# Selective Responses to Threat: The Roles of Race and Gender in Decisions to Shoot

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# Selective Responses to Threat: The Roles of Race and Gender in Decisions to Shoot

**E. Ashby Plant[1], Joanna Goplen[1], and Jonathan W. Kunstman[1]**

## Abstract

Extensive work over the past decade has shown that race can bias perceptions and responses to threat. However, the previous work focused almost exclusively on responses to men and overlooked how gender and the interaction of race and gender influence decisions regarding use of force. In the current article, two studies examine the implications of gender (Study 1) and both race and gender (Study 2) for decisions to shoot criminal suspects on a computerized simulation. In Study 1, participants were biased away from shooting White female suspects compared to White male suspects. In Study 2, White participants showed a pronounced bias toward shooting Black men but a bias away from shooting Black women and White ingroup members, providing evidence of a behavioral threat-related response specific to outgroup men stereotypically associated with aggression. The theoretical and practical implications of these findings are discussed.

## Keywords

prejudice, racial bias, shooter bias, gender, sexism, racism

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In July 2007, as Hasna Maryi neared an Iraqi security checkpoint she fell to the ground and called out to nearby police officers for help. When they ran to her aid, she detonated a bomb strapped to her body, killing three officers and wounding at least 10 civilians (Ghosh, 2008). Maryi is one of a growing number of female suicide bombers. In part, these female terrorists have been particularly successful because they are perceived as nonthreatening and allowed to pass unhindered through security checkpoints (Speckhard, 2008). Indeed, perceptions of the threat posed by individuals based on their social group membership (e.g., gender, race, ethnicity, age, socioeconomic status) are likely to influence both the accurate identification of threat and the likelihood of appropriate behavioral response to threat. However, little work has examined the implications of factors beyond the race of targets for the identification of threat and decisions regarding use of force. The current work investigates how gender and its intersection with race influence perceptions and responses to threat.

In recent years, considerable work has shown that race can bias perceptions and responses to threat (e.g., Correll, Park, Judd, & Wittenbrink, 2002; Correll, Park, Judd, Wittenbrink, Sadler, & Keesee, 2007; Greenwald, Oakes, & Hoffman, 2003; Maner et al., 2005; Miller, Maner, & Becker, 2010; Payne, 2001; Plant & Peruche, 2005; Plant, Peruche, & Butz, 2005). On computer-based shooting simulations, police officers and undergraduate students alike are more likely to mistakenly shoot unarmed Black suspects compared to unarmed White suspects (e.g., Correll et al., 2002; Correll et al., 2007; Plant & Peruche, 2005). However, to our knowledge, all of these experiments have focused exclusively on reactions to Black and White male targets and have not tested for the potential moderating effect of target gender.

There is reason to expect that target gender is an important factor in the identification of threat and decisions to respond with force. First, there is ample evidence that men are more physically aggressive and commit more violent crimes than women (e.g., Daly & Wilson, 1994; Eagly & Steffen, 1986; U.S. Federal Bureau of Investigations, 1995-2006). Thus, men may be perceived as threatening because they are associated with violence and aggression. Moreover, pervasive benevolent sexist beliefs in many cultures promote the perception of women as weak and vulnerable and men as violent and protective (Glick & Fiske, 1996). According to these beliefs, women should be virtuous and nonthreatening, whereas men have a duty to protect (with force if necessary)

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women and their innocence. As a result, men may be associated with threat or violence more than women. On shooting simulations, associating men with threat and women with innocence may bias people toward shooting male targets and away from shooting female targets.

The tendency to shoot male targets more than female targets is also likely influenced by targets' race and their status as either ingroup or outgroup members. There is considerable evidence to suggest that outgroup men are perceived as more threatening than either ingroup men or outgroup women. For example, White people in the United States tend to apply stereotypes of violence and aggression more strongly to Black men than Black women (Navarrete, McDonald, Molina, & Sidanius, 2010; Quillian & Pager, 2001; Sidanius & Veniegas, 2000). In addition, when White people's self-protective motives are activated, they are biased toward perceiving threat from Black men (e.g., projecting anger in Black men's faces) but not from Black women (Maner et al., 2005; also see Navarrete et al., 2009). Collectively, this research suggests that perceptions of threat are not uniquely determined by either race or gender but by their interaction such that in the United States, White people tend to perceive Black men as more threatening than White men and both Black and White women.

These differences in perceived threat likely have important implications for decisions about use of aggression such as responses in shooting simulations. They may result in a bias toward aggressing toward outgroup men (e.g., a tendency to shoot) as compared to outgroup women or ingroup men or women. Indeed, previous work examining decisions to shoot on computer simulations found that participants who were more aware of the stereotypic association between Black people and violence showed more bias toward shooting Black male suspects compared to White male suspects (Correll et al., 2002). The stereotypic association between Black people and violence may have heightened the expectation of threat from the Black male suspects and, as a result, lowered the threshold that participants used when deciding whether a Black suspect was dangerous (i.e., biased the participants' decision-making process toward a shoot response when the suspect was a Black male). Consistent with findings from previous shooter research, this lowered threshold to identify threat from Black men would lead to quick and accurate gun identification when Black male suspects were armed but also less accurate responses when Black male suspects were not armed.

By investigating the effect of target gender on responses to threat, the current work can directly address important questions and untested underlying assumptions in the literature. First, gender-based perceptions of threat likely reflect both base-rate differences in violence and prevailing benevolent sexist beliefs in many societies. These perceptions may introduce a different type of bias into responses to threat that has yet to be investigated. Specifically, people may fail to identify threats in their environment when they are posed by women. Anecdotally, discussions with law enforcement personnel indicate that officers face heightened danger when female suspects respond aggressively because the officers are often unprepared for a hostile response. There is also evidence that "notions of chivalry" among law enforcement officers result in differential treatment of female criminals, including lower arrest rates and more lenient sentencing (Visher, 1983). We anticipate that because people are disinclined to perceive women as a threat, they are likely to set a high threshold to identify women as threatening (i.e., be biased away from perceiving threat from women). As a result, they are less likely to accurately identify threats when they come from women compared to men and, thus, may fail to respond with the necessary aggressive force toward women who pose a threat.

Second, by examining responses to Black and White men and women, we can explore whether the established bias toward shooting Black men generalizes to responses to Black women. However, in keeping with evidence from both benevolent sexism and the application of racial stereotypes, we predict that Black women will be perceived as less threatening than Black men. Benevolent sexist beliefs and gender differences in base rates of violence should make people less biased toward shooting Black women than Black men. Furthermore, as noted previously, the stereotypical associations between violence and aggression tend to be applied most strongly to African American men (Navarrete et al., 2010; Quillian & Pager, 2001; Sidanius & Veniegas, 2000). We predicted that both White men and White women would respond with a strong behavioral threat response (i.e., biased tendency toward shooting) when faced with Black male but not Black female suspects on a shoot/don't shoot simulation.

We examined both of these issues in a pair of studies drawing on shoot/don't shoot methodology that included both male and female suspects. In the first study, we examined decisions to shoot White male and female suspects. We predicted that participants would respond with a bias away from shooting the female suspects as compared to male suspects. That is, participants will show a bias where they see hostile female targets as nonthreatening. In our second study, we examined responses to Black and White male and female suspects by White participants. Examining shooter bias in this way provided an important direct test of the potential intersection of race and gender in threat-related responses.

## Study 1

To test the effect of suspect gender on biases in decisions to shoot, we developed a computer simulation to assess people's split-second shooting decisions when faced with male and female suspects. Using the same procedure as in previous studies examining the implications of race, participants were told to pretend they were police officers chasing dangerous suspects. Some of the suspects who would appear on the computer screen were paired with guns, indicating they were

armed and dangerous criminals. Other suspects who appeared were paired with neutral objects (e.g., wallet, cell phone) and, thus, were not dangerous. The participants' task was to decide as quickly as possible whether each suspect who appeared on screen was a threat. They were instructed to shoot the suspects with guns and not shoot suspects with neutral items by hitting the proper key on the computer keyboard. We tested whether participants' decisions to shoot the suspects were influenced by the suspects' gender. Given both the tendency for men to be more physically aggressive than women and widespread perceptions that women are nonthreatening, we predicted that participants, regardless of gender, would be biased against shooting the female suspects.

## Method

*Participants and design*. Participants were 122 introductory psychology students who participated in exchange for partial course credit (60% female; 71% White, 10% Hispanic, 5% Asian, 5% Black, 6% multiracial; $M_{age}$ = 19.21). The study was a 2 (suspect gender: male vs. female) × 2 (object: gun vs. neutral) × 2 (participant gender: male vs. female) mixed model design with participant gender as the between-subject factor.

*Materials and procedure*. Participants completed a computer simulation based on the shoot/don't shoot simulation used in Plant et al. (2005; see also Peruche & Plant, 2006; Plant, Kunstman, & Maner, 2010; Plant & Peruche, 2005). Participants were instructed to pretend they were police officers chasing dangerous suspects who had their guns drawn. They were told that pictures of people's faces paired with objects would appear at various positions on the computer screen and that their goal was to determine as quickly as possible whether to shoot at the person in the picture. If the face was paired with a gun, they were to assume the person was dangerous and shoot the person. If the face was paired with a neutral object (e.g., a wallet, cell phone), they were supposed to assume the person was not a threat and not shoot the person. They were told to press the *A* key on the keyboard for shoot and the *L* key for don't shoot.

The program presented participants with digital photographs of White, college-aged men and women displaying neutral facial expressions. Pictures were pretested to ensure that ratings of attractiveness for male and female pictures were equivalent and of average attractiveness (Maner et al., 2005; Maner, Gailliot, & Miller, 2009). Because the focus of the current study was the role of gender, we limited the suspects in the program to White men and women to reduce noise due to differences in race and ethnicity. A picture of a gun or a neutral object (e.g., cell phone) was superimposed on the image of each face, so that the face was still clearly visible. The computer program presented each image in random order on the screen until the participant responded or until 630 ms elapsed. The 630-ms time was selected as being fast enough to pressure participants but not too fast to complete with over 50% accuracy. Each participant completed 20 practice trials and 80 test trials.

After the simulation, participants completed a brief questionnaire that included demographic information. They were then debriefed and thanked for their participation.

## Results

We created a percentage error score for each type of trial (e.g., female armed, male unarmed) by dividing the number of errors by the total number of completed trials (excluding time outs). We conducted a 2 (suspect gender: male vs. female) × 2 (object: gun vs. neutral) × 2 (participant gender: male vs. female) mixed model ANOVA on the percentage error scores. This analysis, as well as the other analyses conducted for this study, revealed no effects of participant gender; therefore, we present the analyses without participant gender included. For this and all future analyses, effects that are not explicitly mentioned did not reach statistical significance. The analysis revealed the predicted Suspect Gender × Object interaction, $F(1, 121) = 8.05$, $p = .005$, partial $\eta^2 = .06$ (see Figure 1). Examination of this interaction revealed that participants were more likely to mistakenly *not* shoot the armed female suspects than to mistakenly shoot the unarmed female suspects, $t(121) = -2.82$, $p = .006$, $d = .26$. In contrast, participants were equally likely to mistakenly *not* shoot armed male suspects as they were to mistakenly shoot unarmed male suspects, $t(121) = .85$, $p = .40$, $d = .07$. It is also worth noting that participants were less likely to mistakenly shoot the unarmed female suspects than the unarmed male suspects, $t(121) = -2.79$, $p = .006$, $d = -.25$. However, participants were equally likely to mistakenly *not* shoot the armed female and male suspects, $t(121) = 1.54$, $p = .13$, $d = .14$.

*Analyses using signal detection theory*. In evaluating participants' responses to the program, we also drew on signal detection theory (D. M. Green & Swets, 1966; Snodgrass & Corwin, 1988). Signal detection theory focuses on two types of responses to the shooting program: hits (i.e., a correct identification of a gun when present) and false alarms (i.e., incorrectly identifying a neutral object as a gun). By examining the rates for hits and false alarms, one can identify participants' ability to discriminate guns from neutral objects (i.e., overall accuracy combined across gun and neutral trials measured with d′) and the criterion they use to make their decision (measured with c).[1] Decision criteria can range from liberal (e.g., the tendency to shoot) to conservative (e.g., the tendency not to shoot) with a criterion of 0 indicating neither tendency. For example, if you anticipate there is danger present, you may set a more liberal criterion to shoot (i.e., be prone toward shooting), which would help make sure you accurately identify all armed suspects. However, by setting a liberal criterion, you would also be more likely to shoot suspects who were not a threat than you would with a less liberal criterion. A conservative criterion, in contrast, would

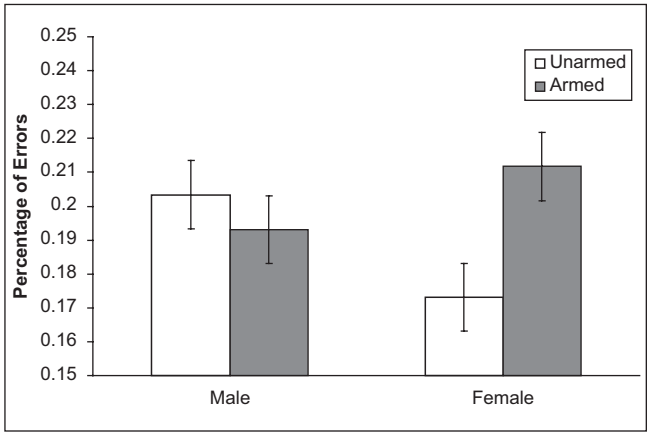


**Figure 1.** Percentage of errors on trials with male and female targets as a function of object (Study 1)

help one to avoid mistakenly shooting unarmed suspects but would also lead to failing to shoot armed suspects.

Previous shooter bias work using this approach (e.g., Correll et al., 2002; Plant & Peruche, 2005) does not tend to find an effect of target on overall accuracy (i.e., the total number of errors combined across the two trial types) but instead typically finds a difference in the criteria participants set to make their decisions. Consistent with these previous findings and the lack of main effect of gender in the error analyses, there were no effects of gender of suspect on the accuracy scores, $t(121) = .66$, $p = .51$.

Examination of the participants' decision criteria for the male and female suspects revealed that participants' responses were more conservative for the female ($M = .09$, $SD = .25$) than the male ($M = .01$, $SD = .23$) suspects, $t(121) = 2.91$, $p = .004$, $d = .33$. In addition, a one-sample $t$ test comparing the decision criteria with zero revealed that the responses to female suspects were significantly biased away from shooting, $t(121) = 3.86$, $p < .001$, whereas the responses to male suspects were not biased either toward or away from shooting, $t(121) = .28$, $p = .78$. Thus, participants were biased to see hostile female targets as nonthreatening.

*Latency analyses*. Typically, when responses have to be made in a very short response window, such as these simulations, most of the meaningful variability occurs in the error scores as opposed to the latency scores (e.g., Correll et al., 2002; Plant et al., 2005). However, to be comprehensive, we also examined the speed of participants' responses using a 2 (suspect gender: male vs. female) × 2 (object: gun vs. neutral) repeated measures ANOVA on the log-transformed latency scores for all trials with a correct response. For ease of interpretation, the means and standard deviations for the untransformed latency scores are presented. The analysis revealed a main effect of object such that, not surprisingly, participants were faster to indicate the presence of a gun than to indicate that the object was not a gun, $F(1, 121) = 15.80$, $p < .001$, partial $\eta^2 = .12$. The only other effect approaching significance was a marginal Suspect Gender × Object interaction, $F(1, 121) = 3.19$, $p = .08$, partial $\eta^2 = .03$. Consistent with the main effect of object, participants responded more quickly to male suspects when they were armed ($M = 504.33$, $SD = 26.95$) than when they were not armed ($M = 513.32$, $SD = 24.77$), $t(121) = 3.78$, $p < .001$, $d = .34$. This object effect was somewhat weaker, although still significant, for the responses to the female suspects ($M = 506.95$, $SD = 23.21$ vs. $M = 511.76$, $SD = 24.81$, respectively), $t(121) = 2.61$, $p = .01$. $d = .24$.

### Discussion

The findings from the current study support the idea that people are biased by the gender of the suspect in their behavioral threat-based responses toward White men and women. Participants in Study 1 made the same amount of errors when responding to men, regardless of whether a weapon was present in the picture. In response to women, however, participants set a criterion or threshold for responding that was biased away from shooting the female suspects and, as a result, were more likely to not shoot armed women than to shoot unarmed women. Furthermore, although participants were generally faster to respond to the objects that posed a danger (i.e., guns), this tendency was somewhat stronger when men posed the threat. Thus, although the participants were equally accurate in their responses to armed and unarmed men, they were quicker to shoot the armed men than to not shoot the unarmed men.

These results support our argument that women are perceived as less physically threatening than men, even when women are in fact posing a physical threat (e.g., when armed). As a result, participants demonstrated a behavioral tendency away from aggressing against the female suspects even when the female suspects posed a threat. These responses to the female suspects have important real-world implications. Inhibited aggression toward objectively threatening women may allow women an advantage in crime as evidenced by the increased use and success of female suicide bombers (Speckhard, 2008). This bias may put others at risk when dealing with aggressive women because they may be caught off guard when presented with a physical threat.

## Study 2

The findings from Study 1 were highly consistent with our predictions regarding the effect of suspect gender on decisions to shoot. We next tested how race and gender interact to determine decisions to shoot. We were interested in testing whether the typical racial bias in decisions to shoot, where participants erred toward shooting unarmed Black male suspects, would generalize to responses to Black female suspects. One reason to predict that the bias would not generalize to

Black women is the finding from Study 1 that people are biased away from responding aggressively to women. In addition, stereotypes regarding Black people's violence tend to be applied most strongly to Black men, and previous examinations of White people's perceptions of threat from Black people reveal a self-protective reaction specific to Black men (Maner et al., 2005; Navarrete et al., 2010; Quillian & Pager, 2001; Sidanius & Veniegas, 2000). We therefore expected that White participants would respond with a threatened self-protective response in reaction to the Black male suspects and tend toward shooting these suspects as compared to the other suspects.

## Method

*Participants and design*. Seventy-two White introductory psychology students participated in exchange for partial course credit (44% female; $M_{age}$ = 19.97). The design of the study was a 2 (suspect gender: male vs. female) × 2 (suspect race: Black vs. White) × 2 (object: gun vs. neutral) × 2 (participant gender: male vs. female) mixed model design with participant gender as a between-subjects factor.

*Materials and procedure*. We created a new computer simulation that included the White male and female pictures from Study 1 as well as pictures of Black men and women. All of these pictures were of college-aged people taken from the pictures used in Maner et al. (2005) and were selected to be of average attractiveness and to be equivalently attractive across race and gender. The participant instructions were the same as in Study 1. A picture of a gun or a neutral object (e.g., cell phone) was superimposed on the image of each face, so that the face was still clearly visible. The computer program presented each image in random order on the screen until the participant responded or until 630 ms elapsed. Because we now had both Black and White faces, we increased the total number of trials, with each participant completing 20 practice trials and 160 test trials. After completing the simulation, participants completed a brief questionnaire that included demographic information and were then debriefed and thanked for their participation.

## Results

We conducted a 2 (suspect gender: male vs. female) × 2 (suspect race: Black vs. White) × 2 (object: gun vs. neutral) repeated measures ANOVA on the percentage error scores. As in Study 1, participants' gender did not influence responses; therefore, it was not included in the presented analyses.

The analysis revealed a Suspect Gender × Object interaction, $F(1, 71) = 16.96$, $p < .001$, partial $\eta^2 = .19$, as well as a Suspect Race × Object interaction, $F(1, 71) = 9.25$, $p = .003$, partial $\eta^2 = .12$. These lower order interactions were qualified by a Suspect Gender × Suspect Race × Object interaction, $F(1, 71) = 4.24$, $p = .04$, partial $\eta^2 = .06$ (see Figure 2). To explore the nature of this interaction we examined the Suspect Race × Object interaction for the participants' responses to male and female suspects separately.

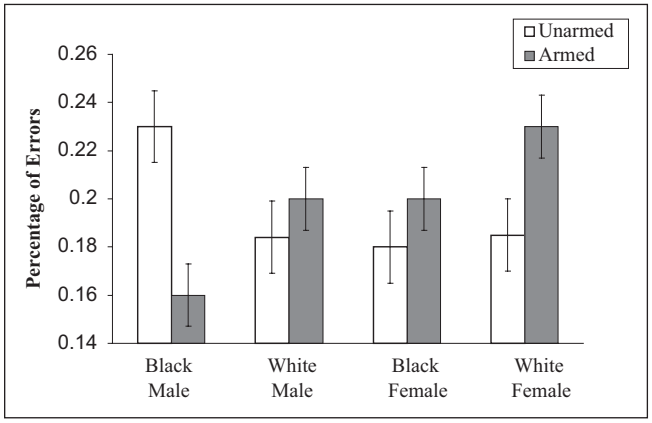


**Figure 2.** Percentage of errors for trials with Black and White male and female targets as a function of object (Study 2)

Analysis of the participants' responses to the female suspects revealed only a marginal main effect of object such that, regardless of the race of suspects, participants were more likely to mistakenly not shoot the armed female suspects than to mistakenly shoot the unarmed female suspects, $F(1, 71) = 3.98$, $p = .05$, partial $\eta^2 = .05$.

The analysis of participants' responses to the male suspects revealed an interaction between suspect race and object, $F(1, 71) = 10.51$, $p = .002$, partial $\eta^2 = .13$. A series of paired-samples $t$ tests on the percentage errors for the Black and White male suspects revealed that participants were more likely to mistakenly shoot the unarmed Black male suspects compared to the unarmed White male suspects, $t(71) = 2.72$, $p = .008$, $d = .32$. It is also worth noting that additional comparisons revealed that the participants were also more likely to mistakenly shoot the unarmed Black male suspects than the unarmed Black female suspects, $t(71) = 3.20$, $p = .002$, $d = .37$, or the unarmed White female suspects, $t(71) = 2.74$, $p = .008$, $d = .32$. Furthermore, there were no differences in participants' likelihood of mistakenly shooting the White male, Black female, and White female suspects, $t$s < 1, $p$s > .67.

Examining the percentage of errors for trials with guns revealed that participants were more likely to mistakenly *not* shoot the White male suspects compared to the Black male suspects, $t(71) = –2.14$, $p = .04$, $d = –.25$. Once again, additional comparisons revealed that participants were also more likely to mistakenly not shoot the armed Black female suspects, $t(71) = –2.62$, $p = .01$, $d = –.31$, and the armed White female suspects, $t(71) = –4.48$, $p < .001$, $d = –.50$, compared to the armed Black male suspects. Although participants were equally likely to not shoot the armed White male and Black female suspects, $t(71) = –.34$, $p = .74$, $d = –.08$, consistent with the pattern of findings in Study 1, there was a marginal tendency for the participants to be more likely to

mistakenly not shoot the White female suspects compared to the White male suspects, $t(71) = -1.91$, $p = .06$, $d = -.25$.

*Analyses using signal detection theory*. As in Study 1, we examined participants' overall accuracy and decision criteria using signal detection analysis using 2 (suspect gender: male vs. female) × 2 (suspect race: Black vs. White) repeated measures ANOVAs. As in Study 1, the analysis of the accuracy scores revealed no significant main effects or interactions, $F(1, 71) < 2.89$, $p$s $> .09$. The analysis of the decision criteria, however, revealed main effects of suspect gender, $F(1, 71) = 19.18$, $p < .001$, partial $\eta^2 = .21$, and suspect race, $F(1, 71) = 8.35$, $p = .005$, partial $\eta^2 = .11$. These main effects were qualified by an interaction between race and gender of suspect, $F(1, 71) = 5.54$, $p = .02$, partial $\eta^2 = .07$. A series of paired-sample $t$ tests revealed that participants responded with a more liberal tendency toward shooting Black male suspects ($M = -.08$, $SD = .32$) compared to each of the other types of suspects (Black female: $M = .11$, $SD = .27$; White male: $M = .08$, $SD = .27$; White female: $M = .12$, $SD = .29$), $t$s$(71) > 3.33$, $p$s $< .002$. It is also worth noting that one-sample $t$ tests comparing the criteria with zero revealed that the participants were responding with a bias toward shooting the Black, male suspects, $t(71) = -2.12$, $p = .04$, but with a bias away from shooting each of the other types of suspects, $t$s$(71) > 2.60$, $p < .02$.

*Latency analyses*. Finally, we again examined the speed of participants' responses using a 2 (suspect gender: male vs. female) × 2 (suspect race: Black vs. White) × 2 (object: gun vs. neutral) repeated measures ANOVA on the log-transformed latency scores for all correct trials. As in Study 1, for ease of interpretation, the means and standard deviations for the untransformed latency scores are presented. The analysis revealed a main effect of object such that participants responded overall more quickly on trials with guns than on trials with neutral objects, $F(1, 71) = 21.94$, $p < .001$, partial $\eta^2 = .25$. Participants also responded more quickly to trials with female suspects than with male suspects, $F(1, 71) = 4.85$, $p = .03$, partial $\eta^2 = .05$. In addition, participants responded more quickly on trials with Black suspects than on trials with White suspects, $F(1, 71) = 19.30$, $p < .001$, partial $\eta^2 = .21$. Finally, the analysis also revealed an interaction between gender of suspect and object, $F(1, 71) = 14.10$, $p < .001$, partial $\eta^2 = .17$. Participants' tendency to respond more quickly on the gun trials than on the neutral object trials was significant for the male suspects ($M = 517.31$, $SD = 22.26$ vs. $M = 533.18$, $SD = 19.31$, respectively), $t(71) = -6.40$, $p < .001$. Although still significant, the effect was weaker for the female suspects ($M = 520.00$, $SD = 22.25$ vs. $M = 526.29$, $SD = 19.32$, respectively), $t(71) = 2.37$, $p = .02$. The Race of Suspect × Gender of Suspect × Object interaction did not approach significance, $F(1, 71) = .28$, $p = .60$.

### Discussion

The findings from Study 2 revealed that White participants' decisions to shoot were influenced by both the gender and the race of the suspects. The participants tended toward mistakenly shooting the unarmed Black male suspects more often than the unarmed Black female and the unarmed White male and White female suspects. In contrast, when responding to armed suspects, participants were actually more likely to mistakenly not shoot the Black female and White suspects of either gender than the Black male suspects. Signal detection analyses indicated that participants' response styles to each of the groups of suspects were biased. For the Black male suspects, White participants responded with a liberal bias toward shooting. For the Black female, White female, and White male suspects, the bias was away from shooting. The responses to the Black male suspects are consistent with previous work revealing a stereotypic association between Black males and violence and a tendency toward self-protective responses toward Black men by White participants (Maner et al., 2005; Navarrete et al., 2010; Quillian & Pager, 2001; Sidanius & Veniegas, 2000).

It is worth noting that the findings related to reactions to White male and female suspects were somewhat different from the Study 1 findings. In Study 1, participants were biased away from shooting the White female suspects and exhibited a more neutral response to the White male suspects. Although there was a tendency for participants to be more likely to mistakenly not shoot the armed White female suspects than the armed White male suspects in the current study, there was not as large of a difference between the responses to the White male and White female suspects as was found in Study 1. This difference across the two studies may have, in part, reflected power differences due to sample size. However, we also suspect that people's assessments of threat are influenced by the current options and comparisons in the given situation. In Study 1, the White male suspects were perceived as the more threatening of the presented suspects. The presence of Black male suspects in Study 2 may have reduced the threat presented by White males. Indeed, self-protection motives cause ingroup males to be perceived as less threatening than outgroup males (Maner et al., 2005). As a result, in the current study, the White participants may have focused their detection of threat on the Black male suspects, thus shifting away from shooting the White male suspects.

## General Discussion

Extensive work over the past decade has linked race with perceptions and responses to threat. However, this work has focused almost exclusively on responses to men and overlooked how gender and the interaction of race and gender influence decisions regarding use of force. Across two studies, we provide evidence for gender's effect on decisions to shoot criminal suspects. In Study 1, participants were more likely to shoot male suspects than female suspects. Moreover, participants showed a unique bias away from shooting female suspects. Even when female suspects were armed and thus threatening, participants failed to shoot them. In Study 2, participants were again biased away from shooting female

suspects. Study 2 also tested how race and gender simultaneously influenced decisions to shoot Black and White men and women. White participants showed a pronounced bias toward shooting Black men but a bias away from shooting Black women and White ingroup members. This study provides important evidence of a behavioral threat-related response at an early and relatively automatic stage of cognition that is specific to outgroup males stereotypically associated with physical aggression and violence.

These findings also add to the literature by highlighting a novel way that benevolent sexist beliefs may have not-so-benevolent implications. Previous work has demonstrated that benevolent sexism has negative implications for women (e.g., Dardenne, Dumont, & Bollier, 2007). Participants in our studies were biased away from shooting the female suspects, even when they were armed. Specifically, when responding to Black and White women, participants tended to make more mistakes of not shooting armed suspects than mistakenly shooting unarmed suspects. Failure to identify threats when they are present has tragic implications for law enforcement and military personnel in the field. From an error management perspective, such failure to identify threats in the environment should be rare. It is highly functional to be attuned to and perceive real sources of threat when they exist even at the risk of being overly vigilant in harmless situations (see Haselton & Buss, 2000; Haselton & Nettle, 2006). As a result, it is surprising that participants showed such a pronounced bias away from self-protection in the shooting simulation.

Importantly, in the current studies, both the male and female participants responded with similar gender bias on the simulation. The lack of gender difference suggests that the bias away from an aggressive response toward the female suspects was not due to the male participants feeling that they should personally protect the female suspects. Instead, biased expectations regarding violence and gender appear to influence automatic perceptions of threat from men and women similarly for both male and female responders.

In considering the bias toward shooting the Black male suspects in Study 2, one may question whether the response would generalize to all outgroup men or whether the response is specific to outgroup men stereotypically associated with aggression and violence. Recently Navarrete and colleagues (e.g., Navarrete et al., 2010) posed the outgroup male target hypothesis, which argues that throughout human evolutionary history, outgroup males have engaged in intergroup aggression, which has resulted in a strong threat response to outgroup males. Although the reasons and motives underlying the responses to outgroup males are argued to differ for men and women (aggression and dominance motives vs. fear of sexual coercion), both types of concerns should result in strong threat-related responses specifically to outgroup men. The current findings are consistent with this theory.

However, it will be informative in future work to expand the racial groups examined. If the tendency to shoot Black men observed in the current work primarily reflects the predisposition to perceive outgroup males as threatening, a Black sample may respond with an equivalent bias toward White men. It will also be important to examine whether a similar bias toward shooting would be found toward outgroup males who are not stereotyped as violent in United States society. Asian men, for example, are often perceived as posing an economic threat as opposed to a physical threat to White Americans. Although Asian men may be perceived as economically threatening, a physically aggressive response (bias toward shooting) may not be found for responses to Asian men as compared to White men because the nature of the threat differs (i.e. physical threat versus financial threat). Exploring these issues in detail is an important issue for future research because it has the potential to shed light on the causal mechanisms behind not only the results of the current study but shooter bias generally. Because previous work examining decisions to shoot has found that knowledge of the stereotype associating African Americans with violence is associated with the degree of biased responding toward Black suspects (e.g., Correll et al., 2002), we expect that cultural stereotypes play a key role in determining the nature of bias expressed toward outgroup males.

Relatedly, the nature of the current findings (bias toward seeing aggression in outgroup males) may have been influenced by the type of aggression examined. If we had instead examined a type of aggression that is more stereotypically associated with women (e.g., relational aggression; Crick & Grotpeter, 1995), our findings may have been quite different. For example, we may have found a decreased threshold to identify relational aggression in women and possibly particularly outgroup women compared to ingroup and outgroup men. An examination of reactions to other types of aggression would be informative in future research.

A limitation of the present work is that the participants in the current studies were all undergraduate psychology students. It will be important to explore whether similar biases occur among those who have to make real life and death decisions (e.g., police officers and military personnel). Finally, it will be important to explore whether these biases can be curtailed either through decreasing stereotypic beliefs or training on simulations where gender and race are unrelated to weapon possession (e.g., Plant et al., 2005).

A better understanding of the effects and interactions of race and gender of target on threat-based responses is important for the protection of both the target and the person deciding whether that target is a threat. In the infamous case of Amadou Diallo, an innocent Black man was shot and killed because his actions were mistakenly perceived as threatening to White police officers. Conversely, however, if Hasna Maryi had been an outgroup male, our research suggests that the security checkpoint officers may have been more cautious in their approach of her and lives could have been saved. Biased perceptions of threat are dangerous, regardless of the direction of the bias.

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## Note

1. $d' = zH - zFA$; $c = -.5 \times (zFA + zH)$. H represents the proportion of hits (correctly saying shoot when a gun was present) and FA represents the proportion of false alarms (incorrectly responding shoot to a neutral object). The *z* indicates the translation of the H and FA into *z* scores.

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