than females (M = 20.31, SD = 4.07) was qualified by a significant interaction (p = .04) between the perceived gender of the hypothetical driver (p = .03) and the gender of the participants. Male participants were more likely to rate female drivers as more risk avoidant than male drivers. There was a marginally significant interaction (p = .05) between the gender of the participants and the perceived gender of the driver in regards to courtesy behind the wheel. Female participants were more likely to rate male drivers as higher in courtesy, and male participants were even more likely to rate female drivers as higher in courtesy. The driving skills subscale did not produce a significant interaction.

Importance of Traffic Violations

Additional data analysis revealed that participants' reported number of traffic violations in the last five years was a major factor in how the hypothetical driver was viewed by participants. Significant differences were found in three of four subscales between participants with zero traffic violations and participants with one or more violation(s). Separate ANOVA

tests were conducted between these groups to determine interaction effects between participants' reported number of traffic violations and the sticker condition, perceived gender of the driver, or gender of the participants.

Results for Respondents with Zero Traffic Violations in the Last Five Years

ANOVAs were conducted, comparing perceptions of drivers on each of the four subscales with sticker condition, gender of respondent, and perceived gender of the driver as predictors. For participants who reported having zero traffic violations within the last five years, the only dependent variable that showed any significant differences was law compliance. The factor that predicted law compliance was sticker condition. The driver with a neutral sticker (M = 24.40, SD = 1.21) was rated higher in law compliance than the driver with a female sticker (M = 19.89, SD = 1.10). There were no other significant differences in the driving skills, risk avoidance, or courtesy subscales.

Results for Respondents with One or More Traffic Violations

ANOVAs were conducted, comparing perceptions of drivers on each of the four subscales with sticker condition, gender of respondent, and perceived gender of the driver as predictors. For risk avoidance, there was only a main effect for the perceived gender of the driver. Drivers perceived to be female were rated as much more likely to avoid risks than drivers perceived to be male (p = .02). For courtesy, there was a significant interaction between sticker condition and perceived gender (p = .03). Neutral cars presumably driven by females were rated as more courteous than males. The neutral car was more likely to be rated as having a female driver than a male driver, indicating a limitation to the results in that the neutral car was intended to equally represent participants' perceptions.

Discussion

The purpose of the present study was to indirectly analyze participants' gender stereotypes in driving based on their perceptions of gendered bumper stickers. Specifically, we hypothesized that if participants were shown images of cars with gendered bumper stickers, then they would be more likely to perceive drivers of cars with masculine bumper stickers as more reckless than drivers with feminine bumper stickers. Gender stereotypes were measured based on participants' evaluation of the hypothetical driver according to four subscales: (a) compliance with traffic rules, (b) courtesy behind the wheel, (c) risk avoidance in driving, and (d) overall driving skills. Data from the experiment were analyzed using two methods, one-way ANOVA and independent samples t-test, which required participants to be grouped in two different ways. For the one-way ANOVA, participants were grouped based on the three original randomly assigned conditions: whether they were shown masculine, feminine, or neutral bumper stickers. Participants that did not select the correct gender for the hypothetical driver were omitted from the data, since they appeared to have completed the survey without paying adequate attention to the content of the bumper stickers. To conduct the independent samples t-test, participants were grouped into two groups based on whether they perceived the hypothetical driver as male or female. No participants were eliminated from this analysis, since their original randomly assigned conditions are no longer considered. Presumably, their perceptions of the driver's behavior were based on their personal perception of the driver's gender instead of the intended gender suggested by the bumper stickers.

The hypothesis was marginally supported by the data, as each data analysis produced significant differences between the groups in only one subscale. When participants were analyzed based on their originally assigned condition, meaning they perceived the hypothetical

driver correctly based on the intended bumper sticker, participants were significantly more likely to rate the driving skills of the hypothetical gender-neutral driver as higher than the skills of the hypothetical male driver. There were no significant differences between the experimental conditions in regards to the other subscales. Thus, my hypothesis that participants would believe males to be more reckless drivers than females was not supported in the first analysis. Limitations presented in the first analysis include an unequal number of participants in each experimental condition. The original 200 participants included 66 participants assigned to the male sticker condition, 66 to the female condition, and 68 in the neutral condition. After eliminating participants that chose the incorrect gender for the hypothetical driver, the remaining groups no longer had a relatively equal number of participants (52 male, 28 female, and 68 neutral). Thus, the sample of participants was more representative in certain conditions than others.

The second analysis better supported the hypothesis, as participants' responses were analyzed based on their perception of the hypothetical driver's gender. One limitation of the study arose as participants may have differing ideas of gender stereotypes. Therefore, while the content of the bumper stickers was chosen based on preliminary studies and previous research, participants may not have responded to the stimuli as predicted. For example, a majority of participants in the original female condition perceived the driver to be a male, even though one bumper sticker read "Keep Calm I'm a Princess." However, a majority of participants in the male condition correctly perceived the driver's intended gender. Based on participants' views of gender, gender roles, and gender stereotypes, the bumper stickers may not have operated in the study as intended. Analyzing participants' responses according to the gender they assigned the driver allows for better examination of their implicit beliefs on male and female driving

tendencies. Using the second analysis, participants were significantly more likely to rate female drivers to be more risk avoidant than male drivers, supporting one component of the hypothesis. However, the other subscales, including law compliance, driving skills, and courtesy were not supported by the results of the t-test.

After determining interaction effects between the gender of the participants and the perceived gender of the hypothetical driver, male and female participants were more likely to rate female and male drivers, respectively, as higher in law compliance and courtesy. Also, male participants were more likely to rate female drivers as more risk avoidant than male drivers, which supported the results that males (M = 18.87, SD = 3.53) are rated significantly lower in risk avoidance than females (M = 20.31, SD = 4.07). Pravossoudovitch et al. (2015) focused on studying the effects of participants' sex and age on gender stereotypes. They found that both male and female participants reported that female drivers were more compliant with traffic rules and courteous. Additionally, female participants rated females' risk avoidance higher than male participants, and male participants rated females' driving skills lower than female participants. Participants' evaluations of males' driving skills and females' courtesy increased with age. The present study found that male and female participants were more likely to rate the other gender as higher in law compliance, risk avoidance, and courtesy than their own gender.

While Pravossoudovitch et al. (2015) did not measure traffic violations of their respondents, we could not ignore the effect that this variable seemed to have on our participants' views of the driver. Thus, our results were analyzed separately based on participants' reported number of traffic violations committed within the last five years. Respondents who reported committing zero traffic violations in the last five years produced no significant effects except for law compliance between the neutral and female sticker conditions. Thus, participants with zero

traffic violations did not appear to hold significant gender stereotypes about driving in the four subscales. However, a majority of participants in the neutral condition presumed the driver of the car to be female, so the effect of sticker condition may reflect participants' response to gender stereotypes. Participants may have assumed that a driver with bumper stickers is likely to be a woman until they are given a clue to the driver being male. They appear to give generic ratings to the hypothetical drivers and do not tend to view the drivers differently based on the bumper sticker, the perceived gender, or their own gender. However, respondents who had at least one traffic violation in the last five years appeared to view the hypothetical drivers from a different lens, possibly based upon other factors, such as past experiences with automobile accidents. Participants reported that female drivers were significantly more risk avoidant and courteous than males. For courtesy, this was observed in that neutral cars thought to be driven by females were rated as more courteous than neutral cars thought to be driven by males. When analyzing the results based on participants' reported number of traffic violations, the group of participants who reported zero violations had a much smaller sample than the group of participants who reported to have at least one violation. Therefore, there may not have been enough power in the zero-violation group to exhibit differences in how they rated hypothetical male and female drivers.

The data supported my hypothesis for two of the four components of gender stereotypes in driving, as female drivers were rated significantly higher than male drivers in risk avoidance and courtesy behind the wheel. There were no significant differences between participants' perceptions of male and female drivers regarding law compliance or driving skills. Thus, the present study supported the findings of Pravossoudovitch et al. (2015) that females are rated to be higher in risk avoidance and courtesy than males. However, the present study did not find

evidence of gender stereotypes in all four driving areas, contrary to the results of Pravossoudovitch et al. (2015). The subscales of law compliance and driving skills did not produce as much difference in participants' views of male and female drivers as the risk avoidance and courtesy subscales. Participants may have been reluctant to reveal gender stereotypes due to the nature and methodology of the study, or they may not hold stereotypes as strongly as participants in the study of Pravossoudovitch et al. (2015), which was conducted approximately six years prior in France. Gender stereotypes vary among cultures and time periods as the view of women's role in society progresses. Today, it may be difficult to comprehend that women did not drive vehicles originally, which is the reality of driving history. Gender stereotypes are complex, meaning participants' perception of gender is difficult to study due to numerous factors such as their personal experiences, the participants' gender and driving history, and the ways in which the individual they are judging is portrayed. More research should be performed to further study the effects of various factors on gender stereotypes. If individuals are made aware of their implicit gender stereotypes and the reasoning behind them, they may be more likely to invoke change in their mindset.

The questionnaire used by Pravossoudovitch et al. (2015) directly asked participants about their beliefs of male or female drivers. For example, participants might be given the statement "I think that males respect speed limits" and asked to record their evaluation. The present study sought to study gender stereotypes more indirectly than the questionnaire utilized by Pravossoudovitch et al. (2015) through implicit stereotypes. Therefore, the questionnaire was modified to describe a general "driver," and participants based their ratings solely on the presented car's bumper stickers, which mimicked what a driver might see on the road. The original questionnaire was also modified to include a different assortment of questions that were

less repetitive. Questions were both modified from the original survey and inspired by various lists of traffic violations. One possible explanation for the disparity in results between the two studies is the difference in reliability between the two scales. The questionnaire in Pravossoudovitch et al. (2015) maintained a Cronbach's alpha score of at least .88 on all four subscales. However, the present study produced a much lower reliability score, even though a pilot study suggested more acceptable values. Therefore, if participants' responses on the subscales indicated that the questions within the subscales were narrowly related, the construction of the questionnaire may have been flawed, or participants may have answered randomly throughout the survey, causing the scales to appear unreliable.

The disparity in results between the two studies also might be attributed to the demographics of participants and the size of the sample. Participants in the Pravossoudovitch et al. (2015) study resided in France, and the sample included 291 participants that were majority female. Meanwhile, the present study included 200 participants, majority male, living in the United States. As suggested by the results of Pravossoudovitch et al. (2015), males and females differ in their evaluations of certain gender stereotypes. Additionally, since the study of Pravossoudovitch et al. (2015) was conducted in France in 2015, gender stereotypes in driving may differ across cultures and across time.

Limitations of the study also existed in the method of recruiting participants. The survey was posted on Amazon Mechanical Turk, and participants were paid for completing the survey. Amazon Mechanical Turk reaches participants across the United States with various genders, ages, and races. However, participants were limited to those who use Amazon Mechanical Turk. The sample of participants included a relatively equal number of males and females, but participants were mostly White and tended to be younger, with a mean age of approximately 35

years. Thus, participants were not equally representative of each race or age. The survey was posted on Amazon Mechanical Turk three times on different days and at different times in order to receive an adequate number of participants. However, the surveys were posted during the day, so certain participants, such as those who work during the day, may not have been able to complete the survey before the limited number of participants was reached.

Random sampling errors may have occurred as participants in one condition may have been more attentive to details or taken more time to complete the survey than a majority of participants in the other conditions, which might account for the discrepancy between the groups of participants that incorrectly perceived the gender of the driver. Participants were required to choose the correct number of stickers presented on the car to continue the survey, encouraging participants to notice every bumper sticker. However, participants may have chosen random answers in order to complete the survey as quickly as possible, since Amazon Mechanical Turk workers are not paid unless they finish the task before other workers reach the participant limit. We were also unable to control the location, environmental circumstances, or time of day in which participants took the survey. Thus, response bias or various extraneous variables may have contributed to the marginally significant findings of the data. When performing the second analysis with 200 participants, each condition had a relatively equal number of participants. However, due to participants incorrectly reporting the hypothetical driver's gender and being omitted from the first analysis, the number of participants in each condition were unequal, possibly affecting the reliability of the data since each condition was not fairly represented.

The present study might not have produced evidence as strong as previous research because gender stereotypes are on the decline. Increasing gender equality across numerous domains and increasing visibility of female drivers, whether in commercials, entertainment, or in

NASCAR racing, may have lessened stereotypes or altered perceptions. Researchers conducting similar studies on gender stereotypes in driving should conduct additional in-depth preliminary research in deciding the content of bumper stickers based on current gender norms. Gendered bumper stickers must be strong enough to adequately activate stereotypes across adults in the United States. Participants' ages, races, genders, and geographic locations may affect their idea of gender roles, meaning they may interpret certain messages differently according to their demographics and background. Researchers should also seek to control more of the extraneous variables to which participants of this study were exposed or offer the survey on a variety of platforms. Participants might have felt rushed in completing the survey due to the nature of Amazon Mechanical Turk, meaning they might have failed to notice certain details in the bumper stickers or might have neglected to fully read and understand each statement. Future research might include similar studies with different survey questions, different bumper stickers, or in different settings. Additionally, since the results of the preliminary studies, which were conducted in one geographic location, contrasted with the results of the actual study, which was conducted across the United States, further research in assessing gender stereotypes across various regions of the United States may be beneficial in determining the prevalence of gender stereotypes in driving today, as well as the transformation over time. Ultimately, each study offers a small contribution to understanding the dynamic nature of gender stereotypes and the progression of gender equality.

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Appendix A

Neutral Condition:

BUMPER STICKER

Male Condition:

BUMPER STICKER

Female Condition:

Appendix B

Demographic Questions

1. What is your gender?
    a. Male, Female, Other _____, Prefer not to say
2. What is your ethnicity? Select all that apply.
    a. White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Other
3. What is your age? _____
4. Do you have a valid driver license?
    a. Yes, No
5. Approximately how many traffic violations, for which you received either a traffic ticket or a warning from a police officer, have you committed within the last 5 years?
    a. 0, 1-2, 3 or more, Prefer not to answer

Attention Check Question

1. How many bumper stickers are on the car pictured below?
    a. 6, 4, 5
    b. Participants will be randomly assigned to a condition and presented the corresponding image (see Appendix A)
    c. Participants must choose the correct number of bumper stickers before proceeding to make sure they have observed each sticker

Driving Perceptions Questionnaire*

Answer Format for Each Question (Likert-Type, Multiple-Choice):

BUMPER STICKER

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Directions

You will now be presented with 25 questions about the driver of the car. Please use the picture provided to answer the questions based on your perceptions of the driver.

Law Compliance

1. This driver does not comply with speed limits. (R)
2. This driver is likely to drive under the influence of a substance, including alcohol or drugs. (R)
3. This driver makes complete stops at stop signs.
4. This driver uses turn signals to notify other drivers of any intention to turn or change lanes.
5. This driver does not stop at crosswalks to allow pedestrians to cross. (R)
6. This driver complies with yield signs when entering an on-ramp.

Driving Skills

1. This driver gradually slows to a stop at stop lights.

2. This driver is likely to weave in their lane as they are adjusting the radio or thermostat. (R)
3. This driver reacts quickly when faced with unexpected traffic hazards.
4. This driver is fluent in changing lanes in heavy traffic.
5. This driver does not have good driving skills. (R)
6. This driver could not easily regain control of their car if it skids in wet weather. (R)

Risk Avoidance

1. This driver avoids distractions, such as using a cell phone, eating, drinking, talking to passengers, or adjusting the radio, while driving.
2. This driver does not take risks while driving.
3. This driver is likely to drive at a high rate of speed during heavy rain or snow. (R)
4. This driver checks their blind spots before changing lanes.
5. This driver engages in street racing at high rates of speed with other vehicles. (R)
6. This driver is likely to accelerate into an intersection when the traffic light is changing from yellow to red. (R)

Courtesy

1. This driver shows politeness to other road users.
2. This driver maintains a safe distance between their car and the car in front of them.
3. This driver would honk at a slower vehicle so that it will get out of their way. (R)
4. This driver would follow the vehicle in front of them closely to prevent another vehicle from merging in front of them. (R)

5. This driver is likely to drive more cautiously to accommodate people or vehicles on the side of the road (e.g. slow down, move over).
6. This driver would intentionally tap their brakes when another car follows them too closely. (R)

Condition Assessment:

1. What is the gender of the driver?
    a. Male, Female
    b. This question will be utilized to decide whether the participant correctly assumed the gender of the hypothetical driver.

(R) = Reverse Coded

* Questions were presented in a random order rather than as consecutive subscales