Female hurricanes are deadlier than male hurricanes

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Do people judge hurricane risks in the context of gender-based expectations? We use more than six decades of death rates from US hurricanes to show that feminine-named hurricanes cause significantly more deaths than do masculine-named hurricanes. Laboratory experiments indicate that this is because hurricane names lead to gender-based expectations about severity and this, in turn, guides respondents' preparedness to take protective action. This finding indicates an unfortunate and unintended consequence of the gendered naming of hurricanes, with important implications for policymakers, media practitioners, and the general public concerning hurricane communication and preparedness.

gender stereotypes | implicit bias | risk perception | natural hazard communication | bounded rationality

Estimates suggest that hurricanes kill more than 200 people in the United States annually, and severe hurricanes can cause fatalities in the thousands (1). As the global climate changes, the frequency and severity of such storms is expected to increase (2). However, motivating hurricane preparedness remains a major challenge for local and state authorities (3). Although natural hazards such as hurricanes represent both physical and social phenomena (4, 5), meteorologists and geoscientists point out that too little attention has been paid to findings from the social sciences about subjective risk perceptions (6, 7). Those findings highlight the importance of understanding how assessments of risk from threats in the environment are often influenced not only by environmental and social cues (8, 9), but also by irrelevant psychological factors (10–12).

We demonstrate that a natural disaster can, merely by being symbolically associated with a given sex through its assigned name, be judged in ways congruent with the corresponding social roles and expectations of that sex (13–16). In particular, analyses of archival data on actual fatalities caused by hurricanes in the United States (1950–2012) indicate that severe hurricanes with feminine names are associated with significantly higher death rates. An explanation for this unexpected finding is tested in six experiments. These experiments show that gender-congruent perceptions of intensity and strength are responsible for male-named hurricanes being perceived as riskier and more intense than female-named hurricanes. These findings have important implications for hurricane preparedness and public safety.

US hurricanes used to be given only female names, a practice that meteorologists of a different era considered appropriate due to such characteristics of hurricanes as unpredictability (17). This practice came to an end in the late 1970s with increasing societal awareness of sexism, and an alternating male-female naming system was adopted (17). Even though the gender of hurricanes is now preassigned and arbitrary, the question remains: do people judge hurricane risks in the context of gender-based expectations?

Research shows that women and men are socialized to have different social roles and self-schemas, in turn generating descriptive and prescriptive expectancies about women and men (16, 18). Men are often expected to be strong, competent, and aggressive, whereas women are often expected to be weak, warm, and passive (19–21). Men are more likely than women to commit violent behaviors (22), and thus males are perceived to be more strongly associated than females with negative potencies such as violence and destruction (23, 24). We extend these findings to hypothesize that the anticipated severity of a hurricane with a masculine name (Victor) will be greater than that of a hurricane with a feminine name (Victoria). This expectation, in turn, will affect the protective actions that people take. As a result, a hurricane with a feminine vs. masculine name will lead to less protective action and more fatalities.

Archival Study

To test this hypothesis, we used archival data on actual fatalities caused by hurricanes in the United States (1950–2012). Ninety-four Atlantic hurricanes made landfall in the United States during this period (25). Nine independent coders who were blind to the hypothesis rated the masculinity vs. femininity of historical hurricane names on two items (1 = very masculine, 11 = very feminine, and 1 = very man-like, 11 = very woman-like), which were averaged to compute a masculinity-femininity index (MFI). A series of negative binomial regression analyses (26, 27) were performed to investigate effects of perceived masculinity-femininity of hurricane names (MFI), minimum pressure, normalized damage (NDAM) (28), and the interactions among them on the number of deaths caused by the hurricanes (see *Materials and Methods* for complete descriptions of models tested, Table S1 for descriptive statistics, and Table S2 for a statistical summary of models tested. See the full Dataset S1 available online.)

The analyses showed that the change in hurricane fatalities as a function of MFI was marginal for hurricanes lower in normalized damage, indicating no effect of masculinity-femininity of name for less severe storms. For hurricanes higher in normalized damage, however, this change was substantial, such that hurricanes with feminine names were much deadlier than those

Significance

Meteorologists and geoscientists have called for greater consideration of social science factors that predict responses to natural hazards. We answer this call by highlighting the influence of an unexplored social factor, gender-based expectations, on the human toll of hurricanes that are assigned gendered names. Feminine-named hurricanes (vs. masculine-named hurricanes) cause significantly more deaths, apparently because they lead to lower perceived risk and consequently less preparedness. Using names such as Eloise or Charlie for referencing hurricanes has been thought by meteorologists to enhance the clarity and recall of storm information. We show that this practice also taps into well-developed and widely held gender stereotypes, with potentially deadly consequences. Implications are discussed for understanding and shaping human responses to natural hazard warnings.

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with masculine names (Fig. 1). For example, a hurricane with a relatively masculine name (MFI = 3) is estimated to cause 15.15 deaths, whereas a hurricane with a relatively feminine name (MFI = 9) is estimated to cause 41.84 deaths. In other words, our model suggests that changing a severe hurricane's name from Charley (MFI = 2.889, 14.87 deaths) to Eloise (MFI = 8.944, 41.45 deaths) could nearly triple its death toll. The substantial change in predicted counts of deaths for hurricanes high in normalized damage, coupled with the marginal change for less damaging hurricanes, supports our line of reasoning about the effect of gendered names on protective action. For storms that are less damaging, death rates are relatively low, and decisions to take protective measures are less predictive of survival. However, for severe storms, where taking protective action would have the greatest potential to save lives, the masculinity-femininity of a hurricane's name predicted its death toll.

These results suggest that individuals assess their vulnerability to hurricanes and take actions based not only on objective indicators of hurricane severity but also on the gender of hurricanes. This pattern may emerge because individuals systematically underestimate their vulnerability to hurricanes with more feminine names, avoiding or delaying protective measures. To test this hypothesis directly, we conducted a series of laboratory experiments to assess whether the gender of the hurricane name affects subjective predictions of hurricane intensity (experiments 1 and 2), delay until evacuation decision (experiment 3), and intentions to follow an evacuation order (experiments 4–6). See Table 1 for a summary of designs and results.

Experiments

Experiment 1 used five male and five female names from the official 2014 Atlantic Hurricane names. Three hundred forty-six participants predicted each hurricane's intensity on two items (1 = not at all, 7 = very intense; 1 = not at all, 7 = very strong). As expected, hurricanes with male names (Arthur = 4.246, Cristobal = 4.455, Omar = 4.569, Kyle = 4.277, and Marco = 4.380) were predicted to be more intense than those with female names (Bertha = 4.523, Dolly = 4.014, Fay = 4.042, Laura = 4.039, and Hanna = 4.181). A mixed ANOVA with the gender of hurricane name (within-subjects factor) and participants' sex (between-subjects factor) yielded a significant effect of the gender of the hurricane name on predicted intensity [$M_{male} = 4.386$, SD = 0.822 vs. $M_{female} = 4.186$, SD = 0.907; $F(1,344) = 18.055$, $P < 0.0001$, $\eta^2 = 0.050$]. There was no interaction between the gender of the hurricane name and participants' sex ($P > 0.325$). Indeed, this was true across our experiments and thus the interaction is not discussed further.

In experiment 2, 108 participants were randomly assigned to one of three conditions: Hurricane Alexander (male), Hurricane Alexandra (female), or Hurricane (control). They were shown a map displaying a county and a hurricane and read a short scenario about uncertainty of the future intensity of the hurricane. Next, they judged the riskiness of the hurricane on four items (e.g., 1 = not at all, 7 = very risky). A two-way ANOVA with the gender of the hurricane name and participants' sex yielded only a significant main effect of the gender of the hurricane: Hurricane Alexander ($M_{alexander} = 4.764$, SD = 1.086) was perceived to be more intense and risky than Hurricane Alexandra ($M_{alexandra} = 4.069$, SD = 1.412) and an unnamed hurricane [$M_{control} = 4.048$, SD = 1.227; $F(2,102) = 3.652$, $P = 0.029$, $\eta^2 = 0.064$]. The similarity in the perceived riskiness of the female-named and unnamed hurricanes may reflect the influence of the historical female-only naming convention. Even in the absence of an assigned name, storms may be more associated with female than male names and, therefore, with milder qualities. Consistent with experiment 1, these results further support the notion that perceived vulnerability to a hurricane depends on the gender of its assigned name.

Experiment 3 tested whether the gender of the hurricane name affects perceived risk, which in turn affects evacuation intentions. One hundred forty-two participants were given a scenario and a weather map on which either Hurricane Christopher or Hurricane Christina was displayed and reported their evacuation intentions on three items (e.g., 1 = definitely will evacuate immediately, 7 = definitely will stay home). A two-way ANOVA with the gender of the hurricane name and participants' sex yielded a significant main effect of the gender of the hurricane name such that Christopher elicited a greater intention to act than did Christina [$M_{christopher} = 2.343$, SD = 1.212 vs. $M_{christina} = 2.939$, SD = 1.538; $F(1,138) = 6.543$, $P = 0.012$, $\eta^2 = 0.044$]. A measurement of perceived risk showed the same patterns observed in experiment 2: Hurricane Christopher was perceived to be riskier than Hurricane Christina [$M_{christopher} = 5.567$, SD = 1.053 vs. $M_{christina} = 5.007$, SD = 1.259; $F(1,138) = 8.698$, $P = 0.004$, $\eta^2 = 0.059$].

Our measure of evacuation intentions has limitations as some individuals might believe that, in the absence of an order to evacuate, staying home is a way of protecting themselves. Because evacuation responses are particularly complex, meteorological research puts a priority on understanding them (6). Therefore, in experiment 4, the scenario involved a voluntary evacuation order. Intentions to follow the order were measured with three items (e.g., 1 = very likely to follow, 7 = very unlikely to follow). One hundred participants read about Hurricane Danny vs. Hurricane Kate. Consistent with the previous experiment,

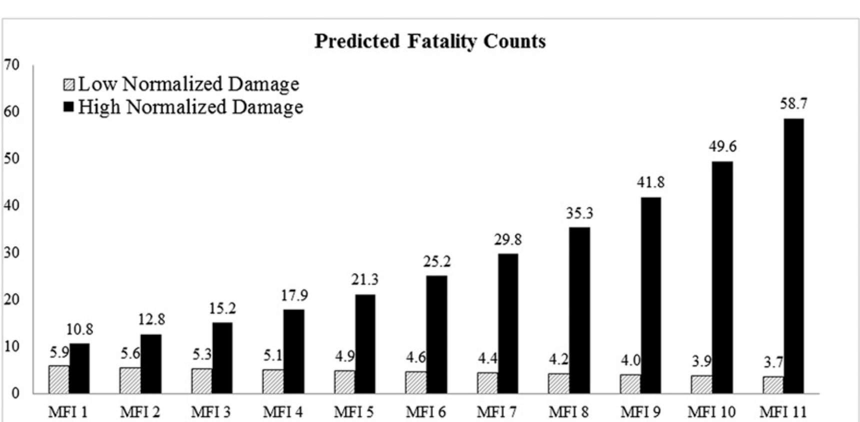

Fig. 1. Predicted fatality counts. MFI indicates masculinity-femininity index, and hurricanes with low MFI (vs. high MFI) are masculine-named (vs. feminine-named). Predicted counts of deaths were estimated separately for each value of MFI of hurricanes, holding minimum pressure at its mean (964.90 mb).

Table 1. Statistical summary of experiments

Experiment	Dependent variable	Male	Female	Control	*F* statistics, *P* values, and effect sizes
Experiment 1 (n = 346)	Predicted intensity (1 = not at all, 7 = very strong)	Five male hurricanes 4.386 (0.822)	Five female hurricanes 4.186 (0.907)		$F(1,344) = 18.055$, $P < 0.0001$, $\eta^2 = 0.050$
Experiment 2 (n = 108)	Perceived risk (1 = not at all, 7 = very risky)	Hurricane Alexander 4.764 (1.086)	Hurricane Alexandra 4.069 (1.412)	Hurricane (control) 4.048 (1.227)	$F(2,102) = 3.652$, $P = 0.029$, $\eta^2 = 0.064$
Experiment 3 (n = 142)	Evacuation intention (1 = evacuate immediately, 7 = stay home)	Hurricane Christopher 2.343 (1.212)	Hurricane Christina 2.939 (1.538)		$F(1,138) = 6.543$, $P = 0.012$, $\eta^2 = 0.044$
Experiment 4 (n = 100)	Evacuation intention (1 = certainly will follow, 7 = certainly will not follow)	Hurricane Danny 2.160 (1.344)	Hurricane Kate 2.900 (1.658)		$F(1,96) = 4.469$, $P = 0.037$, $\eta^2 = 0.043$
Experiment 5 (n = 274)	Evacuation intention (1 = very unlikely to follow, 7 = very likely to follow)	Hurricane Victor 5.861 (1.275)	Hurricane Victoria 5.391 (1.614)	Hurricane (control) 5.278 (1.552)	$F(2,268) = 3.796$, $P = 0.024$, $\eta^2 = 0.027$
Experiment 6 (n = 201)	Evacuation intention (1 = very unlikely to follow, 7 = very likely to follow)	Hurricane Alexander 6.061 (0.882)	Hurricane Alexandra 5.586 (1.152)		$F(1,197) = 11.055$, $P = 0.001$, $\eta^2 = 0.053$

Numbers in parentheses are SDs. Experiment 1, 346 participants reported similar predictions of the intensity across five hurricanes with a male's name and across five hurricanes with a female's name, and we therefore collapsed them. A one-way repeated-measure ANOVA was conducted. Experiments 2–6, the mean estimations are based on main effects of the gender of hurricane name in two-way ANOVAs, with the gender of the hurricane name and participants' sex as independent variables. It should be noted that using ANCOVAs with the gender of hurricane name as a predictor and participants' sex as a covariate generated almost identical statistical results. Effect sizes are presented with η^2 and their interpretation is analogous to R^2.

a two-way ANOVA with the gender of the hurricane name and participants' sex yielded a significant main effect of the gender of the hurricane name, indicating that people facing a hurricane with a male vs. a female name reported significantly greater intentions to follow a voluntary evacuation order [$M_{danny} = 2.160$, SD = 1.344 vs. $M_{kate} = 2.900$, SD = 1.658; $F(1,96) = 4.469$, $P = 0.037$, $\eta^2 = 0.043$].

Using paired male and female names for hurricanes in these experiments (Alexander vs. Alexandra, Christopher vs. Christina) might raise concerns about whether the names matched in terms of other connotations (29). Indeed, the male vs. female names in experiments 2 and 3 were more popular as baby names in 2000–2009 (Alexander was the #13 boy's name and Alexandra the #40 girl's name; Christopher was the #6 boy's name and Christina the #125 girl's name). We addressed this and other potential confounds in two ways. First, experiment 5 addressed possible differences in name familiarity by using a male name that was less popular than the female one, Victor (#103 boy's name) and Victoria (#25 girl's name). Two hundred seventy-four participants read a scenario about Hurricane Victor (male), Hurricane Victoria (female), or a Hurricane (control) and reported intentions to follow the voluntary evacuation order and perceived risk. Results suggested that name familiarity did not impact the hurricane gender effect. Consistent with the previous findings, Hurricane Victor elicited greater intentions to follow the evacuation order than did Hurricane Victoria and an unnamed hurricane [$M_{victor} = 5.861$, SD = 1.275 vs. $M_{victoria} = 5.391$, SD = 1.614 vs. $M_{hurricane} = 5.278$, SD = 1.552; $F(2,268) = 3.796$, $P = 0.024$, $\eta^2 = 0.027$]. Similarly, Hurricane Victor was perceived to be riskier than Hurricane Victoria and an unnamed hurricane ($M_{victor} = 5.808$, SD = 0.985 vs. $M_{victoria} = 5.340$, SD = 1.296 vs. $M_{hurricane} = 5.423$, SD = 1.283; $F(2,268) = 3.660$, $P = 0.027$, $\eta^2 = 0.026$]. The fact that female-named and unnamed hurricanes yielded similar results replicates experiment 2. As noted earlier, historical naming conventions may lead unnamed storms to be more strongly associated with female than male names. Although it is possible that negative associations with male names, as opposed to positive associations with female names, drive the effect given that males are strongly associated with danger (24), this is an issue for future research. Because there is no unnamed condition in the actual practice of hurricane naming, our focus is on the comparison between female- and male-named hurricanes.

To further examine potential confounds in our name stimuli, we directly assessed whether the male and female names used across all of our experiments varied in their age, perceived intellectual competence, and perceived likability (29) (Table S3). Ratings of perceived masculinity-femininity, intellectual competence, and likability of the 18 names we used in the experiments were obtained from 109 participants. The perceived masculinity-femininity of the names was not correlated with either their attractiveness or their intellectual competence. The male vs. female names used in experiments 2, 3, and 6 were seen as more likable and competent, but for experiments 4 and 5, it was the reverse. Moreover, using data derived from the Social Security Office's Name Popularity Database, we determined that the ages of our names did not track with their gender. In experiment 1, the five female names are overall much older than the five male names. However, all female names used in experiments 2–6 are younger than the corresponding male names. In other words, the additional data yielded no evidence of confounds. The direction of name-gender differences in age, likability, and intellectual competence varied across experiments, whereas the effect of name-gender on responses to hurricanes was the same across the six experiments.

Discussion

An archival study of hurricane fatalities established that severe storms with more feminine names are deadlier. Multiple experiments suggested that this is because feminine- vs. masculine-named hurricanes are perceived as less risky and thus motivate less preparedness. Although our findings do not definitively establish the processes involved, the phenomenon we identified could be viewed as a hazardous form of implicit sexism. Indeed, in an additional dataset, when asked explicitly whether a male-named or female-named hurricane would be riskier and more dangerous, responses were evenly split between female- and male-named hurricanes (*Materials and Methods*).

As with other forms of implicit bias (23, 30, 31), the effect is not always limited to people who explicitly endorse traditional gender-trait beliefs. In experiments 4 and 5, we measured gender-trait beliefs and found that both those who affirmed and those who rejected the notion of differences in men's and women's warmth and aggressiveness based their evacuation intentions on the gendered names. However, a moderating effect of gender-trait beliefs emerged in experiment 6 (*Materials and Methods*).

As climate change forecasts anticipate that storms will increase in severity in the coming years (2), our findings have increasingly important implications for policymakers, media practitioners, and the general public concerning hurricane communication and preparedness. The findings suggest that natural disasters, when given gendered names, can elicit gender-congruent expectancies that (de)motivate preparedness. Thus, although using human names for hurricanes has been thought by meteorologists to enhance the clarity and recall of storm information, this practice also taps into well-developed and widely held gender stereotypes, with unanticipated and potentially deadly consequences.

For policymakers, these findings suggest the value of considering a new system for hurricane naming to reduce the influence of biases on hurricane risk assessments and to motivate optimal preparedness. For media practitioners, the pervasive media practice of giving gendered descriptions of hurricanes (32) should prompt a reconsideration of the use of "he" or "she" when communicating about hurricanes. Finally, making members of the general public aware of the impact of gender biases on subjective risk perceptions may improve preparedness in the face of the next Hurricane Fay or Laura.

More broadly, our findings highlight the importance of understanding the way that category labels may influence responses to natural hazards and other events. When hurricanes and other such events are tagged with specific yet arbitrary labels used for other categories (men/women, animals, flora), one may expect human responses to be influenced by the mental representations associated with those categories. Those representations may then influence subjective risk assessments or indeed any assessment relevant to the mental representation. Thus, a storm named for a flower may seem less threatening than one named for a raptor. Our findings highlight the need to reexamine the practice of assigning arbitrary names to natural hazards in an effort to facilitate communication.

Materials and Methods

Archival Study. ***Outliers.*** We removed two hurricanes, Katrina in 2005 (1833 deaths) and Audrey in 1957 (416 deaths), leaving 92 hurricanes for the final data set. Retaining the outliers leads to a poor model fit due to overdispersion. It should be noted that these hurricanes have feminine names.

MFI. We provided the names of 94 hurricanes to nine independent coders (four females; age range, 24–55 y; all native English speakers). The coders did not know that these were hurricane names. We considered the gender of the name as a continuous variable and asked coders to evaluate the perceived masculinity or femininity of the names on two items (1 = very masculine, 11 = very feminine, 1 = very man-like, 11 = very woman-like). These items were averaged to form the MFI ($\alpha = 0.978$). Intercoder correlations (range, 0.797–0.982) indicated a high level of agreement on the perceived masculinity-femininity of the names.

Death tolls. We obtained information on death tolls of hurricanes primarily from monthly weather reports in the digital archive of the National Oceanic and Atmospheric Administration (www.aoml.noaa.gov/hrd/hurdat/mwr_pdf/). If indirect and directed deaths were specified separately, they were recorded separately and then summed into the total death index. If the death data were not disclosed in the weather reports, we relied on other weather reports published by National Oceanic and Atmospheric Administration (NOAA). If we could not find any relevant data, we then used the Atlantic hurricane list in Wikipedia (http://en.wikipedia.org/wiki/List_of_Atlantic_hurricanes). Any discrepancies were resolved in favor of the NOAA monthly weather reports. Deaths outside the continental United States were excluded.

Other indicators. The minimum pressure and maximum wind speed of hurricanes at the time of landfall in the United States were obtained from NOAA (www.aoml.noaa.gov/hrd/hurdat/All_U.S._Hurricanes.html). However, maximum wind speed data were not available until 1979; therefore, this variable was excluded from the data analyses. The raw dollar amounts of property damage caused by hurricanes were obtained, and the unadjusted dollar amounts were normalized to 2013 monetary values by adjusting them to inflation, wealth and population density (28) (available at ICAT: www.icatdamageestimator.com/commonsearch?search=able). We also computed years elapsed since the occurrence of hurricanes for use as a covariate because of possible changes in population, hurricane severity, and availability of protective means over time. However, this variable was dropped for the main analysis as its effect was nonsignificant in all models. We also considered including days on land as a control variable. However, hurricanes sometimes move in and out of contact with land and also cause fatalities before making landfall (e.g., oil rig workers, boaters). Such deaths are appropriately part of the dataset as they reflect the preparedness issues being examined. Adjusting for days on land would make this death count problematic. Data on many other factors potentially responsible for hurricane fatalities (e.g., width of hurricane, route of hurricane) were unavailable.

Correlational analysis. Total deaths had the strongest association with normalized damage ($r = 0.555$, $P < 0.001$), among other variables such as minimum pressure ($r = -0.394$, $P < 0.001$) and hurricane category ($r = 0.281$, $P < 0.01$). Perhaps this is because it reflects other unobserved factors potentially responsible for hurricane fatalities, such as population density, route, and duration of hurricane, indicating that costlier hurricanes are much deadlier. Similarly, greater normalized damage was associated with lower pressure ($r = -0.566$, $P < 0.001$) and higher hurricane category ($r = 0.481$, $P < 0.001$). As expected, general indicators for hurricane intensity, such as minimum pressure and hurricane category, were strongly correlated ($r = -0.875$ $P < 0.001$). Findings from correlational analyses are presented in Table S1.

Main analysis. As the number of deaths is a simple count involving only nonnegative integer values (0, 1, 2, 3…), Poisson regression analysis is preferred over ordinary least squares regression. However, Poisson regression analysis is based on an assumption of mean-variance equivalence that is not met by the dependent variable. Variance of deaths (1673.152) is much greater than the mean of deaths (20.652), indicating a high likelihood of overdispersion and spurious estimates of SEs and P values. In such cases, a negative binomial regression model is recommended (26, 27).

A series of negative binomial regression analyses was performed. First, minimum pressure was entered into the base model, yielding a poor model fit (Pearson χ^2/df = 3.448) and indicating overdispersion (model 1 in Table S2). Next, MFI and normalized damage were added as predictors (model 2 in Table S2), which yielded an improved model fit relative to the base model (Pearson χ^2/df = 1.548). This result indicates that normalized damage explained a significant portion of variance in the log count of deaths that minimum pressure did not explain. Third, two two-way interaction terms were added (model 3 in Table S2); interactions between MFI and minimum pressure and MFI and normalized damage. Notably, there were significant interactions between MFI and minimum pressure ($\beta = 0.006$, $P = 0.012$, SE = 0.0025) and between MFI and normalized damage ($\beta = 0.00002$, $P < 0.001$, SE = 0.00001). Again, both the overall omnibus test with likelihood ratio χ^2 ($\chi^2 = 60.565$, $P < 0.001$) and the model fit (Pearson χ^2/df = 1.107) were improved, suggesting that a significant portion of the variance in deaths was explained by the effects associated with hurricane name (MFI). However, SEs associated with these significant interactions were small, raising concern about model overfitting. Finally, we standardized minimum pressure, MFI, and normalized damage variables and created interaction variables as in model 3 (model 4 in Table S2). This standardized model provided evidence for minimal overdispersion and a significant omnibus test (Pearson χ^2/df = 1.107; $\chi^2 = 60.565$, $P < 0.001$) as in model 3 and interactions remained significant (MFI × minimum pressure: $\beta = 0.395$, $P = 0.012$, SE = 0.157; MFI × normalized damage: $\beta = 0.705$, $P < 0.001$, SE = 0.184).

We also modeled the data using different count models, including a generalized Poisson, Poisson inverse Gaussian, and the three-parameter models: NB-P, Famoye generalized negative binomial, and generalized Waring NB regression. The best-fitted model was Famoye generalized negative binomial model [Akaike information criterion (AIC) = 641.92, Bayesian information criterion (BIC) = 662.09], but the model improvement was marginal compared with the standard negative binomial model (model 3 in Table S2: AIC = 658.09, BIC = 675.74). A robustness check on model 3, using the gender of the hurricane name as a binary variable (male-named = 0, female-named = 1) rather than a continuous variable (MFI), showed similar parameter estimations, yielding significant interactions between gender of the hurricane name and minimum pressure ($\beta = -0.038$, $P = 0.037$) and gender of the hurricane name and normalized damage ($\beta = 0.0001$, $P = 0.001$).

Interaction interpretation. To interpret and visualize the nature of the interaction between MFI and normalized damage, we factored normalized damage into two categories, ran a negative binomial regression model, and obtained coefficients as in model 3: $\beta_0 = 42.019364$ (intercept), $\beta_1 = -0.041257$ (minimum_pressure); $\beta_2 = -0.395306$ (normalized_damage), $\beta_3 = -3.299548$ (MFI); and $\beta_4 = 0.003595$ (MFI × minimum_pressure), $\beta_5 = -0.215676$ (MFI × normalized_damage).

Next, we obtained the predicted counts of fatalities as a function of MFI while holding minimum pressure at its mean (964.90 mb). For example, the death toll of a hurricane in the high-damage group (coded as 0) either with MFI 1 or with MFI 11 was calculated manually as follows:

$$\text{Predicted death toll of a hurricane in the high-damage group with}$$
$$\text{MFI1} = \text{Exp}\{\beta_{0+}(\beta_1 \times 964.90) + (\beta_2 \times 0) + (\beta_3 \times 1) + (\beta_4 \times 1 \times 964.90) + (\beta_5 \times 1 \times 0)\} = 10.80$$

$$\text{Predicted death toll of a hurricane in the high-damage group with}$$
$$\text{MFI11} = \text{Exp}\{\beta_{0+}(\beta_1 \times 964.90) + (\beta_2 \times 0) + (\beta_3 \times 11) + (\beta_4 \times 11 \times 964.90) + (\beta_5 \times 11 \times 0)\} = 58.70.$$

In a similar vein, the death toll of a hurricane in the low-damage group (coded as 1) either with MFI 1 or with MFI 11 was calculated as follows:

$$\text{Predicted death toll of a hurricane in the high-damage group with}$$
$$\text{MFI1} = \text{Exp}\{\beta_{0+}(\beta_1 \times 964.90) + (\beta_2 \times 1) + (\beta_3 \times 1) + (\beta_4 \times 1 \times 964.90) + (\beta_5 \times 1 \times 1)\} = 5.86$$

$$\text{Predicted death toll of a hurricane in the high-damage group with}$$
$$\text{MFI11} = \text{Exp}\{\beta_{0+}(\beta_1 \times 964.90) + (\beta_2 \times 1) + (\beta_3 \times 11) + (\beta_4 \times 1 \times 964.90) + (\beta_5 \times 11 \times 1)\} = 3.69$$

We repeated this procedure to graph the predicted death tolls by entering each value of MFI (1, 2, 3, 4. . ., 11).

Additional analysis. Finally, because an alternating male-female naming system was adopted in 1979 for Atlantic hurricanes, we also conducted analyses separately on hurricanes before vs. after 1979 to explore whether the effect of femininity of names emerged in both eras. Despite the fact that splitting the data into hurricanes before 1979 ($n = 38$) and after 1979 ($n = 54$) leaves each sample too small to produce enough statistical power, the findings directionally replicated those in the full dataset. For hurricanes before 1979 ($n = 38$), a model in which normalized damage, minimum pressure, MFI, and two two-way interaction terms (MFI × normalized damage, MFI × minimum pressure) were entered generated similar but nonsignificant interactions (MFI × minimum pressure: $\beta = 0.007$, $P = 0.408$, SE = 0.008; MFI × normalized damage: $\beta = 0.00003$, $P = 0.308$, SE = 0.00003). For hurricanes after 1979 ($n = 54$), a model with normalized damage, minimum pressure, MFI, and two two-way interaction terms (MFI × normalized damage, MFI × minimum pressure) yielded a marginally significant interaction between MFI and normalized damage ($\beta = 0.00001$, $P = 0.073$, SE = 0.000004). The interaction between MFI and minimum pressure was nonsignificant ($\beta = 0.003$, $P = 0.206$, SE = 0.0028). In addition, using the gender of the hurricane name as a binary variable instead of MFI showed similar but nonsignificant interactions (gender of hurricane name × normalized damage: $\beta = -0.00004$, $P = 0.128$, SE = 0.00003; gender of hurricane name × minimum pressure: $\beta = -0.019$, $P = 0.326$, SE = 0.0197).

Experiment 1. ***Participants.*** A total of 346 students at the University of Illinois at Urbana–Champaign participated for course credit (age, 19–25 y; 208 females).
Stimuli and procedure. Ten hurricanes (five with a masculine name: Arthur, Cristobal, Omar, Kyle, Marco; five with a feminine name: Bertha, Dolly, Fay, Laura, Hanna) were presented in a randomized order to all participants, who predicted the intensity of the hurricanes on two items (1 = not at all, 7 = very intense; 1 = not at all, 7 = very strong). These two items were later averaged (range of α of each of hurricanes = 0.935–0.951), and responses were collapsed, respectively, for five hurricanes with male names ($\alpha = 0.571$) and five hurricanes with female names ($\alpha = 0.638$).

Experiment 2. ***Participants.*** A total of 108 students at the University of Illinois at Urbana–Champaign participated for course credit (age, 18–25 y; 53 females).
Stimuli and procedure. Participants were told that the purpose of the experiment was to examine abilities that people may have, specifically for predicting a future event under uncertainty. Participants were provided with a map and a short scenario about either Hurricane Alexander (male), Hurricane Alexandra (female), or "a hurricane" (control) (Fig. S1), and reported the perceived riskiness of the hurricane on four items (1 = not at all, 7 = very dangerous, very risky, very severe, very strong; $\alpha = 0.941$).

Experiment 3. ***Participants.*** A total of 142 Amazon Mechanical Turk users participated for cash compensation (age, 18–81 y; 65 females).
Stimuli and procedure. Participants were provided with a scenario along with a weather map on which either Hurricane Christopher or Hurricane Christina was displayed (Fig. S2) and reported their evacuation intentions on three items (1 = very likely to evacuate immediately, certainly will evacuate immediately, definitely will evacuate immediately, 7 = very likely to stay home, certainly will stay home, definitely will stay home; $\alpha = 0.981$) and perceived risk on four items (1 = not at all, 7 = very risky, very dangerous, very severe, very strong; $\alpha = 0.957$).
Results. In this experiment, there was a significant effect of hurricane gender on perceived risk [$M_{christopher} = 5.567$ vs. $M_{christina} = 5.007$; $F(1,138) = 8.698$, $P = 0.004$, $\eta^2 = 0.059$]. However, in experiments 4 and 6, we observed ceiling effects and little variation in perceived risk; therefore, these results are not discussed further.

Experiment 4. ***Participants.*** A total of 100 Amazon Mechanical Turk users participated for cash compensation (age, 18–80 y; 43 females).
Stimuli and procedure. Participants were randomly assigned to one of two conditions: Hurricane Danny vs. Hurricane Kate. The overall procedure used in experiment 4 was identical to that of experiment 3 except that participants reported intentions to follow a voluntary evacuation order, using three items (1 = very likely to follow, 7 = very unlikely to follow; 1 = definitely will follow, 7 = definitely will not follow; 1 = certainly will follow, 7 = certainly will not follow; $\alpha = 0.978$). To assess whether the effect of the gender of the hurricane name on responses would be contingent on people's beliefs about gender traits (i.e., that the effect would mainly be observed in people who endorse traditional gender beliefs), we measured participants' beliefs by using six comparative statements about women and men shortly after the evacuation intention measure: "Women are more warm than men," "Men are more assertive than women," "Men are more dominant than women," "Women are more compassionate than men," "Women are more yielding than men," and "Men are more forceful than women" (1 = strongly disagree, 7 = strongly agree).
Results. Other than the reported main effect of the gender of the hurricane name, there were no other significant effects ($P > 0.157$). In addition, there was no interaction between the gender of the hurricane name and gender-trait beliefs in evacuation intentions ($P = 0.937$).

Experiment 5. ***Participants.*** A total of 274 Amazon Mechanical Turk users participated for cash compensation (age, 18–73 y; 126 females).
Stimuli and procedure. Participants were randomly assigned to one of three conditions: Hurricane Victor, Hurricane Victoria, or a Hurricane. The procedure used was identical to that of experiment 4. Participants reported intentions to follow a voluntary evacuation order, using three items (1 = very likely to follow, 7 = very unlikely to follow; 1 = definitely will follow, 7 = definitely will not follow; 1 = certainly will follow, 7 = certainly will not follow; $\alpha = 0.963$), and perceived risk, using four items (1 = not at all, 7 = very risky, very dangerous, very severe, very strong; $\alpha = 0.953$). To assess whether the effect of the gender of the hurricane name is contingent on explicit endorsement of traditional gender-trait beliefs, participants then reported their beliefs about women's and men's warmth and aggressiveness by indicating the extent to which they agree or disagree (1 = strongly disagree, 7 = strongly agree) with 12 noncomparative statements about women and men: 3 statements about women's warmth (women are warm, women are caring, women are compassionate; $\alpha = 0.868$), 3 statements about women's aggressiveness (women are aggressive, women are assertive, women are dominant; $\alpha = 0.776$), 3 statements about men's warmth (men are warm, men are caring, men are compassionate; $\alpha = 0.825$), and 3 statements for men's aggressiveness (men are aggressive, men are assertive, men are dominant; $\alpha = 0.762$). A series of paired-samples t tests indicated that women are believed to be more warm than aggressive [$t(273) = 15.595$, $P < 0.0001$], whereas men are believed to be more aggressive than warm [$t(273) = 10.764$, $P < 0.0001$]. Moreover, women are believed to be warmer than men [$t(273) = 14.958$, $P < 0.0001$], whereas men are believed to be more aggressive than women [$t(273) = 12.561$, $P < 0.0001$]. We computed a single grand index about endorsement of gender-trait beliefs called the women-men-warm-aggressive index (WMWA) by using the following equation: WMWA = (score on women's warmth) − (score on women's aggressiveness) − (score on men's warmth) + (score on men's aggressiveness). In

other words, a higher score on WMWA indicates that a participant believes that women are warmer but less aggressive than men.

Results. Other than the reported main effect of the gender of the hurricane name on evacuation intentions, there was also a main effect of participants' sex [M_{female} = 5.757, SD = 1.471 vs. M_{male} = 5.300, SD = 1.504; $F(1,268) = 6.540$, $P = 0.011$, $\eta^2 = 0.023$]. A main effect of participants' sex also emerged for perceived risk [M_{female} = 5.726, SD = 1.145 vs. M_{male} = 5.350, SD = 1.240; $F(1, 268) = 6.473$, $P = 0.012$, $\eta^2 = 0.023$]. A two-way general linear model (GLM) with the gender of the hurricane name and WMWA (mean-centered) with participants' sex as a covariate generated a significant effect of the gender of the hurricane name on intentions to follow an evacuation order [$F(2,267) = 4.383$, $P = 0.013$, $\eta^2 = 0.032$], consistent with the finding in the previous experiments. However, there was no significant interaction between the gender of the hurricane name and WMWA ($P = 0.171$).

Experiment 6. ***Participants.*** A total of 201 students at the University of Illinois at Urbana–Champaign participated for course credit (age, 18–24 y; 113 females).

Stimuli and procedure. Participants were randomly assigned to one of two conditions: Hurricane Alexander vs. Hurricane Alexandra. The procedure was identical to experiment 5 with the following exception. After reporting evacuation intentions, participants completed two unrelated tasks for about 20 min and then reported their gender-trait beliefs as in experiment 5. All of the items for each dimension generated sufficient internal consistency (range of α from 0.709 to 0.743). Paired-samples t tests indicated that women were believed to be more warm than aggressive [$t(200) = 15.156$, $P < 0.0001$], whereas men were believed to be more aggressive than warm [$t(200) = -9.587$, $P < 0.0001$]. Moreover, women were believed to be warmer than men [$t(200) = 16.358$, $P < 0.0001$], whereas men were believed to be more aggressive than women [$t(200) = -9.976$, $P < 0.0001$]. A WMWA was computed as in experiment 5.

Results. A two-way GLM with the gender of the hurricane name and WMWA (mean-centered) with participants' sex as a covariate generated a significant main effect of the gender of the hurricane name on intentions to follow an evacuation order [$M_{alexander}$ = 6.061, SD = 0.882 vs. $M_{alexandra}$ = 5.586, SD = 1.152; $F(1,196) = 10.673$, $P = 0.001$, $\eta^2 = 0.049$), consistent with the findings in previous experiments. Notably, there was also a significant interaction between the gender of the hurricane name and WMWA [$F(1,196) = 7.946$, $P = 0.005$, $\eta^2 = 0.037$]. In other words, the effect of the gender of the hurricane name on evacuation intentions was pronounced for people who endorsed women's warmth and men's aggressiveness (high WMWA: $M_{alexander}$ = 6.311 vs. $M_{alexandra}$ = 5.441; $b = -0.870$, $t = -4.303$, $P < 0.001$), whereas it was not significant for those who did not endorse these traditional gender-trait beliefs (low WMWA: $M_{alexander}$ = 5.800 vs. $M_{alexandra}$ = 5.736; $P = 0.754$).

Explicit Choice Study. ***Participants.*** A total of 107 Amazon Mechanical Turk users participated for cash compensation (age, 18–66 y; 65 females).

Stimuli and procedure. A total of 21 male-female pairs of hurricane names with the same starting initial were created by using the 42 actual hurricane names for 2016 and 2017 (e.g., Hurricane Alex vs. Hurricane Arlene, Hurricane Bonnie vs. Hurricane Bret, Hurricane Colin vs. Hurricane Cindy…, Hurricane Walter vs. Hurricane Whitney). Pairs were presented in random order, and participants were asked to indicate for each pair which hurricane should be more risky and dangerous. When participants chose a male-named hurricane it was coded as 1 and when they chose a female-named hurricane it was coded as −1. Responses to the 21 pairs of hurricane names were later summed to create an index that ranged from −21 to 21, with positive values indicating that they chose more male-named than female-named hurricanes and negative values indicating the opposite.

Results. No differences emerged in these explicit comparisons of riskiness [one-sample t test with test value 0: M = −0.78, SD = 9.864, $t(106) = -0.813$, $P > 0.410$). That is, 50.5% of participants (54 participants) chose more female-named hurricanes as being riskier, whereas 49.5% of participants (53 participants) chose more male-named hurricanes as riskier.

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