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Women's Leadership Is Associated With Fewer Deaths During the COVID-19 Crisis: Quantitative and Qualitative Analyses of **United States Governors**

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The coronavirus disease that emerged in 2019 (COVID-19) spotlights the need for effective leadership in a crisis. Leadership research in applied psychology suggests that women tend to be preferred over men as leaders during uncertain times. We contribute to this literature by examining, in the context of COVID-19, whether states with women governors had fewer deaths than states with men governors, and why. We tested this research question with publicly available data on COVID-19 deaths in the United States as of May 5, 2020 and found that states with women governors had fewer COVID-19 deaths compared to states with men governors. Governor sex also interacted with early stay-at-home orders; states with women governors who issued these orders early had fewer deaths compared to states with men governors who did the same. To provide insight into psychological mechanisms of this relationship, we conducted a qualitative analysis of governor briefings that took place between April 1, 2020 and May 5, 2020 (251 briefings, 38 governors, 1.2 million words). Compared to men, women governors expressed more empathy and confidence in their briefings. Practical implications are discussed.

Keywords: leadership, gender, leader effectiveness, crisis, COVID-19

The COVID-19 pandemic has been described as one of the most challenging societal crises since World War II. For example, on April 5, 2020, the Surgeon General of the United States warned the public, "Next week is going to be our Pearl Harbor moment. It's going to be our 9/11 moment." A month later, on May 6, 2020, White House Press Secretary Kayleigh McEnany expressed similar worries: "The President has been clear that at this moment we're at a war-time moment where we're fighting the invisible enemy. And by that, I mean COVID-19."2

This crisis has changed people's lives in unprecedented ways. In addition to public health concerns, the crisis has left many fearing for their jobs, struggling with rampant unemployment, and losing faith in the effectiveness of business and political leaders (Gershman, 2020; Horsley, 2020). Rapid escalation of COVID-19 highlights the need for timely and effective decision-making by leaders. Applied psychology research has shown that perceptions of who makes an effective leader can be altered in a crisis (Ryan, Haslam, Hersby, & Bongiorno, 2011).

One perspective from which leadership literature in applied psychology (Lord, Day, Zaccaro, Avolio, & Eagly, 2017) can be evaluated is gender effectiveness (Hoobler, Masterson, Nkomo, &

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Michel, 2018; Post & Byron, 2015). In particular, research comparing women and men on transformational leadership (Bass & Riggio, 2006) showed that women scored higher on charisma and individualized consideration (Eagly, Johannesen-Schmidt, & van Engen, 2003), giving rise to a "female leadership advantage" under contemporary conditions (Eagly & Carli, 2003, p. 807). Ryan, Haslam, and Postmes (2007) similarly found that women tend to be favored as leaders during a crisis, and they are also selected to contest hard-to-win elections (Ryan, Haslam, & Kulich, 2010). Palvia, Vahamaa, and Vahamaa (2015) found "strong evidence that smaller banks with female CEOs and chairwomen were less likely to fail" (p. 577) during the 2008 recession. In their review of studies on women's leadership during trying times, Ryan et al. (2016) likewise concluded that women leaders seem to be preferred during business downturns.

This literature prompted our research question: Do states in the United States with women governors have fewer COVID-19 deaths than states with men governors, and why? To examine this question, we used publicly available data and compared the number of reported deaths caused by COVID-19 among states in the United States. Because these data were archival, we examined gender with the information available, as a dichotomous biological sex variable. We found statistically significantly fewer deaths in

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¹ Surgeon General: This week will be like a 'Pearl Harbor' and '9/11' moment. CNN. April 5, 2020. Retrieved from https://www.cnn.com/2020/ 04/05/politics/jerome-adams-coronavirus/index.html.

² White House Kayleigh McEnany press conference transcript, May 6, 2020. Rev. Retrieved from https://www.rev.com/blog/transcripts/white-housepress-secretary-kayleigh-mcenany-briefing-transcript-press-conference-may-6.

states with women governors than in states with men governors. To provide insight into potential psychological mechanisms of this relationship, we conducted a qualitative analysis of governors' COVID-19-related briefings. In comparison to men governors, women governors expressed more empathy and exuded greater confidence.

We proceed as follows. First, we describe the context during which the data for this article were collected. Next, we review the applied psychology literature on gender and leadership that guided our research question and analyses. Then, we report the results of both quantitative and qualitative analyses. We conclude with a discussion of practical implications.

Context, Literature Review, and Theory Background for the Research Question

Context

Under the Tenth Amendment of the U.S. Constitution, states are granted responsibility for safeguarding the welfare, safety, and health of the public. In emergencies, state governors have the power to issue executive orders, activate the National Guard, and request financial and military aid from the federal government. Because governors have influence over state-level public health outcomes, we used the COVID-19 crisis to examine if governor sex influences the COVID-19-related death count, and why. On April 16, 2020, President Trump called attention to the differences in leadership among the U.S. governors and their impact on important outcomes: "They [governors] really worked hard and . . . some states got too much credit for what they've done . . . and others haven't been given credit that have done a phenomenal job."

To illustrate, on March 15, 2020, California Governor Gavin Newsom issued an order closing all public establishments and institutions across the state. In contrast, on April 14, 2020, South Dakota Governor Krisi Noem announced that she would not issue a statewide stay-at-home order: "I've been very clear about the fact that I don't think decisions for Sioux Falls are the same decisions that are correct and right for a town like Faith or Lemmon, South Dakota."

Literature Review: Theoretical Perspectives on Gender and Leadership Effectiveness

Gender as a differentiator of leadership effectiveness has spawned polemic in the past five decades (Megargee, 1969). Several journals have devoted special issues to gender and leadership effectiveness—for example, *The Leadership Quarterly* (Eagly & Heilman, 2016), *American Psychologist* (Chin, 2010), and *Education Sciences* (O'Connor, 2018); hence, our review is brief.

Research on gender and leadership effectiveness typically adheres to either a micro or a macro level of analysis. Micro research studies individual-level variables—for example, leader behaviors—whereas macro research investigates "the shaking and moving" of a firm to face the future, cope with change, and achieve organizational-level results (Nicholls, 1988, p. 16). The present study bridges the micro-macro divide by relating a micro predictor (governors' sex) to a macro outcome (state death count). This cross-level research answers a call by Hoobler et al. (2018, p.

2490) for gender and leadership studies that capture "multiple vantage points and conduct studies that serve to bridge—not further divide—these two [macro and micro] approaches."

At a micro level of analysis, research has indicated that women seem to be sought-out as leaders in times of uncertainty (Ryan et al., 2011). In comparison to men, arguably, this is because of women's desire to help others, capacity to balance risk, and resilience to "bounce back" from failure more pragmatically (Ryan et al., 2016). This research often derives its conclusions from surveys, such as by asking participants to rate characteristics of managers from successful and unsuccessful companies (Haslam & Ryan, 2008; Ryan et al., 2011), by evaluating stock-market declines (Ryan & Haslam, 2005), and by probing political appointments by opposing political parties (Ryan et al., 2010). Though valuable in accentuating gender differences in leadership effectiveness, the characteristics of the "crisis" examined (e.g., decreased firm performance) do not equate to the multifaceted severity of the COVID-19 crisis.

Research on social roles (Eagly, 1987; Eagly & Steffen, 1984) suggests that the behavior of women and men leaders is guided by role stereotypes, according to which women tend to be communal and sharing, whereas men are agentic and independent (Chrobot-Mason, Hoobler, & Burno, 2019; Eagly & Steffen, 2000; Koenig, Eagly, Mitchell, & Ristikari, 2011). If women act incongruently with gender role stereotypes, more often than not, such behavior is evaluated unfavorably (Eagly, 2004; Eagly & Karau, 2002; Eagly, Makhijani, & Klonsky, 1992; Rudman & Glick, 2001). This covariation reinforces work behavior in line with gender stereotypes (Amanatullah & Morris, 2010; Bowles, Babcock, & Lai, 2007; Brescoll, 2011; Heilman, Block, Martell, & Simon, 1989).

Social—cognitive theory of gender role development and differentiation postulates that gender-driven behavior depends on a coupling of external and internal influences in any given context (Bussey & Bandura, 1999). Although much of human learning and adaptation is socially situated, neither women nor men are passive objects orchestrated by their environments. Instead, they are sentient agents of their experiences, and self-referent thought is an intermediary between one's social milieu and behavior. In this vein, cognition (e.g., causal attributions, self-efficacy) mediates the impact of gender on leadership effectiveness (Betz & Hackett, 1981; Brown & Lent, 2016, 2017; Bussey & Bandura, 1999; Hartman & Betz, 2007; Mazei et al., 2015).

Macrolevel research in this literature has historically focused on the link between gender and organizational-level effectiveness (Krishnan & Park, 2005; Nielsen & Huse, 2010) and on examining moderators (e.g., legal, sociocultural context) of this relationship (Abdullah, Ismail, & Nachum, 2016; Hoobler et al., 2018; Post & Byron, 2015). For example, two recent meta-analyses found a positive relationship between women's leadership (e.g., number of women on the board) and firm performance (e.g., accounting returns; Hoobler et al., 2018; Post & Byron, 2015). Some mediators of the relationship between gender and firm-level effectiveness include women enhancing the firm's legitimacy in the eyes of stakeholders (Bilimoria, 2006), offering heterogeneity and depth in

³ All quotes from the president and the governors used in the article are publicly available, and we retrieved them from the transcript company Rev.com.

decision-making (Carter, D'Souza, Simkins, & Simpson, 2010), and impacting evaluations of resource dependence (Hambrick, 2007; Peterson & Philpot, 2007).

Macrolevel gender leadership studies typically use financial indicators as measures of effectiveness. This assumes that the primary meter of whether women make effective leaders is their influence on a firm's bottom line (Hoobler et al., 2018). For context, in an analysis of articles in three management journals between 1972 and 2001, Walsh, Weber, and Margolis (2003) found that fewer than 2% of studies considered welfare outcomes. Economic effectiveness is critical, but a sole focus on it leaves much unsaid about leadership beyond a firm's monetary bottom line.

Theory Background for the Research Question

Our crossed micro-macro research mirrors the situation on the ground: State governors are individuals responsible for state-level outcomes. As former Speaker of the House Tip O'Neill proclaimed, "All politics is local" (O'Neill, 1994, p. 1); in many ways, the impact of COVID-19 is local, too, for governors make decisions for their states. We next discuss why whether a governor is a man or woman may make a difference on COVID-19 deaths in a state.

First, as mentioned, women tend to be preferred for leadership positions across professions during times of uncertainty (Adams, Gupta, & Leeth, 2009; Ashby, Ryan, & Haslam, 2007; Eagly & Johnson, 1990; Eagly, Karau, & Makhijani, 1995). In general, this appears to be because qualities that make a leader effective when circumstances are smooth differ from leadership characteristics needed in a crisis, and women seem to navigate uncharted waters better than men (Haslam et al., 2001; Hunt, Boal, & Dodge, 1999; Pillai & Meindl, 1998; Ryan et al., 2011). For routine operations, advance plans can be drawn up and executed in a linear and controlled manner. In contrast, in a crisis, rationality is bounded (Simon, 1997), and effective leadership requires curvilinear thinking, such as relying more on creativity, improvisation, and intuition (Pearson & Sommer, 2011). Research in both applied and neuropsychology suggests that women exhibit more of these qualities than men (Byron & Khazanchi, 2012; Byron, Khazanchi, & Nazarian, 2010; Hausmann & Güntürkün, 1999; Kimura, 1987; Pagnani, 2011).

Second, leaders face unfamiliar dilemmas during a life-and-death crisis, making the capacity to foster collaboration and leverage knowledge across teams with multidisciplinary expertise a critical skill. Doing this effectively requires a willingness to distribute authority and share information. The tendency for women to have a democratic leadership style (Eagly & Johnson, 1990) increases the likelihood of information sharing, generating more diverse ideas, brainstorming, and consensus building, which in turn increases cooperation and facilitates adaptive decision-making (Bartunek, Walsh, & Lacey, 2000; Mano-Negrin & Sheaffer, 2004).

Third, the psychologically tense atmosphere of the COVID-19 crisis makes promoting psychological safety another key to leadership effectiveness. Leaders need to create milieus in which people discuss ideas, raise questions, and share concerns without fear of repercussions. Men tend to associate psychological safety with knowledge and control, while women tend to associate it with

health and security (Kharlamenkova, 2015). In taxing situations, men typically use problem-focused coping (Ptacek, Smith, & Dodge, 1994; Ptacek, Smith, & Zanas, 1992), whereas women tend to seek social support using emotion-focused coping (Baker & Berenbaum, 2007; Tamres, Janicki, & Helgeson, 2002). Though some situations bode better for problem-focused coping, during a crisis, followers' concerns turn toward basic needs, and such worries are often emotionally laden. Thus, successful leaders show awareness of their followers' feelings and acknowledge the emotional challenges faced. Doing this effectively necessitates empathy, defined as an emotional response congruent with the perceived welfare of others (Batson, 1991).

Showing empathy involves perspective shifting to imagine how others are affected by the situation at hand (Batson et al., 1997). Research on gender and empathy has shown that women tend to be more empathetic toward others than men (Batson et al., 1996; Gault & Sabini, 2000; Macaskill, Maltby, & Day, 2002; Toussaint & Webb, 2005). Empathy drives a tone of communication that is tactful and gentle, making it more effective for delivering emotionally laden speeches in a time of crisis. Because men tend to be less empathetic, their communication with followers is often more blunt, dominant, and forceful (Zahn, 1989).

Fourth, keeping a clear mind during a crisis benefits from adaptive emotion regulation, defined as prospective shifting regarding activated emotions (Hülsheger, Alberts, Feinholdt, & Lang, 2013). Research on gender and emotion regulation has found that women are more likely than men to use positive emotions in the service of reappraising negative situations (Bryant, Smart, & King, 2005; Bryant & Verhoff, 2007; McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008). This enables women to more adaptively handle the psychological setbacks they face.

Given the uncertainty surrounding the COVID-19 pandemic, mistakes are likely. Thus, leaders also need confidence to make course corrections without overreacting or paralyzing the operations with doubt (Boin, Stern, & Sundelius, 2016; Stajkovic, 2006). Because women make causal attributions less tied to their ability compared with men (Frieze, Whitley, Hanusa, & McHugh, 1982; Rosenthal, Guest, & Peccei, 1996), and external attributions are positively related to maintaining confidence (Stajkovic & Sommer, 2000), women are more likely than men to exude confidence in a crisis. Confidence, like empathy, can translate to differences in communication patterns. For example, men seem to communicate confidence by commanding attention and winning arguments, with an aim to gain power (Maiorescu, 2016; Tannen, 2013). In contrast, most women perceive confidence as context dependent; therefore, women tend to be more sensitive in exuding confidence to their followers by focusing on immediately relevant issues, not power (Alban-Metcalfe & West, 1991; Austin, Liu, & Jin, 2014; Bussey & Bandura, 1999; Deaux & Major, 1987; Gillian, 2003).

Taken together, these gender differences in thoughts and actions may increase the likelihood that followers will respond differently to messages from women leaders compared to men leaders. Accordingly, in the context of the present research, it seems plausible that when governors issued stay-at-home orders before they became the norm, state residents might have responded more positively to briefings by women governors, ultimately saving lives. That is, if women governors showed more empathy and confidence in their briefings than men governors, that might have fostered

volitional compliance with their stay-at-home orders, which saved lives.

Method and Results

Quantitative Study

Data and measures. We used the "Coronavirus (COVID-19) Data in the United States" file (henceforth, data) released by *The New York Times* to capture number of deaths caused by COVID-19 in the United States.⁴ These data contained information for the 50 states in the United States, the District of Columba, and four U.S. Territories (N = 55).⁵ The death count from COVID-19 was reported in this data set by state, by day, from January 21, 2020 to May 5, 2020. We combined these data with state population as of July 1, 2019 from the U.S. Census Bureau, divided the population numbers by 100,000 (M = 60.32, SD = 72.4), and mean-centered them.

To test the interaction effect of governor sex and an issuance of early stay-at-home orders on death count, we included a categorical variable to indicate whether states issued this order by March 23, 2020 (first wave; 0.5 = statewide order issued, 0 = orders in parts of the state, and -0.5 = no order issued) as reported by *The New York Times* (Mervosh, Lu, & Swales, 2020). We coded sex as a woman (0.5) or a man (-0.5) according to the roster posted online by the National Governors' Association. Governors' average age was 58.2 years, (SD = 12.04), tenure in the current term was 1.29 years (SD = 0.84), and the prior terms served was 0.42 (SD = 0.57).

Results. We used analysis of covariance (ANCOVA) to examine whether governor sex and its interaction with an early stay-at-home order was associated with a lower COVID-19 death count. Following the best practice recommendations by Bernerth and Aguinis (2016), we considered several covariates, including the following sociodemographic variables: governor's age, tenure, number of previous terms served, political affiliation, and state population. Prior research on leadership, as reported in Bernerth and Aguinis (2016), commonly controls for age and tenure-related variables to proxy for differences in a leader's accrued knowledge and other experience-related factors. Political science research has established a relationship between gender and political affiliation as political parties shape who runs for office and frequency of initiatives to facilitate elections of women to office (Sanbonmatsu, 2010). Finally, infectious disease studies have found that state population impacts deaths associated with virus transmissions (Nolan et al., 1980).

The above covariates are based on theory and prior research. The following covariates pertain to COVID-19 and were retrieved from the COVID-19 State and Territory Actions Tracker available on the National Governors' Association's website. We considered whether states mandated residents to wear face masks to proxy for risk of virus transmission; whether states banned domestic and state-employee travel to control for interstate crossover in virus infections; whether states enacted curfews to proxy for nonessential travel; and whether governors allowed hospitals to participate in a ventilator sharing program to proxy for capacity.

Bivariate correlations of the study variables are reported in Table 1. Following ANCOVA procedures (Keppel, 1991), to mitigate alternative explanations and to demonstrate the unique rela-

tionship between governor sex and COVID-19 deaths, we parsed out the covariance between covariates and criterion variable. The results of the full ANCOVA model are reported in Table 2. Results indicated that several covariates were not significantly related to COVID-19 deaths. Hence, we next ran a reduced ANCOVA model and excluded covariates associated with death count at p > .10 in Table 2. Results of the reduced ANCOVA model are reported in Table 3. Results remain consistent when state population is added to the reduced ANCOVA model.

Though results in both ANCOVA models supported our research question, we focus on the more parsimonious, reduced ANCOVA model. In it, the main effect of governor sex was significant; states with women governors had fewer COVID-19-related deaths compared to states with male governors, F(1, 47) = 5.98, p = .018, $\eta_p^2 = .08$. The interaction of governor sex and early issuance of a stay-at-home order was also significant, F(1, 47) = 7.74, p = .008, $\eta_p^2 = .11$; states with women governors who issued an early stay-at-home order had fewer COVID-19 deaths compared to states with a male governor who issued the same order (see Figure 1).

Qualitative Study

Data and measures. To shed insight into potential reasons for the effects reported above, we next analyze the transcripts from governmental briefings related to COVID-19 that took place between April 1, 2020 and May 5, 2020. These transcripts are provided by the transcription company Rev, and they are available on the company's website. We analyzed 251 briefings, from 38 different state governors (including the mayor of the District of Columbia), covering 1.2 million words spoken. Table 4 reports descriptive information and quotes to illustrate differences in emphasis among the governors. To avoid confounding the effect of the predictor variable, for each briefing, we analyzed words only from the governor and excluded remarks from invited guests in the briefing.

We used the Linguistic Inquiry and Word Count (LIWC) 2015 software (Tausczik & Pennebaker, 2010) with built-in theme dictionaries to analyze the transcripts. These dictionaries are established by the LIWC manufacturer, have been validated (Pennebaker, Boyd, Jordan, & Blackburn, 2015), and have been used in applied psychology research (Shantz & Latham, 2009). The software provides dictionaries that assess 41 psychological variables and six personal concern categories. Our choice among these available dictionaries was guided by theory discussed above.

⁴ https://github.com/nytimes/covid-19-data.

⁵ There was no COVID-19-related information available on deaths for the territory of American Samoa.

⁶ The District of Columbia (D.C.) has no governor, but the mayor of D.C. serves in a similar capacity to U.S. state governors. Hence, we used the mayor's demographic information for D.C.

⁷ These data were obtained from the "Governor's Roster 2020" (https://www.nga.org/wp-content/uploads/2019/07/Governors-Roster.pdf).

⁸ https://www.rev.com/blog/transcripts/all-transcripts.

⁹ From April 1 to May 5, 2020, the transcription company Rev.com only transcribed briefings for the 38 governors included in this analysis. If those governors who were not included in this analysis gave COVID-19-related briefings during this period, the transcripts for those briefings were not publicly available through this transcription service.

Table 1
Correlations for the Quantitative Analysis

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Governor sex ^a												
2. State population ^b	23^{\dagger}											
3. Stay-at-home order ^c	19	.43**										
4. Domestic travel band	.05	25^{\dagger}	39**									
 Face mask mandate^e 	.10	10	.16	.06								
6. Statewide curfew ^f	.13	.31*	.19	13	05							
7. Ventilator sharing ^g	04	.38**	.46**	33*	06	.21						
8. State-employee travel ^h	03	.03	.07	.05	.24†	20	.11					
9. Governor political affiliation ⁱ	15	10	30*	.11	18	03	25^{\dagger}	21				
10. Governor age	11	.01	.07	.14	.01	01	.12	04	10			
11. Governor tenure	26*	03	15	.10	12	19	.09	10	00	.31*		
12. Governor prior terms served	08	.04	05	07	10	.01	.26†	27*	.20	.18	.09	
13. COVID-19 deaths	13	.41***	.39***	30*	.23†	.18	.49***	09	24^{\dagger}	.05	05	.29*

 a 0.5 = female, -0.5 = male. b Population data was divided by 100,000. c 0.5 = statewide order by March 23, 2020, 0 = order in parts of state, -0.5 = no order issued. d 0.5 = executive order, 0 = recommended, -0.5 = no order issued. e 0.5 = mandatory for all, 0 = mandatory for essential workers, -0.5 = recommended. f 0.5 = yes, -0.5 = no. g 0.5 = yes, -0.5 = no. h 0.5 = yes, -0.5 = no. i 0.5 = Republican, 0 = Independent, -0.5 = Democrat.

First, because empathy entails awareness of the feelings of others, we used the LIWC "feelings" dictionary. This dictionary assesses the frequency with which the speaker references feelingsassociated words (e.g., feelings, hard, tough, and pain). Second, showing empathy entails acknowledging a concern for the welfare of others. Thus, we analyzed the degree to which governors related to their followers' personal concerns. We chose the following three personal categories that are likely on the minds of many during the COVID-19 crisis: death (e.g., die, mourn, epidemic, war), money (e.g., tax, income, loan, economy), and work (e.g., layoff, hire, employ, job). Finally, we analyzed transcripts on the LIWC confidence dictionary (e.g., confident, daring, fearless, optimism, and positive). ¹⁰ The scores for each dictionary are the percent of words that relate to the dictionary construct; for example, a score of 2.25 means 2.25% of the words spoken related to the construct. Despite some governors issuing many briefings and others speaking rarely, scores are computed as a percentage of total words and thus are comparable.

Results. Descriptive statistics and bivariate correlations are reported in Table 5. Because political affiliation impacts the audience governors are accustomed to addressing and the priority of topics tackled, and because it had a marginally significant correlation with feelings and confidence, we controlled for it. Moreover, age was marginally correlated with gender in this analysis. Thus, we ran an ANCOVA model in which gender was a predictor of the LIWC criteria described above, controlling for political affiliation and age. Additionally, Levitt et al. (2018) outlined standards for reporting qualitative findings that called for "quotes or excerpts to augment data" (p. 37) and to "demonstrate that findings are grounded in evidence (e.g., using quotes)" (p. 36). Accordingly, we report the qualitative findings and provide illustrative quotes for each result.

Governor sex was related to outcomes examined. First, women governors compared to men governors showed more empathy via greater awareness of the feelings of others, F(1, 34) = 8.84, p = .005, $\eta_p^2 = .21$. This is exemplified by South Dakota Governor Krisi Noem's April 23, 2020 remarks:

There is a place you can go to talk to someone that can help you, not just get answers to your financial issues, programs that may help you get through, but somebody that may help you deal with some anxiety or depression or lack of hope that you might be feeling today. You do not have to go through this alone. Do not hesitate to reach out to me personally, to reach out to my family because they are in the same boat and feel the same feelings that you all do.

Governor Gretchen Whitmer also frequently discussed feelings in her briefings: "The frustration and the pain are real, and the fear is real... I understand the frustration that people are feeling. I'm frustrated too" (April 15, 2020); "People are feeling very anxious. People are worried about the business that they built... People are worried about making the rent payment because they are out of work" (April 17, 2020); "I know that ... people are feeling squirrelly from being at home so much with their family. I know that people are worried about getting a job so that they can pay their bills ... I have those same fears" (April 29, 2020); "I know that some people are angry and I know many are feeling restless. I get it and I respect it and it's okay to feel that way" (May 1, 2020).

Second, women governors showed more empathy than men governors by taking an outward emotional response congruent with their followers' welfare by focusing more on relevant topics of work, F(1, 34) = 11.53, p = .002, $\eta_p^2 = .25$, and money, F(1, 34) = 7.69, p = .009, $\eta_p^2 = .18$. To illustrate, consider the remarks of South Dakota Governor Krisi Noem on April 6, 2020 when she reassured her populace that "resources are available to you, whether it be economic or mental health and labor unemployment." Likewise, Kansas Governor Laura Kelly emphasized an understanding for her people's concerns related to their work on April 3, 2020 when she said, "That's what I want to talk about today. Kansas jobs and small businesses and how we can support

[†] p < .10. * p < .05. ** p < .01. *** p < .001.

¹⁰ The LIWC manufacturer titles this dictionary "reward." However, upon review of the words included in this dictionary, a title of "confidence" rather than "reward," is a more accurate portrayal.

Table 2 Full Covariate Model: Effect of Governor Sex on COVID-19 Death Count

Predictor	Estimate (b)	b 95% CI	SE	p	
Intercept	2,577.23	[1,218.65, 3,935.81]	672.72	.004***	
Governor sex ^a	-2,157.81	[-4,285.94, -29.69]	1,053.77	.047*	
Governor political affiliation ^b	-898.91	[-2,336.79,538.98]	711.99	.214	
Governor age ^c	-9.18	[-66.22, 47.87]	28.25	.747	
Governor current tenure ^c	-294.56	[-1,162.38,573.25]	429.71	.497	
Governor previous terms served ^c	1,099.80	[-178.70, 2,378.31]	633.07	.090†	
State population ^d	8.43	[-2.18, 19.04]	5.25	.116	
Stay-at-home order ^e	-1,232.56	[-3,611.86, 1,146.73]	1,178.14	.302	
Domestic travel ban ^f	-272.94	[-1.922.30, 1.376.42]	816.70	.740	
Face mask mandateg	2,611.66	[766.38, 4,456.93]	913.71	.007**	
Statewide curfew ^h	-165.24	[-1,612.63, 1,282.15]	716.69	.819	
State-employee travel ⁱ	-1,488.14	[-3.044.29, 68.00]	770.55	$.060^{\dagger}$	
Ventilator sharing ^j	3,463.81	[765.10, 6,162.52]	1,336.30	.013*	
Governor Sex × Stay-At-Home Order	-4,272.75	[-8,528.84, -16.66]	2,107.45	.049*	

Note. $R^2 = .546^{**}$. CI = confidence interval; SE = standard error. A significant b-weight indicates the semi-partial correlation is also significant. b represents unstandardized regression weights. Number of observations = 55.

a 0.5 = female, -0.5 = male. b 0.5 = Republican, 0 = Independent, -0.5 = Democrat. c Mean-centered. d Divided by 100,000 and meancentered. $^{\rm e}$ 0.5 = statewide order by March 23, 2020, 0 = order in parts of state, -0.5 = no order issued. $^{\rm f}$ 0.5 = executive order, 0 = recommended, -0.5 = no order issued. g 0.5 = mandatory for all, 0 = mandatory for essential workers, -0.5 = recommended. h 0.5 = yes, -0.5 = no. i 0.5 = yes, -0.5 = no. j 0.5 = yes, -0.5 = no. † p < .10. * p < .05. ** p < .01. *** p < .001.

them, save them, and create them when the danger of COVID-19 is behind us." As illustrated, women governors spoke about work and money to connect with followers by painting a brighter future ahead. In contrast, speaking about death would call attention to the tragic consequences of COVID-19. Hence, death was not spoken about differentially by gender (p = .12). For context, the mean death mention was 0.11% of words spoken, suggesting that most governors avoided talking about it.

Third, women governors exuded more confidence compared with men governors, F(1, 34) = 3.74, p = .061, $\eta_p^2 = .10^{.11}$ For example, on April 27, 2020, Governor Gretchen Whitmer asserted to her state, "We are not out of the woods yet, but we are seeing signs to give us reason to be feeling optimistic; cautiously, but optimistic nonetheless." On April 13, 2020, Governor Gina Raimondo assured her public, "I am confident that by working together and sharing our best ideas, we will be much, much more likely to get it right for the citizens of our state."

Discussion

Our quantitative analysis revealed that states with women governors had fewer COVID-19 deaths than states with men governors. This finding is consistent with both microlevel studies suggesting that women tend to be preferred as leaders during times of poor organizational performance and uncertainty (Ashby et al., 2007; Bruckmüller & Branscombe, 2010) and macrolevel research linking women's presence in high leadership positions to better firm performance (Davis, Babakus, Englis, & Pett, 2010; Haslam, Ryan, Kulich, Trojanowski, & Atkins, 2010; Hoobler et al., 2018; Post & Byron, 2015). Given the multifaceted severity of the COVID-19 crisis, this finding extends prior research by demonstrating that women leaders tend to be effective beyond just a moderate-level organizational crisis (cf., Vongas & Al Hajj, 2015).

We also found that governor sex interacted with early stay-athome orders. Women governors who issued early stay-at-home orders had fewer COVID-19 deaths in their states than men governors who issued the same orders. This suggests that state residents perhaps responded differently depending on whether a man or woman governor issued this order, as manifested by lives saved. This finding supports literature suggesting that a leader's message partly determines how the followers respond to it (Boin et al., 2016). That is, our qualitative results lend insight to suggest that stay-at-home orders issued by women governors were potentially delivered with greater empathy and confidence compared to men governors. This qualitative difference in briefing messages is consistent with research showing that women tend to be more sensitive to the needs of those around them and express themselves accordingly (Gillian, 2003; Zahn, 1989). Together, the quantitative interaction and qualitative results suggest that state residents might have responded to early state-at-home orders from women governors more positively with greater volitional compliance than to such orders by men governors.

Our crossed (micro-macro) and multimethod (quantitativequalitative) research helps mitigate a "black box" problem in this literature, defined as scarcity of theory regarding mediators (Hoobler et al., 2018; Post & Byron, 2015). In probing for psychological mechanisms linking women to leadership effectiveness during COVID-19, we found that content of the briefings differed between women and men governors in terms of two important psychological variables: empathy and confidence. Adding nuance to the notion of communication sensitivity in a crisis, our findings illustrate how gender differences can manifest in speeches to followers. This is important because leaders (e.g., governors)

 $^{^{11}}$ The gender difference reported here has a Type I error rate of 6.1%. To avoid making a Type II error, we thank our Reviewer 1 for the constructive suggestion to report effects at p < .10 due to the relatively low statistical power/small sample size to detect a relationship at a conventional Type I error rate of 5%.

Table 3
Reduced Covariate Model: Effect of Governor Sex on COVID-19 Death Count

Predictor	b	<i>b</i> 95% CI	SE	p	
Intercept	2,855.93	[1,572.53, 4,139.33]	638.0	<.001***	
Governor sex ^a	-2,344.07	[-4,271.99, -416.15]	958.3	.018*	
Governor prior terms served ^b	936.99	[-270.65, 2,144.63]	600.3	.125	
Stay-at-home order ^c	-631.93	[-2,859.53,1,595.67]	1,107.3	.571	
Face mask mandate ^d	2,511.47	[725.61, 4,297.33]	887.7	.007**	
Ventilator sharing ^e	4,059.90	[1,653.64, 6,466.16]	1,196.1	.001**	
State-employee travel ^f	-1,346.25	[-2,794.50, 101.99]	719.9	.068†	
Governor Sex × Stay-At-Home Order	-5,440.38	[-9,374.40, -1,506.36]	1,955.5	.008**	

Note. $R^2 = .491^{**}$. CI = confidence interval; SE = standard error. A significant b-weight indicates the semi-partial correlation is also significant. b represents unstandardized regression weights. Number of observations = 55.

 a $^{\hat{0}}$.5 = female, -0.5 = male. b Mean-centered. c $^{\hat{0}}$.5 = statewide order by March 23, 2020, 0 = order in parts of state, -0.5 = no order issued. d $^{\hat{0}}$.5 = mandatory for all, 0 = mandatory for essential workers, -0.5 = recommended. c $^{\hat{0}}$.5 = yes, -0.5 = no. $^{\hat{f}}$ $^{\hat{0}}$.5 = yes, -0.5 = no. $^{\hat{f}}$ $^{\hat{0}}$.5 = yes, -0.5 = no. $^{\hat{f}}$ $^{\hat{0}}$.5 = yes, -0.5 = no.

typically inspire people, and managers (e.g., in state agencies) manage processes (Bertocci, 2009). Whether state agencies, first responders, and people are confident that they can do what it takes to get through a crisis and bounce back partly depends on the leader's rhetoric (Boin & McConnell, 2007; Brescoll, 2011; Drabek, 1986). Even when people have the skills, many forsake pursuits if they doubt they can do what it takes. In our sample, women governors seemed to have emphasized confidence more than men governors.

Limitations

The COVID-19 pandemic was started by a rapid virus pathogenesis over which little appreciable control existed (Rothan &

Byrareddy, 2020). The results we report are current but could change when counts are final. However, there is an uncertainty about a recurrence of the virus in late 2020 (Lovelace & Breuninger, 2020). In the meantime, we responded to a call for research on the facilitative role of applied psychology during the pandemic. Because the data were not experimental, which is impossible with our criterion variable, no causality can be inferred from our results, just patterns of associations. Our aim was to offer timely insight on the role of gender in leadership effectiveness during an unprecedented time of crisis and uncertainty.

Although it has been used in applied psychology research (Shantz & Latham, 2009), the LIWC analysis is only as accurate as the data it analyzes. Because we used public transcripts, if words

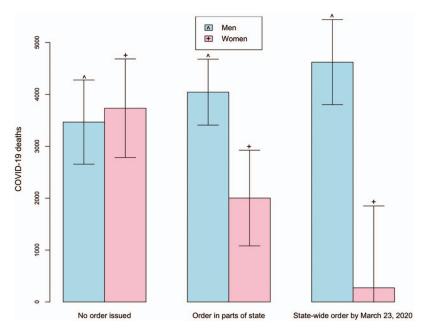


Figure 1. Interaction of governor sex and issuing an early stay-at-home order on COVID-19 deaths. This figure plots the interaction of governor sex (women = .5, men = -.5) and issuance of an early stay-at-home order (-0.5 = no order issued, 0 = order in parts of state, 0.5 = statewide order) on COVID-19 deaths as of May 5, 2020. The error bars represent the 95% confidence intervals of the point estimates. See the online article for the color version of this figure.

Table 4
Description of Governor Briefing Transcripts From the Qualitative Analysis

State	#	Dates of briefings	Sex	Quote				
1. Alabama	abama 3 April 3, 14, 2		F	"We all want to get back to work, and I want all my people to have a good paying job."				
2. Arizona	1	April 7	M	"We're going to continue to use our heads and we're going to continue to use our hearts."				
3. Arkansas	6	April 4, 6, 7, 13 14, 23	M	"We're not going to be stampeded into making too quick of a decision."				
4. California	25	April 1, 2, 3, 4, 6, 7, 8, 9 10, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 27, 28, 29, 30; May 1, 4	M	"I'm working overtime to rise above the politics, the finger pointing, the bickering back and forth. I think you've seen that. I hope folks notice that. Trying to do my best in that space and working cooperative as we possibly can with the administration at all levels."				
5. Colorado	4	April 1, 6, 8, 24	M	"I think anybody would have thought that was a very cruel April fool's joke."				
6. Connecticut	5	April 14, 17, 29; May 1, 5	M	"The social distancing is working, but I don't want to go a false sense of complacency."				
7. District of Columbia	3	April 3, 13, 17	F	"We will get through this and we will get on the other side of this and we will get back to life."				
8. Florida	15	April 1, 2, 6, 8, 10, 13, 16, 17, 18, 21, 27, 29; May 1, 3, 5	M	"When you're in these situations, all those little things that people try to get an advantage here, try to do this there, you've got to put that aside and you got to work for the common good."				
9. Georgia	3	April 1, 20, 27	M	"These are tough moments in our state and our nation. I hear the concerns of those I'm honored to serve."				
10. Idaho	1	April 30	M	"It is imperative that individuals take personal responsibility by limiting their exposure."				
11. Illinois	15	April 1, 9, 10, 11, 15, 16, 17, 21, 25, 27, 28, 29, 30; May 4, 5	M	"We are still climbing on our curve and I just talked to you about how that's a slowing climb, which is a good thing, but we are still on this side of the peak and I'm hoping there's not a plateau."				
12. Iowa	3	April 6, 9, 20	F	"You are our warriors, and we can't win this fight without you. Thank you for being the best self."				
13. Kansas	2	April 3, 10	F	"I also must think about the economic challenges I know will be waiting once we get to the other side"				
14. Kentucky	5	April 5, 6, 9 15, 22, 28	M	"We have sacrificed too much. We have flattened this curve and saved so many lives. Let's not stop now."				
15. Louisiana	7	April 6, 9, 14, 16, 23, 30; May 4	M	"We still have more than our fair share of deaths because we're not as healthy as we should be."				
16. Maryland	7	April 3, 7, 10, 17, 20, 24, 29	M	"The result is a well thought out, gradual, safe, and effective path forward for the people of our state."				
17. Massachusetts	12	April 2, 3, 6, 8, 15, 16, 21, 23, 28, 29, 30; May 4	M	"It's important for people to find a way to get back to something and it looks like a new normal, but it's got to be done safely. I can't emphasize this enough, the timing on this needs to be based on data."				
18. Michigan	12	April 2, 6, 9, 13, 15, 17, 20, 24, 27, 29; May 1, 4	F	"Throughout this crisis, I have been having regular Zoom calls with various essential workers across our state. I wanted to thank them and I wanted to listen to them and ask them what I can do to help them."				
19. Minnesota	3	April 5, 6, 20	M	"It is a hard, cold reality, one that far exceeds the reality of Minnesota's harshest winters."				
20. Mississippi	2	April 2, 7	M	"We're going to make sure that you get what you were entitled to because it's not your fault."				
21. Missouri	1	April 22	M	"It is Missouri data that I'm going to make decisions on, not some prediction."				
22. New Jersey	20	April 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 21, 22, 23, 25, 27, 30; May 1, 5	M	"There is no price too high for us to try to save every life we can. This is again a war. We are in a war."				
23. New Mexico	1	April 30	F	"This is painful that we have such grave economic losses and impacts. Incredibly painful."				
24. New York	32	April 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29; May 1, 3, 4, 5	M	"These decisions we have to make without emotion and we have to make them on the facts and I'm not going to be swayed this week by this one and now the next week by the other one. Make the decisions on the facts, make the decisions on the numbers."				
25. North Carolina	4	April 3, 7, 28, 30	M	"We're going to rely on the data and we're going to rely on the facts in order to make decisions."				
26. Ohio	18	April 1, 2, 3, 6, 7, 9, 13, 14, 16, 17, 20, 22, 23, 28, 30; May 1, 4, 5	M	"To be able to do this and to continue to move forward in the way that we want to do and not have to backtrack I need your help. I don't think it's going to be hard."				

Table 4 (continued)

State	#	Dates of briefings		Quote
27. Pennsylvania	2	April 9, 22	M	"So we recognize that we are far away from where we need to be I apologize for the inconvenience."
28. Rhode Island	1	April 13	F	"I am confident that by working together and sharing our best ideas, we will be more likely to get it right."
29. South Carolina	1	April 6	M	"So we must be aggressive in going after this virus, but we must seek to do as little damage."
30. South Dakota	3	April 6, 17, 23	F	"You do not have to go through this alone. Don't hesitate to reach out to me personally, to reach out to my family because they are in the same boat many times and feel the same feelings that you all do."
31. Tennessee	3	April 3, 14, 24	M	"We're just beginning to understand. It's too soon to say with certainty what's going to happen, for sure."
32. Texas	9	April 3, 6, 8, 10, 13, 17, 21, 27; May 5	M	"The important thing to achieve mitigation is to ensure that people do comply with the standard."
33. Utah	1	April 30	M	"Be careful as you travel in where you go and what you do. This is no time for us to relax."
34. Virginia	11	April 1, 6, 10, 13, 15, 17, 24, 27, 29; May 1, 4	M	"And as I have said so often, we came in as Virginians strong to COVID-19, and we will put this in our rear view mirror. We will come out of it even stronger."
35. Washington	7	April 1, 7, 13, 16, 21, 29; May 5	M	"Small acts are what wins a war. That's how you win wars. There are millions of small heroic actions."
36. West Virginia	1	April 6	M	"It's sad and it's not good enough, but we just have to deal with it this pandemic is really rough stuff."
37. Wisconsin	1	April 6	M	"Frankly, there is no good answer to this problem. I wish it were easy."
38. Wyoming	1	April 8	M	"We need to consider the common good of all people, not just our fellow Christians."

by governors were altered by the third-party transcription, this can impact results. Also, the LIWC does not understand sarcasm. These limitations are somewhat mitigated by the large number (1.2 million) of words analyzed. Relatedly, because the quantitative and qualitative analyses were derived from two data sources, we cannot test a model in which empathy and confidence mediate the impact of sex on COVID-19 deaths within the same model of influence.

Our data were publicly available; thus, we tested gender according to biological sex. Our research question, though, draws from literature on social roles and social cognition, both of which are mediated by psychosocial processes. For this reason, men can also exhibit traditionally feminine qualities (Ely & Padavic, 2007; Mensi-Klarbach, 2014) because gender roles emerge from an individual's activities throughout role development (Eagly, Wood,

& Diekman, 2000). Therefore, not all women have different leadership styles from all men (Hoobler et al., 2018).

Practical Implications

We cannot control state election results nor sex of the governor. However, consistent with Post and Byron (2015), our findings underscore that states with a women governor are not just "tokenism" (p. 1562) or a "numbers game" (p. 1563) as we found women governors cultivated empathy and confidence more in their COVID-19 briefings than did men governors. The juxtaposition of these findings with prior research underscores the need to value different leadership voices and to build a culture of inclusion in which varied voices are heard and valued.

Table 5 Means, Standard Deviations, and Correlations of Governor Briefing Transcript LIWC Scores

Variable	M	SD	1	2	3	4	5	6	7
1. Governor sex ^a	_	_							
2. Governor political affiliation ^b	0.03	0.51	03						
3. Governor age	58.53	13.38	29^{\dagger}	.02					
4. Feelings	0.23	0.07	.46**	28^{\dagger}	15				
5. Confidence	1.49	0.39	.28 [†]	27^{\dagger}	.06	.24			
6. Death	0.11	0.09	29^{\dagger}	13	.14	09	05		
7. Money	0.94	0.56	.34*	19	.21	.18	.16	41^{*}	
8. Work	3.91	1.03	.48**	08	.02	.20	.10	42**	.83**

Note. LIWC = Linguistic Inquiry and Word Count.

 $[^]a$ 0.5 = female, -0.5 = male. b 0.5 = Republican, 0 = Independent, -0.5 = Democrat. $^\dagger p < .10.$ $^* p < .05.$ $^{**} p < .01.$

In the absence of women governors or women organizational leaders during a crisis, effort can be put forth to diversify leadership teams with individuals who show empathy and confidence. In organizations, these attributes could be enhanced with training or selected during hiring (Gibson, 2004). Most organizations still have hierarchical structures (Donkin, 2010); thus, organizing seminars or adopting hiring criteria appears relatively straightforward.

Women's leadership in public office is more prone to be moderated by sociocultural context. For example, women who express empathy versus men who express empathy are more readily accepted in many societies, but embracing confidence from women leaders is a tougher sell in some cultures (Bandura, 1995, 2006). For this reason, implementing a program to unobtrusively change gendered stereotypes at a societal level is easier said than done. For example, research on subtle forms of prejudice (see Sergent & Stajkovic, 2019 for a review) suggests that simply discussing gender issues increases the salience of gender prejudice. Thus, in addition to calling for needed change, following up with constructive conversations is needed to sift through ways in which preconceived views about gender stereotypes can be updated.

Conclusion

COVID-19 was an exogenous shock that dramatically affected individuals, organizations, and societies. We leveraged this lifeand-death pandemic to reexamine the growing postulate in the literature that women seem to be more effective leaders than men in a crisis. We focused on U.S. governors for they face extraordinary leadership trials during COVID-19. In addition to decisionmaking under uncertainty, governors need to reassure and persuade state residents to volitionally follow through on the orders, even when they come with rare personal costs-for example, social distancing. We found that states with women governors had fewer COVID-19 deaths than states with men governors, and when governors issued an early stay-at-home order, states with women governors were more responsive, as borne out by fewer COVID-19 deaths. The qualitative analysis indicated a potential mechanism for that effect may be that women governors were more empathetic and confident, as shown in their briefings. Beyond the COVID-19 crisis, the gender leadership dynamics discussed and examined herein are likely to unfold when uncertainty permeates business and society.

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