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Human dimensions in water crisis management: Gender bias in water manager appraisals and implications for water decision-making

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Abstract

Climate change increases water crises' frequency and intensity, requiring more effective solutions and water management. Environmental scholars have found gender-diverse teams make more sustainable, efficient, and equitable solutions. However, women remain under-represented in water management, hindering effective decision-making. Further, water crisis communications carry inextricable mortality reminders: In a water crisis, access to a life-sustaining resource is threatened. Terror Management Theory stipulates that these mortality reminders activate predictable human responses to assuage the anxiety from thinking about our own demise, responses that include strengthening ingroup identities and distancing from outgroups. These responses may exacerbate gender biases already present in homogeneous management contexts, potentially limiting effective water management outcomes. We empirically tested effects of (a) a standard mortality reminder, (b) a water crisis reminder, and (c) a painful but non-life-threatening control reminder on judgements of same- or different-gender water managers. Ambivalent sexism (a framework consisting of hostile and benevolent sexism subcategories) was included as a moderator variable, revealing significant interacting effects based on participants' benevolent sexism levels. Benevolent sexism (BS) stems from the belief that women need to be protected by men, creating prejudiced behaviours that may appear protective but in actuality harm gender equity. We found (a) water crisis reminders evoked responses similar to the standard mortality reminders and (b) significant interacting effects emerged regarding existential threat, benevolent sexism, and decision-makers' gender. Specifically, control group males rated the water manager more positively, regardless of gender; male participants higher in BS rated the woman water manager more positively, regardless of reminder condition; and female participants lower in BS rated the woman water manager less positively in the threat reminder conditions. Reasons for these outcomes are explained alongside implications for effective water management. Thus, water crisis communications, mortality

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reminders, and sexism can influence gender bias in water management, negatively influencing sustainable water outcomes.

1.0 Introduction

As water mismanagement intensifies the climate crisis, worsening flooding and drought risks and posing dire threats to people of all genders, water-related decision makers remain disproportionately men [1–5]. Water crises are complex and hard-to-predict, yet outcomes require deliberate, collaborative, interdisciplinary decision-making [6]. Despite male-dominance at the top of water decision-making hierarchies in both the Global North and South [1–4,7], the most effective solutions for complex climatic problems require decision-maker diversity [8–13]. Beyond water, gender and leadership scholars find persistent gender homogeneity in top management across sectors: men are typically the majority in top decision-making and management contexts [14,15]. Further, even when some women *are* present, gender and other intergroup biases (based on group identity) may prevent these minority members from being heard [16], considered valuable, or viewed as influential compared to dominant male counterparts [17,18]. This limits opportunities for more equitable [8], innovative [19,20], and effective environmental solutions [10–13,21]. Yet, the influence of gender bias in water management remains underexplored.

Complicating water decision-making dynamics further is the persistent, threatening climate and water messaging that can trigger psychological responses to assuage existential, mortality anxieties. Psychological responses to these threats, detailed in Section 1.2, include ingroup preference and outgroup othering that undermine diversity efforts [22–25]. Decades of social psychology research on Terror Management Theory (TMT) demonstrate that mortality threats can exacerbate intergroup biases [26–28]. Yet the influence of threatening water reminders remains underexplored in TMT and water communication research, despite water's essential role in human survival, myriad water-related catastrophes connected to climate change, and the desperate need for decision-maker diversity in this space [29,30].

Bridging largely disparate fields – climate, existentialism, and social psychological sciences – we investigated how mortality reminders may impact intergroup gender biases related to appraisal of female versus male water managers. To examine how ingroup gender bias may present in water decision-making contexts, we tested the influence of a typical mortality reminder and a water crisis reminder on evaluations of female versus male water decision-makers. The typical mortality reminder used to evoke mortality salience (MS) in TMT studies involves two questions asking the participant to think about their own death (see Section 2.2.2). Our water crisis reminder involved the same questions but about drowning rather than death. Given the established male-dominance in top water decision-making and management roles [31], men's appraisal of female decision-makers was our primary focus, with a larger sample size; exploratory analyses also tested women's decision-maker appraisals.

Our data extend research on human responses to existential threats (e.g., within TMT) and on how mortality reminders may contribute to gender bias and influence decision-making, heeding calls from climate scholars to pay critical attention to water crises and responses [32] and from leadership scholars to fill behavioral gaps in the literature [33].

First, we outline foundations of current water crisis research, required solutions, and water management practices as a rationale for our water focus. Second, we discuss gender, gender biases, and their role in decision-making, particularly within water management. Third, we briefly describe TMT's principles, human response to existential threats, and related impacts on gender bias and group decision-making.

1.1 Climatic water crises management

Water availability and quality are central concerns for human life in a changing climate, both threatened by predicted extreme weather conditions [29,30]. Although technical solutions (e.g., water infrastructure, sanitation, desalination) have been previously prioritized [34,35], water scholars increasingly understand water crises as unique governance and management challenges, due to climatic and physical boundary uncertainties [36,37]. This shift in thinking has increased demand for collaborative, transdisciplinary, intersectional water management and solutions [38,39]. Scholars argue that diverse, collaborative groups are required for these water solutions [40–43]. Gender diverse decision-making groups make more pro-environmental and equitable decisions [9,44–46], which generate more innovative and creative water solutions [34,35,47]. Here, gender diverse groups mean those with similar numbers of women and men as research on alternate gender identity groupings is lacking. To address complex water crises, diverse input is required to identify, develop, and implement effective water solutions. When underrepresented groups are absent from these discussions, their insights are unheard and their needs often go unmet, exacerbating the harms they face [8,12,16,21].

Whereas much gender-water literature focuses on the Global South [48,49], our research focused on the Global North (or Western societies), recognizing that the power and resources here are needed for making positive changes to water management. Northern water decisions also affect the South, as water privatization companies based in the Global North increasingly expand into the South [50]. Lastly, the Global North offers clear opportunities to improve water-related decision-making. For example, over 100 Indigenous reserves remain under boil water advisories in Canada [48,49] and water contamination concerns persist in the U.S. (e.g., Flint, MI; [49]).

1.1.1 *Workplace gender bias and diversity in water management.*

Although the diversity required to obtain optimal water solutions could and should include various identity intersections (e.g., race, class, age), here we focused on gender.

We focused on gender as the powerful few in water decision-making are mostly men; women are largely absent in water management and leadership roles [3,4,51–53]. For example, in water utilities – responsible for safe drinking water and wastewater transportation and treatment – only 23% of managers are women [3]. The Global North treats water management as a highly technical field [34,54], with increasing reliance on technology for monitoring, control, and treatment, and this is not viewed as stereotypical women's work [55,56].

In addition to gendered stereotypes around the *type* of work entailed in water management, persistent *leadership* stereotypes can be a barrier for women entering management roles [14,57,58]. Conventional leadership roles are often viewed as requiring stereotypically masculine, agentic traits of assertiveness, dominance, and competitiveness, which contradict entrenched societal expectations around female behaviors [59,60]. Women who act agentically – often associated as good leadership behavior for men – are viewed more *negatively* and are rated as *poor* leaders, in part because women are expected societally to display more communal traits – being gentle, sensitive, and nuturing [61,62]. This negative appraisal is especially prominent in male-dominated fields, such as engineering [63], where water management often falls. However, business scholars argue that transformational leadership, which relies on collaborative, communal traits and interpersonal skills – qualities typically associated with and a style more often displayed in women [64] – is what leads to improved environmental outcomes from both employees and by the leaders' organization overall [65–67].

Increasing groups' gender diversity is not easy and, at times, can lead to unintended negative outcomes [68]. For example, analyses linking more women on corporate boards to increased board performance may overlook reverse causation if firms that are performing well have additional resources to hire and support women in higher roles [69]. In addition, a solo woman or marginalized group member hire is unlikely to feel valued or to impact group decisions, as they will often be viewed as an outgroup [70]. Such complexities do not negate goals to address representation or inclusion concerns, but should be acknolwedged to be an 'honest knowledge broker' who considers their role and that of science in evidence-based policy and decision-making [69,71].

Social psychology scholars have found abundant evidence of gender bias in workplaces, particularly for women in management or leadership [59]. This workplace bias stems in part from gender role incongruity [72], whereby women are presumed to take on stereotypically feminine roles – those that are caring, nurturing, or requiring communal skills – and face biases or criticism when they enact gender incongruent roles – those thought to require masculine traits, such as assertiveness and competition [14,73].

Although gender stereotypes regarding water work and leadership may explain some of women's absence from these decision-making spaces, an inextricable aspect of human psychology remains. Within social psychology, TMT scholars have demonstrated how mortality reminders and awareness – also termed mortality salience – influence gender stereotypes and ingroup biases. Management and organizational behavior scholars have called for inclusion of TMT insights [74] and initial studies have findings applicable to workplace dynamics [75–77], discussed further below. In addition, the founding premise for the current work, water-specific TMT researchers have found that drowning reminders evoked MS similarly to traditionally used mortality reminders [78]. Our psychosocial defenses to these threats, explained below, may help explain lacking diversity – in both ideas and perspectives – in water management [79].

1.2 Terror management theory: Human response to existential threat

All humans know their lives will one day cease; the existential dread evoked by this awareness activates psychological defenses to push this anxiety aside [80–83]. However, these defenses can trigger unconscious biases against those seen as others – whether of different gender, race, or other social identity [26–28]. Over 30 years of social psychological research has aided in TMT development and validation [80,81,84]. A brief TMT overview is provided, detailing gender bias intersections, before we describe its potential applications in water crisis decision-making and our research.

TMT scholars have identified predictable human responses to mortality reminders that serve to temper the existential anxiety that these reminders induce [85,86]. Specifically, explicit, direct mortality reminders (e.g., thinking about one's death, attending a funeral, experiencing another's death) evoke *proximal* defenses; we deny our vulnerability or mortality, distract ourselves from the reminder, or rationalize that we are not at risk [86]. When mortality reminders are more subtle or indirect (e.g., the word 'death' flashed subliminally or a delay follows a proximal mortality reminder, allowing it to exit focal attention), *distal* defenses occur; people seek to boost their self-esteem by more vigorously supporting their worldviews and those who are aligned with their values, distancing from those who are different, and supporting 'hero-projects' that will outlast their own physical existence [86]. In sum, proximal defenses serve to minimize the mortality threat while distal defenses provide ways in which we may symbolically survive.

Distal defenses were our focus due to the ingroup preference and outgroup derogation – or intergroup biases – that can occur. Prior TMT scholars have found mortality reminders increase ingroup preference regarding political opinions [87,88], religion [83], race [89], nation [90,91], societal norms [82], and gender [92]. Recent TMT work has identified that climate change reminders can serve as mortality reminders, instigating similar anxiety defenses as traditional death-related stimuli [24,93–96]. Water crises were explicitly tested in prior research and found to activate death thoughts similarly to traditional mortality reminders [78]. Thus, when water, a life-sustaining resource, is threatened, subtle mortality reminders may activate these intergroup biases to bolster self-esteem and ensure ingroup survival.

Prior TMT-gender research is presented briefly below to illustrate potential gender biases that can occur from such reminders.

1.2.1 ***Terror management theory and gender.*** Gender identity is a component of self-identity and self-esteem [97,98]; following distal mortality reminders, one may seek to strengthen positive connections with gender identity to protect their self-esteem, potentially resulting in ingroup gender bias [99,100]. In male-dominated groups, mortality awareness can activate ingroup preferences, leading men to prefer other men and to dislike women, as observed by Hoyt et al. [76] and Arndt et al. [99], resulting in gender discrimination. Due to preexisting gender and societal stereotypes (e.g., role congruity theory [72]), this reaction can increase gender equity challenges in homogeneously gendered spaces.

This MS-related gender bias repeats in leadership appraisals where gender stereotype threats may occur. Women are often viewed negatively when they occupy roles traditionally seen as masculine or participate in men-dominant groups [14,60,72,99]. Business-focused TMT researchers explored the impact of MS on stereotype and ingroup-gender bias effects [100]. These scholars found that when mortality was salient (vs. not), women preferred the woman candidate, and men preferred the man candidate – a clear indication of ingroup biases. In Hoyt et al.'s [76] second study, the more stereotypically agentic candidate was preferred regardless of gender when mortality was salient – though men preferred only agentic-men candidates, not agentic-women candidates [100]. Further, MS can increase use of agentic leadership traits when participants define an effective leader [77]. MS has also been shown to increase preference for charismatic leaders and decrease preference for relationship-oriented leaders [101]. These altered preferences may increase bias against those who do not display these attributes (e.g., women) in existentially threatening scenarios. This bias is particularly troubling when we consider that transformational leaders are those needed for improved environmental outcomes [102]. If agentic traits are preferred following mortality reminders, people may be predisposed to leaders who may 'look the part' but may not necessarily be best suited to providing effective, equitable climate solutions [8,9,45].

1.3 Mortality, gender bias, and water decision-making

Given the potential for water crises to activate mortality anxieties and reinforce stereotypical gender biases in leadership roles, hindering decision-maker diversity and optimal water outcomes, in this study we examined how mortality reminders influence perceptions of women versus men in decision-making. After establishing that our specific life-threatening water reminder about drowning effectively evoked MS relative to a control prompt in an earlier study [78], here we compared the influence of a typical mortality reminder and this life-threatening water reminder of drowning (relative to a control message) on appraisal of a fictional "water manager" woman versus a fictional "water manager" man, among a sample of educated (e.g., with post-secondary education) adult men. The education constraint was important to correlate with approximate education level of water managers. Men were chosen as our focal group due to their hierarchical dominance in water-related decision-making and positions of power, as described above. We made no hypotheses for the women participants in this investigation, so our corresponding women sample was treated as exploratory. We hypothesized that if typical or drowning-related MS increased ingroup gender bias, men exposed to MS would rate a decision-making man more positively than a decision-making woman, than in a control condition (described below). Decision-makers in this study were not explicitly described as leaders, so we did not expect stereotype threat effects from gender role incongruity to outweigh ingroup bias effects (preferring one's own gender). We included a measure of ambivalent sexism [103] to capture further insights on individual differences in sexist attitudes that might predict potential gender biases. We expected that participants in typical MS or drowning MS interventions would score higher on this sexism measure than those in the control condition due to activated ingroup gender biases.

2.0 Materials and methods

2.1 Ethics statement

The research was approved by the Office of Research Ethics at the University of Waterloo (ORE #42726) and participants provided informed, written consent to participation online and re-consented to their data usage after learning the full study purpose.

2.2 Participants

We recruited 656 adult participants from the United States and Canada (161 women, 495 men; aged 18–75) from September 5–November 2, 2022, via Prolific, an online crowd-sourcing platform, to complete an approximately 20-minute survey for about $3.25 CAD. The sample size, with its implied stopping rule, was determined to balance desired power (.95 to detect medium effect size of $d = .25$ at.05 alpha error probability) and resource availability (e.g., financial constraints within the research budget). Men were the focal group, so were recruited at a 3:1 ratio to women. Enrollment was limited to participants with (a) a minimum bachelor-level education to approximate experience to those in water management roles and (b) Prolific approval ratings over 90% to ensure quality responses as recommended for online research [104].

Prolific automatically screened out responses when attention checks failed, surveys timed out, or there was evidence of non-human activity, removing 8 women and 33 men. Our exclusion criteria (e.g., incomplete intervention prompts, responses >3 *SD*s from mean) did not identify any additional removals, yielding final samples of 153 women and 453 men.

2.3 Procedure and design

We employed a randomized between-subjects 3 (Intervention: typical MS vs. drowning MS vs. control) x 2 (Vignette decision-maker gender: woman vs. man) preregistered study design, displayed graphically in Fig A in S1 Text, with a delay between the mortality-related and gender manipulations. Our pre-registration is available at https://osf.io/x2vab/?view_only=4bd8a4c757bb4f5f85cd7105a5235829.

2.3.1 ***Cover survey and delay tasks.*** Participants were first presented a cover survey to mask study purpose and avoid inadvertently priming all participants with mortality [105]. This survey is commonly used to bolster the cover story in TMT research [105,81]. As per standard TMT research procedures [94,106,105], to extend the delay period and allow MS to activate distal defenses, participants completed three delay tasks: The Positive and Negative Affect Schedule (PANAS; [107]), Rosenberg Self-Esteem Measure [108], and State-Trait Anxiety Inventory [109]. Prior TMT researchers have found that longer delays (e.g., > 5 minutes) strengthen defense effects [110].

2.3.2 ***Independent variables.*** Participants were then randomly assigned to one of three intervention groups (Supplementary Materials 2: Control, Typical MS, Drowning MS) and asked two, open-ended questions regarding physical and emotional experiences of an event, modeled after the Mortality Attitudes Personality Survey (MAPS; [82]). The control event was an anxiety-inducing but non-life-threatening painful dental visit, used as the control in roughly two-thirds of TMT studies [81,105], the typical MS group described their own death, while the water-specific MS group described drowning, a scenario that successfully evoked MS in a prior study [78].

Following the delay, participants were randomly assigned to read one of two vignettes (Text A in S1 Text) describing a water-related decision made by either ‘Jennifer’ or ‘John’, cuing the respective decision-maker identities of woman versus man. This naming difference elicited significant gender biases in appraisals a candidate described as a woman versus man in past research where ‘Jennifer’ was deemed less competent and offered a lower salary in a hypothetical hiring scenario compared to identically qualified ‘John’ [111]. Similarly, our vignettes were identical in all ways other than name and pronouns used throughout the text.

We investigated appraisals of others based on their presumed gender as evidenced via names and pronouns in the vignette. Given the psychosocial factors involved in judgements about others, where people are often viewed as the gender they present or perform [112], we addressed gender (as an expression of identity; [98,113]) rather than sex (based on one’s physical body or genitalia). We also included self-disclosure for transgendered, non-binary, and gender-non-conforming identities, but few participants (<1%) disclosed these identities.

2.3.3 ***Dependent variables.*** After reading the vignette, participants rated their positive or negative perceptions of the decision-maker on both “Likeability” (16 items) and “Competence” (12 items). These measures, adapted from social psychology and leadership studies [27,101,114], included items such as “I agree that the decision-maker is friendly”, “I

would enjoy working with the featured decision-maker", and "I trust the decision-maker" rated on Likert scales. Factor and correlational analyses indicated that these measures were highly related in both samples (r_{male} = .67 & r_{female} = .73, *p*s < .001), with almost identical *p*atterns of results. As such, we deviated from pre-registration for parsimony by combining the scales into one "Positivity" measure with excellent reliability in both samples (Cronbach's α_{male} = .93; α_{female} = .96). Beforehand, we rescaled the 5-point "Competency" scale to an 8-point range (like "Likeability") so the two measures had matched minima and maxima, suitable for averaging together (see Text B in S1 Text).

2.3.3 ***Moderating and demographic variables.*** Ambivalent sexism was measured via the Ambivalent Sexism Inventory (ASI [103]; Text C in S1 Text), which includes 22 items rated on a Likert scale from 0 to 5. This well-validated and widely used sexism measure (see [115] for a comprehensive review) assesses both hostile and benevolent sexism (HS and BS). HS originates from patriarchal society ideals, leading women to be viewed as inferior, and BS from female reproductive roles, leading to preference for traditional values and roles for women [103,116]. For example, in a Turkish sample, high HS individuals view women managers less positively than men [117]. The ASI has been used in prior TMT studies [118,119]. We also collected participants' demographic information (e.g., age, gender, location, education).

3.0 Results

As described in preregistration, after data cleaning (e.g., removal of outliers and/or erroneous responses), general linear models (GLMs) with orthogonal planned contrasts were used to test differences across conditions (e.g., interventions) for all dependent variables. Contrasts and reasons for their use are summarized in Table B in S1 Text.

Data were analyzed via linear regression with the GLM procedure in SPSS 28. We used pre-registered orthogonal contrasts to test hypothesized effects of interventions, decision-maker gender, and their interactions (see Table B in S1 Text for contrast details). When intervention effects were tested for influence on appraisal of specific decision-maker gender, focal gender was dummy coded as the reference group and follow-up models explored effects for the non-focal gender (Table 2, simple effects). Exact *p* values were reported, and effect size expressed as η^2_p. Table 2 displays unstandardized regression estimates (*b*) and *SE*. Unless specifically indicated, age and education did not significantly moderate appraisal scores.

3.1 Descriptive Statistics

Participant distributions into experimental conditions and means are shown in Table 1. Most participants had a master's degree or higher (90% of male sample, 95% of female sample) and their ages ranged from 20 to 71 years (M_{male} = 40; M_{female} = 41).

Bivariate correlations for dependent variables are displayed in Table C in S1 Text. Planned analyses of the male sample then exploratory analysis of the female sample are reported below.

3.2 Condition effects among male participants

Positivity scores are shown by intervention condition and decision-maker gender in Fig B in S1 Text.

Planned contrast GLMs tested condition differences. A significant effect of the Threat versus Control contrast emerged for positivity (*b* = -.10, *SE* = .05, *t*(1, 447) = -2.07, *p* = .039, η^2_p = .009), indicating that after a mortality or drowning threat, decision-makers (regardless of gender) were rated significantly less positively (by 0.29 points, 95% CI: -0.56, -0.02) than the control.

Analysis of ASI as a dependent variable revealed no effects so we deviated from preregistration to analyze each ASI subscale as a predictor, consistent with their conceptualization and operation primarily as stable individual difference variables [103,115]. Thus, HS (*M* = 1.82, *SD* = 1.19) and BS (*M* = 2.14, *SD* = 0.98) were mean-centred and added as moderators in separate models. The HS moderation model showed no evidence of interaction effects. BS significantly interacted with DM Gender (*b* = .15, *SE* = .07, *t*(1, 447) = 2.27, *p* = .024, η^2_p = .012, see Fig 1) and the Threat versus Control contrast (*b* = -.10, *SE* = .05, *t*(1, 447) = -2.08, *p* = .039, η^2_p = .010, see Fig 2).

Table 1. Participant counts and decision-maker positivity by condition.

	Male participants			Female participants		
	Decision-maker			Decision-maker		
Condition	**Jennifer**	**John**	**Total**	**Jennifer**	**John**	**Total**
Count	*n*	*n*	*n*	*n*	*n*	*n*
Control	71	58	129	26	29	55
Typical MS	66	69	135	29	21	50
Drowning MS	92	97	189	20	27	47
Total	229	224	453	75	77	152
Positivity	*M* (*SD*)					
Control	4.76 (1.50)	4.79 (1.25)	4.77 (1.39)	4.60 (1.35)	3.99 (1.46)	4.28 (1.43)
Typical MS	4.62 (1.34)	4.25 (1.44)	4.43 (1.40)	4.52 (1.41)	4.37 (1.32)	4.46 (1.36)
Drowning MS	4.64 (1.30)	4.44 (1.17)	4.54 (1.23)	4.75 (1.43)	4.09 (1.27)	4.37 (1.38)
Total	4.67 (1.40)	4.47 (1.29)	4.57 (1.33)	4.61 (1.38)	4.13 (1.35)	4.37 (1.38)

Note. MS = mortality salience. Jennifer and John were the respective female and male decision-maker names.

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We probed these interactions among men higher versus lower in BS (±1 *SD* from the mean [120]; see Table 2). Men higher in BS showed significant simple effects of decision-maker gender ($b = .25$, $SE = .09$, $t(1, 447) = 2.81$, $p = .005$, $\eta^2_p = .018$) – rating women (vs. men) decision-makers more positively (.50 points higher, 95% CI: 0.15, 0.85) – and of the Threat versus Control contrast ($b = -.20$, $SE = .07$, $t(1, 447) = -3.05$, $p = .002$, $\eta^2_p = .021$) – rating decision-makers more negatively (by.61 points, 95% CI: -1.00, -0.22) after MS. No significant effects emerged among lower-BS men (all $ts < 1$; see Table 2).

3.3 Condition effects among female participants

For female participants, initial planned contrast results showed significant effects of decision-maker gender for positivity ($b = .24$, $SE = .11$, $t(1, 147) = 2.10$, $p = .037$, $\eta^2_p = .029$).

We again explored mean-centred HS ($M = 1.07$, $SD = 1.00$) and BS ($M = 1.62$, $SD = 0.93$) as potential moderators. For positivity ratings, a significant three-way interaction (see Table 2) indicated that BS moderated the Threat x DM Gender interaction ($b = .21$, $SE = .08$, $t(1, 147), = 2.48$, $p = .014$, $\eta^2_p = .042$). As such, higher and lower BS were probed. Among higher-BS women, only one marginally significant (simple) effect emerged (see Table 2): Women (vs. men) decision-makers were rated marginally higher (by 0.54 points, $b = .27$, $SE = .15$, $t(1, 147) = 1.79$, $p = .075$, $\eta^2_p = .022$).

Among lower-BS women, however, a significant Threat x DM Gender simple interaction ($b = -.23$, $SE = .11$, $t(1, 147) = -2.16$, $p = .033$, $\eta^2_p = .032$) indicated that MS effect on positivity varied based on decision-maker gender (see Fig 3), so we decision-maker gender was dummy-coded to test MS simple effects specific to men or women decision-makers among lower-BS women. MS did not affect ratings of men decision-makers ($b = 0.19$, $SE = 0.15$, $t(1, 147) = 1.25$, $p = .215$, $\eta^2_p = .011$). Conversely, for ratings of women decision-makers, a marginally significant simple effect for the Threat versus Control contrast emerged among lower-BS women ($b = -.28$, $SE = 0.16$, $t(1, 147) = -1.80$, $p = .075$, $\eta^2_p = .022$), such that women decision-makers were rated 0.84 points more negatively (95% CI: -1.76 – 0.08) after MS reminders than control instructions.

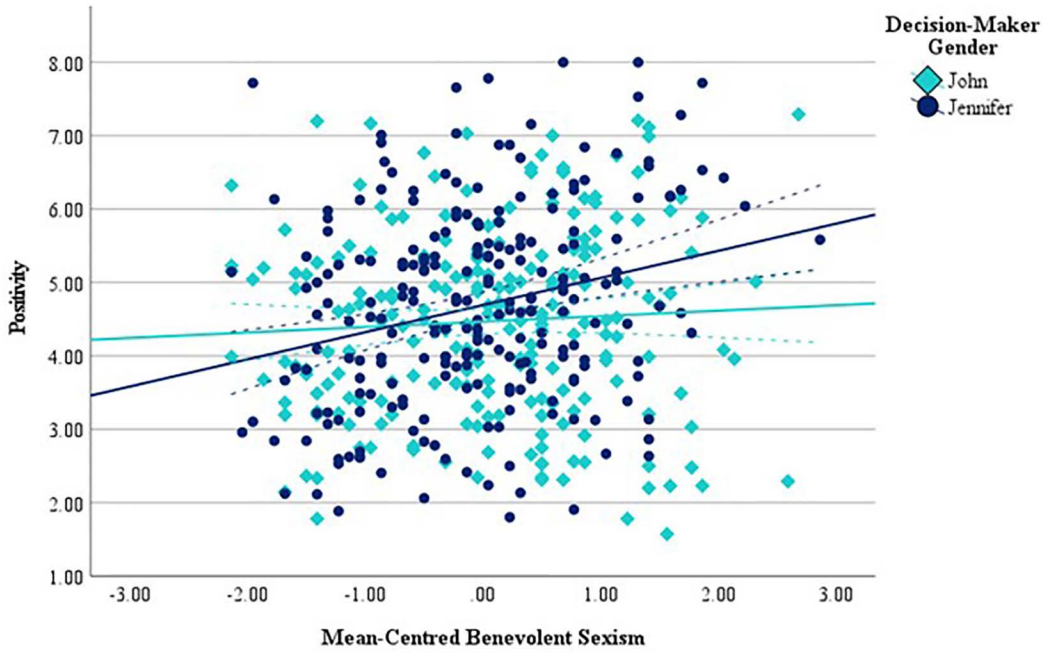

Fig 1. Male participants' positivity ratings of women (Jennifer) Versus Men (John) water decision-makers by benevolent Sexism. Women (but not men) decision-makers were rated more positively by those with higher benevolent sexism scores. Dashed lines indicate 95% confidence bands.

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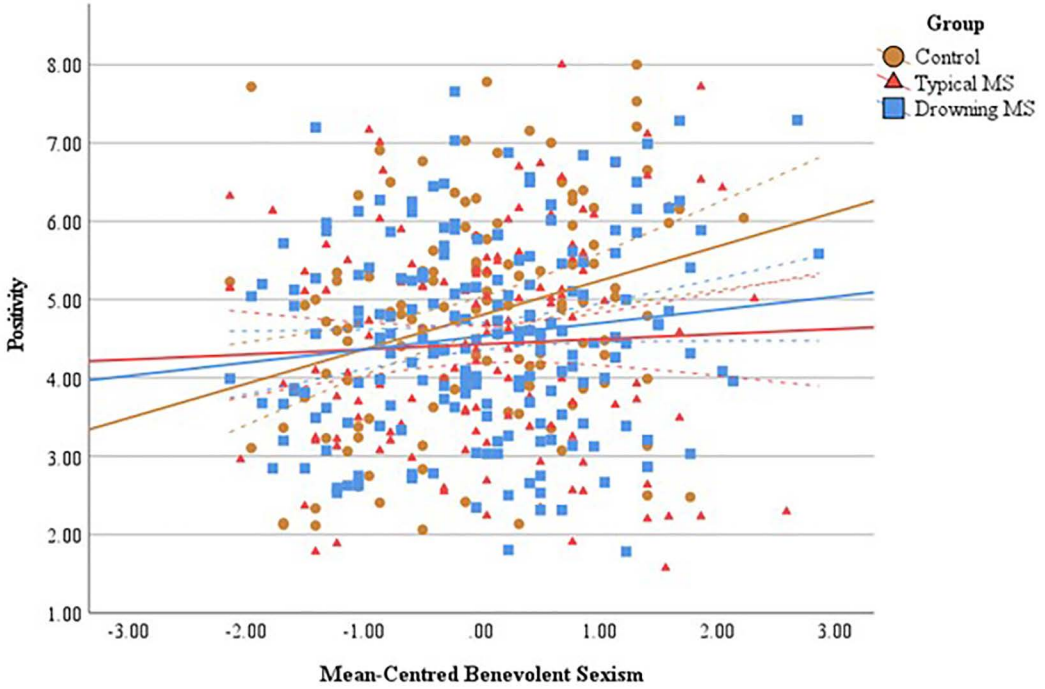

Fig 2. Male participants' positivity ratings by intervention condition and benevolent sexism. Dashed lines indicate confidence bands (95%).

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Table 2. Base model and benevolent sexism moderation of positivity ratings by sample.

	Male sample		Female sample	
	b	***SE***	***b***	***SE***
Base model (with contrast coding)				
Threat (1) vs. Control (-2)	-.10*	.039	.05	.078
MS (-1) vs. Drowning (1)	.05	.075	-.02	.141
DM Gender: Woman (1), Man (-1)	.09	.063	.24*	.113
Threat × DM Gender	.05	.046	-.04	.078
MS vs Drown × DM Gender	-.04	.075	.13	.141
Benevolent sexism (BS) moderation model				
Threat vs. Control	-.11*	.046	.03	.075
MS vs. Drowning	.04	.074	-.03	.136
DM Gender	.11†	.063	.22*	.109
Threat × DM Gender	.04	.046	-.04	.075
MS vs Drown × DM Gender	-.05	.074	.10	.136
BS	.24**	.064	.38**	.116
Threat vs. Control × BS	-.10*	.048	.09	.084
MS vs. Drowning × BS	.05	.075	.07	.139
DM Gender × BS	.15*	.065	.06	.116
Threat × DM Gender × BS	.01	.048	.21*	.084
MS vs Drown × DM Gender × BS	-.06	.075	-.02	.139
Effects at higher BS				
Threat vs. Control	-.20**	.067	.12	.109
MS vs. Drowning	.09	.103	.04	.186
DM Gender	.25**	.089	.27†	.153
Threat × DM Gender	.04	.067	.16	.109
MS vs Drown × DM Gender	-.10	.103	.09	.186
Effects at lower BS				
Threat vs. Control	-.01	.064	-.05	.108
MS vs. Drowning	.00	.105	-.10	.190
DM Gender	-.04	.088	.16	.154
Threat × DM Gender	.03	.064	-.23*	.108
MS vs Drown × DM Gender	.01	.105	.12	.190

Note. MS = mortality salience; DM = decision-makers. Higher/lower BS = ±1 *SD* from mean.

†p ≤.10. * p ≤.05. ** p ≤.01.

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4.0 Discussion

Overall findings are explained below, organized by sample, first discussing general positivity results before considering BS influence on positivity ratings and susceptibility to threat conditions. We then connect findings to theoretical and practical implications for diversity efforts within water crisis management.

4.1 Male participants: overall decision-maker appraisal and benevolent sexism

Contrary to our prediction that appraisal of women decision-makers would be more negative in threat conditions, we found no such interactions among male participants. Instead, significant overall MS effects on positivity emerged, discussed below.

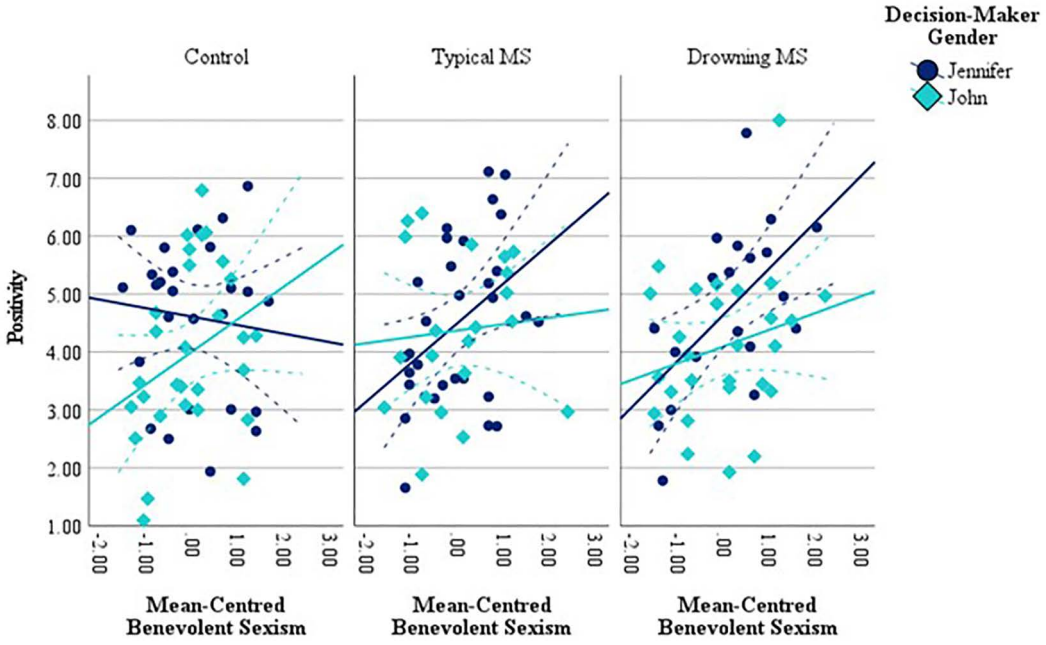

Fig 3. Significant Three-Way Interaction of Intervention, Decision-Maker Gender, and Benevolent Sexism on Positivity Ratings Among Female Participants. Dashed lines indicate confidence bands (95%).

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4.1.1 ***Threat effects on decision-maker appraisal.*** Following typical and drowning MS, decision-makers regardless of gender were rated marginally less positively by male participants. Plausibly, participants may have seen these decision-makers as outgroups, thus rating decision-makers more negatively (than in the control) to create psychological distance from a threatening other to offset mortality anxieties. Although participants had similar (or higher) education levels to water managers and decision-makers, we did not specifically recruit participants working in water sectors (or ask participants to imagine themselves as working in this sector). If participants were instead limited to water managers or had been led to consider the decision-makers as part of their ingroup (as in, with some shared interest), perhaps decision-makers would have been rated more favorably after mortality reminders, as observed in other TMT [121,122] and intergroup bias research [123,124].

4.1.2 ***Benevolent-sexism-specific findings among male participants.*** Our investigations of variation in participants' BS yielded several moderation findings. First, among higher-BS men—but not lower-BS men—appraisal positivity differed for the man versus woman decision-maker. Specifically, we found that higher-BS men rated the woman decision-maker more positively, regardless of condition (e.g., control, mortality, drowning). As seen in Fig 1, ratings of only 'Jennifer' (not 'John') as a decision-maker increased with higher BS.

A possible explanation for this result comes from gender-social psychology literature. These scholars have identified that women are often rated more favorably than men in general, a concept referred to as the "women-are-wonderful" (WAW) effect [125,126]. This effect aligns with the content of BS, which involves an expectation that women are kind, gentle, and agreeable [126]. Plausibly, this WAW effect may have outweighed any underlying intervention differences, suggesting opportunities for subsequent research. With a larger sample size or alternate wording, intervention differences might be more evident. Further, highly favorable ratings of women among men higher in BS may not persist when women occupy gender-incongruent roles, such as management or leadership, where such communal traits are not stereotypically valued. For instance, if the decision-maker had been explicitly described as a leader or in a top managerial position,

outcomes may have been more negative for women decision-makers due to gender role incongruity [72]. Importantly, BS correlates with positive attitudes towards women [103]. This correlation does not mean BS is harmless: It represents beliefs that women should remain in stereotypically traditional care-taking and domestic roles, with men maintaining dominion over women [103]. In addition, management scholars have found that BS can prevent women from being assigned challenging but important skill-development tasks, reducing opportunity for promotion and leadership [127]. Further, social psychologists have found that while higher BS predicts stronger support for workplace equity policies, support persists only for policies that funnels women into stereotypically feminine positions [128]. Thus, depending on how men viewed women – whether they believed women belong in traditional, nurturing roles – influenced their appraisal of the woman water decision-maker. Again, it must be emphasized that positive appraisal does not translate to equitable treatment at work if women are well-liked but not respected and rewarded for their achievements [129,130].

Our second BS-specific finding among male participants was that BS significantly moderated overall effects of the threat conditions (e.g., mortality, drowning) versus control condition on positivity ratings. Higher-BS participants may have sought to distance themselves from the decision-maker, regardless of decision-maker gender, working in a role related to an existential threat as a strategy to avoid mortality anxieties. Thus, rating the decision-maker more negatively allowed them to deny mortality risk and keep death anxiety at bay. Similar to the results observed for decision-maker gender, effects of threat condition emerged only among male participants higher (but not lower) in BS.

4.2 Female participants: overall decision-maker appraisal and benevolent sexism

Analyses of our smaller female sample were exploratory, so we did not hypothesize expected appraisal outcomes, yet compelling findings emerged and are discussed below.

4.2.1 ***Benevolent-sexism-specific findings among female participants*****.** Considering BS, a significant Threat x DM Gender x BS interaction transpired. Intriguingly, lower-BS women showed effects that were originally predicted to occur among men. Lower-BS women rated women, but not men, decision-makers marginally less positively in threat conditions (typical mortality or drowning) than the control. That this effect would emerge specifically among women lower (not higher) in BS may initially seem puzzling, given that lower-BS women may be less gender congruent themselves (reducing likely backlash against other women in gender-incongruent roles). Indeed, in prior research, women's BS was related to disapproval of agentic women [131]. However, lower-BS women have been found to hold women in leading roles (a group historically facing barriers) to higher, more exacting standards [132]. In our vignette, the woman decision-maker chose financial savings over improved environmental outcomes, potentially contradicting expectations held by lower-BS peers for women in leadership to uphold higher standards for moral behavior [132]. This contradiction may have evoked harsher appraisals.

4.3 Water-specific mortality threat influence on decision-maker appraisal

A central goal of our research was to determine whether water-specific MS effects on decision-maker appraisal resembled those of typical MS – that is, we wanted to determine whether water threats would influence our participants' appraisals of decision-makers in similar ways to a typical mortality threat. Although we observed aforementioned threat effects relative to the control condition (see 4.1.1), drowning MS did not emerge as more or less potent than typical MS. This aligns with prior empirical exploration of MS in water crisis communication [78,133] and TMT-Climate research more broadly (see: [94]). As such, water crisis communicators – whether communicating water crises to the general public or within water policy – should consider implications of both generic and water-specific threatening language in decision-making as this can influence how decision-makers may be viewed and, thus, what actions may or may not result. In scenarios where gender role incongruency may evoke gender stereotypes, such as when increasing involvement of underrepresented leaders or managers in water management, problem framing and language choice warrants consideration lest MS further exacerbate existing gender biases.

4.4 Implications for terror management theory and gender

Our findings contribute to TMT, gender role theory, and their intersection. Some but not all findings supported prior TMT and gender studies research. We found MS effects to be moderated by BS for (a) higher-BS men's appraisal of decision-makers and (b) lower-BS women's appraisal of female decision-makers. Potential explanations for convergence and divergence are provided below, considering timing and recent TMT critiques, before discussing connections to leadership and management literatures. Water management specific implications are discussed in Section 4.5.

First, MS may have been influenced by study recruitment timing (2021–2022), amid an ongoing pandemic, recognized as a society-wide mortality reminder [134,135]. Elevated ambient MS could have diminished comparisons between threat and non-threat (control) conditions. A non-pandemic study might detect stronger MS effects, perhaps even outweighing the WAW effects observed here to trigger stronger intergroup biases, as found in prior TMT research [23,28,91,136–138].

Importantly, the relatively modest MS effects ($\eta^2_p < .01$ among male participants; reversed and non-significant among female participants) in our high-powered study can contribute additional evidence to current debates surrounding TMT. Recent meta-analyses [139,140] of large-scale MS replication experiments have added key null effects to TMT literature and revised the average TMT effect size estimate downward to $r = 0.18$ [141]; our pre-registered experiment stands to strengthen the scientific record by clarifying *when* and *for whom* (in our study, based on BS levels) predictions derived from TMT may or may not replicate.

Further research into gender-specific appraisal differences following mortality threats would provide necessary insights into gender biases exacerbated by MS and thus influencing climate and water decision-making. For example, Florian et al. [142] found that MS caused gender-congruent girls and boys to prefer interacting with other gender-congruent peers more than those who were gender incongruent, while those who were gender incongruent preferred gender-incongruent others. Due to various stereotypes and norms regarding women in decision-making roles, such as incongruent gender roles and human responses to existential threats that can magnify these stereotypes, our findings indicate that judgements made about decision-makers under threat lead to complex psychosocial reactions. This has significant, meaningful implications for water management, water policy, and gender equity efforts. By examining implicit sexism factors, particularly BS, we can detect patterns relevant to real-world decision-making and management scenarios. Improved understanding of TMT and gender role implications within realistic-but-threatening decision-making scenarios may help clarify how to best increase diversity in these spaces.

4.5 Implications for water crisis practitioners

Our findings and literature review suggest an arduous path to increasing diversity and equity in water management for more sustainable outcomes. We first present leadership applications (as significant power lies in these positions), followed by workplace connections, and then suggest options for tackling gender biases in these contexts.

We respond to calls for increased behavioral research within leadership theory [33]. We argue that greater gender diversity – and specific attention to benevolent presentations of ambivalent sexism – is needed in high-ranking positions to obtain more effective, durable, and widely applicable solutions to impending water crises. With diverse leaders, more versatile, innovative, and effective water solutions can serve the needs of many [143,144].

To achieve gender inclusion, workplace culture must also be transformed to support women, particularly in spaces like water management that have been frequently dominated by men [145]. Despite increased education and recruitment rates for women in traditionally male-dominated fields, women's attrition rates persist, and women less often progress to management and leadership positions [57,146]. Several organizational and cultural factors contribute to these attrition rates. Workplaces often lack sufficient childcare accommodations (while women remain predominant caregivers in households [147,148]) and organizations with few women in leadership roles lack non-male role models and have limited training, mentorship, and sponsorship opportunities for women [57,146,149]. In addition to remedying these issues, our findings suggest that strategies that address BS in the workplace would be beneficial given the effects we found for both

higher-BS men and lower-BS women. BS, as a component of ambivalent sexism, is less obvious than HS because the latter more often manifests in overtly misogynistic acts or statements that individuals can readily perceive, address, or avoid [115,150]. Counter to our initial predictions, we did not find that men rated women (vs. men) water managers more negatively in the threat conditions specifically; however, the observed tendency for men with higher BS scores to evaluate water managers differently merely based on their name (Jennifer or John) points to the persistence of gender bias. Again, that higher-BS men in this instance evaluated women more positively than men does not ensure equitable workplace treatment. For example, social psychological research indicates that in male-dominated occupations, female leaders are penalized more harshly than their male counterparts for mistaken decisions [151]. As such, incorporating BS-aware equity strategies may help to foster gender diversity among management and leadership, particularly in fields like water crisis management where bias-exacerbating mortality threats are common.

Lastly, while our participants held similar education levels to water managers, testing these patterns among actual decision-makers and leaders would provide valuable insights for enhanced water solutions. Still, our findings indicate that gender biases and implicit, ambivalent sexism modify appraisal of same- and different-gender decision-makers. Fortunately, strategies exist to limit harmful biases and increase cooperation among diverse decision-making groups. For example, increased intergroup contact – more interaction with individuals from different groups – decrease prejudice and outgroup derogation [124,152]. Identifying similarities among group members also reduced bias in studies by psychologists [153] and TMT scholars specifically [27]. Recent research on allyship has shown that *proactive* allyship (e.g., demonstrating inclusion before biased behaviors occur, such as including underrepresented groups on projects they might not be otherwise), even more than *reactive* allyship (responding to biased behavior after or as it happens), effectively reduces discrimination felt by underrepresented employees [145]. Water managers should incorporate such strategies when seeking to increase diversity among decision-makers. These changes may be difficult and complex, but the benefits to sustainable, equitable water outcomes are worthwhile and urgently needed [40–43].

5.0 Conclusion

Climate change will increase water crises – in turn, increasing mortality awareness – and require effective, pro-environmental, impactful solutions that provide water security for all. Environmental scholars have shown diverse decision-making groups are well-equipped for these solutions, so water management must make equity and diversity in decision-making a priority. Our research responds to calls to fill water gaps in climate change recommendations [32] and behavioral gaps in leadership studies [33]. We have shown how life-threatening topics can impact decision-maker appraisals through activated mortality anxieties, which in turn can determine whose voices are heard, whose ideas are valued, and, ultimately, what solutions are implemented. Group dynamics are complex; our results show gender dynamics, particularly BS, within typically men-dominant settings only add to this complexity. Given the potential – if not likelihood – for gender and intergroup biases to influence decisions in water crisis management, increased mortality saliency with more potent climate change consequences, and the perhaps impossibility of removing mortality reminders, diversity efforts in these workplaces must be intentional and strategic. For instance, diversity strategies that emphasize differences can fail to engage or motivate those with (and without) power [154]. Rather, efforts that stress similarity, collective goals, proactive allyship, and interaction with different others have been effective for improving inclusion. Empirically supported strategies to minimize intergroup biases should coincide with attention to retaining underrepresented groups. Though our initial research focused on gender in water management, other identity intersections are necessary to consider within water decision-making and are worth incorporating in future research [155]. To ensure such diversity is obtainable and equitable, intergroup biases that occur at individual and structural levels within water management – and other homogeneous spaces – must be addressed. A broader, nuanced understanding of water crises – and potential solutions – is possible with greater diversity at decision-making tables.

Supporting information

S1 Text. Supporting information list of legend. Fig A. Visual representation of study procedure. Table A. Prompt and condition-specific phrasing. Text A. Water decision-making vignette. Text B. Decision-maker positivity measure. Text C. Ambivalent Sexism Inventory (Glick et al., 1996). Table B. Planned contrasts and explanations. Table C. Bivariate correlations by sample. Fig B. Mean positivity ratings by condition among male participants.
(DOCX)

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References

1. Adams EA, Juran L, Ajibade I. 'Spaces of Exclusion' in community water governance: A feminist political ecology of gender and participation in Malawi's urban water user associations. Geoforum [Internet]. 2018;95(July):133–42. Available from: https://doi.org/10.1016/j.geoforum.2018.06.016
2. International Water Association. The untapped resource: Gender and diversity in the water workforce [Internet]. 2016. Available from: http://www.iwa-network.org/wp-content/uploads/2016/08/The_Untapped_Resource_screen.pdf
3. World Bank Group. Women in water utilities. Breaking barriers. Washington, DC: World Bank Group. 2019.
4. Zwarteveen M. Questioning masculinities in water. Econ Polit Wkly. 2011;46(18):40–8.
5. United Nations Environment Programme. Progress on implementation of Integrated Water Resources Management. 2024.
6. Vörösmarty CJ, Green P, Salisbury J, Lammers RB. Global water resources: vulnerability from climate change and population growth. Science. 2000;289(5477):284–8. https://doi.org/10.1126/science.289.5477.284 PMID: 10894773
7. Jalal I. ADB Briefs: Women, water, and leadership [Internet]. Manila; 2014. Available from: https://www.adb.org/sites/default/files/publication/150953/women-water-and-leadership.pdf
8. Hannagan RJ, Larimer CW. Does gender composition affect group decision outcomes? Evidence from a laboratory experiment. Polit Behav. 2010;32(1):51–67.
9. Cook NJ, Grillos T, Andersson KP. Gender quotas increase the equality and effectiveness of climate policy interventions. Nature Climate Change. 2019;9(4):330–4.
10. Li J, Zhao F, Chen S, Jiang W, Liu T, Shi S. Gender diversity on boards and firms' environmental policy. Bus Strategy Environ. 2017;26(3):306–15.

11. Nadeem M, Bahadar S, Gull AA, Iqbal U. Are women eco-friendly? Board gender diversity and environmental innovation. Bus Strat Env. 2020;29(8):3146–61. https://doi.org/10.1002/bse.2563
12. Lu J, Herremans IM. Board gender diversity and environmental performance: An industries perspective. Bus Strat Env. 2019;28(7):1449–64. https://doi.org/10.1002/bse.2326
13. Orazalin N, Baydauletov M. Corporate social responsibility strategy and corporate environmental and social performance: The moderating role of board gender diversity. Corporate Social Responsibility and Environmental Management. 2020;27(4). https://doi.org/10.1002/csr.1860
14. Heilman ME, Eagly AH. Gender stereotypes are alive, well, and busy producing workplace discrimination. Ind Organ Psychol. 2008;1(4):393–8.
15. Majumdar R, Weber EU. Multilevel intergroup conflict at the core of climate (in)justice: Psychological challenges and ways forward. WIREs Climate Change. 2023;14(5). https://doi.org/10.1002/wcc.836
16. Tuggle CS, Sirmon DG, Borgholthaus CJ, Bierman L, Bass AE. From Seats at the Table to Voices in the Discussion: Antecedents of Underrepresented Director Participation in Board Meetings. J Management Studies. 2021;59(5):1253–83. https://doi.org/10.1111/joms.12778
17. Diehl AB, Stephenson AL, Dzubinski LM, Wang DC. Measuring the invisible: Development and multi-industry validation of the Gender Bias Scale for Women Leaders. Hum Resour Dev Q. 2020;31(3):249–80.
18. Stoddard O, Karpowitz CF, Preece J. Strength in Numbers: A Field Experiment in Gender, Influence, and Group Dynamics. Bonn. 2020.
19. Chen S, Ni X, Tong JY. Gender Diversity in the Boardroom and Risk Management: A Case of R&D Investment. J Bus Ethics. 2015;136(3):599–621. https://doi.org/10.1007/s10551-014-2528-6
20. Díaz-García C, González-Moreno A, Sáez-Martínez FJ. Gender diversity within R & D teams: its impact on radicalness of innovation. Innovation: Management, Policy and Practice. 2013;15(2):149–60.
21. Rao K, Tilt C. Board Composition and Corporate Social Responsibility: The Role of Diversity, Gender, Strategy and Decision Making. J Bus Ethics. 2015;138(2):327–47. https://doi.org/10.1007/s10551-015-2613-5
22. Fritsche I, Cohrs JC, Kessler T, Bauer J. Global warming is breeding social conflict: The subtle impact of climate change threat on authoritarian tendencies. J Environ Psychol. 2012;32(1):1–10.
23. Uhl I, Klackl J, Hansen N, Jonas E. Undesirable effects of threatening climate change information: A cross-cultural study. Group Processes & Intergroup Relations. 2017;21(3):513–29. https://doi.org/10.1177/1368430217735577
24. Akil H, Robert-Demontrond P, Bouillé J. Exploitation of mortality salience in communication on climate change. Recherche et Applications en Marketing (English Edition). 2018;33(1):2–29. https://doi.org/10.1177/2051570717745839
25. Uenal F, Sidanius J, Roozenbeek J, van der Linden S. Climate change threats increase modern racism as a function of social dominance orientation and ingroup identification. J Exp Soc Psychol. 2021;97(September):104228.
26. Castano E, Yzerbyt V, Paladino MP, Sacchi S. I belong, therefore, I exist: ingroup identification, ingroup entitativity, and ingroup bias. Pers Soc Psychol Bull. 2002;28(2):135–43.
27. Giannakakis AE, Fritsche I. Social identities, group norms, and threat: On the malleability of ingroup bias. Pers Soc Psychol Bull. 2011;37(1):82–93.
28. Harmon-Jones E, Greenberg J, Solomon S, Simon L. The effects of mortality salience on intergroup bias between minimal groups. Eur J Soc Psychol. 1996;26(4):677–81.
29. Gosling SN, Arnell NW. A global assessment of the impact of climate change on water scarcity. Clim Change. 2016;134(3):371–85.
30. Caretta MA, Mukherji A, Arfanuzzaman M, Betts RA, Gelfan A, Hirabayashi Y. Water. In: Pörtner HO, Roberts DC, Tignor M, Poloczanska ES, Mintenbeck K, Alegría A, editors. Climate Change 2022: Impacts, Adaptation and Vulnerability Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 6th ed. New York: Cambridge University Press. 2022. p. 551–712.
31. World Bank Group, Global Water and Sanitation Partnership. Women in water utilities. Breaking barriers. Washington, DC: World Bank Group. 2019.
32. Douville H, Allan RP, Arias PA, Betts RA, Caretta MA, Cherchi A, et al. Water remains a blind spot in climate change policies. PLOS Water. 2022;1(12):e0000058. https://doi.org/10.1371/journal.pwat.0000058
33. Banks GC, Woznyj HM, Mansfield CA. Where is "behavior" in organizational behavior? A call for a revolution in leadership research and beyond. Leadership Quarterly. 2021.
34. Ajami NK, ThomsponBHJr, Victor DG. The Path to Water Innovation. Stanford Woods Institute for the Environment. Washington, DC; 2014.
35. Elledge M, Parker A, Toolaram A, Stoner B. A Gender Lens into Sanitation Technology Innovation. J Manage Eng. 2020;36(4). https://doi.org/10.1061/(asce)me.1943-5479.0000775
36. Pahl-Wostl C, Knieper C. The capacity of water governance to deal with the climate change adaptation challenge: Using fuzzy set qualitative comparative analysis to distinguish between polycentric, fragmented and centralized regimes. Global Environmental Change. 2014;29:139–54.
37. Babuna P, Yang X, Tulcan RXS, Dehui B, Takase M, Guba BY. Modeling water inequality and water security: The role of water governance. J Environ Manage. 2023;326:116815.
38. Pahl-Wostl C, Knieper C, Lukat E, Meergans F, Schoderer M, Schütze N. Enhancing the capacity of water governance to deal with complex management challenges: A framework of analysis. Environ Sci Policy. 2020;107:23–35.

39. Gleick PH. Transitions to freshwater sustainability. Proc Natl Acad Sci U S A. 2018;115(36):8863–71. https://doi.org/10.1073/pnas.1808893115 PMID: 30127019
40. Bhattarai B, Upadhyaya R, Neupane KR, Devkota K, Maskey G, Shrestha S, et al. Gender inequality in urban water governance: Continuity and change in two towns of Nepal. World Water Policy. 2021;7(1):30–51. https://doi.org/10.1002/wwp2.12052
41. Imburgia L, Osbahr H, Cardey S, Momsen J. Inclusive participation, self-governance, and sustainability: Current challenges and opportunities for women in leadership of communal irrigation systems. Environ Plan E Nat Space. 2021;4(3):886–914.
42. Powell N, Kløcker Larsen R, De Bruin A, Powell S, Elrick-Barr C. Water Security in Times of Climate Change and Intractability: Reconciling Conflict by Transforming Security Concerns into Equity Concerns. Water. 2017;9(12):934. https://doi.org/10.3390/w9120934
43. Pahl-Wostl C, Tàbara D, Bouwen R, Craps M, Dewulf A, Mostert E, et al. The importance of social learning and culture for sustainable water management. Ecological Economics. 2008;64(3):484–95. https://doi.org/10.1016/j.ecolecon.2007.08.007
44. Swim JK, Vescio TK, Dahl JL, Zawadzki SJ. Gendered discourse about climate change policies. Global Environmental Change. 2018;48:216–25. https://doi.org/10.1016/j.gloenvcha.2017.12.005
45. Craft JL. A Review of the Empirical Ethical Decision-Making Literature: 2004–2011. J Bus Ethics. 2012;117(2):221–59. https://doi.org/10.1007/s10551-012-1518-9
46. Ergas C, Greiner PT, McGee JA, Clement MT. Does Gender Climate Influence Climate Change? The Multidimensionality of Gender Equality and Its Countervailing Effects on the Carbon Intensity of Well-Being. Sustainability. 2021;13(7):3956. https://doi.org/10.3390/su13073956
47. Nählinder J, Tillmar M, Wigren C. Towards a gender-aware understanding of innovation: a three-dimensional route. International Journal of Gender and Entrepreneurship. 2015;7(1):66–86. https://doi.org/10.1108/ijge-09-2012-0051
48. Hanrahan M, Mercer N. Gender and water insecurity in a subarctic Indigenous community. The Canadian Geographer/ Le Géographe canadien. 2019;63(2):211–24.
49. Meehan K, Jepson W, Harris LM, Wutich A, Beresford M, Fencl A. Exposing the myths of household water insecurity in the global north: A critical review. Wiley Interdisciplinary Reviews: Water. 2020;7(6):e1486. https://doi.org/10.1002/wat2.1486
50. Laurie N. Gender water networks: femininity and masculinity in water politics in Bolivia. Int J Urban Reg Res. 2011;35(1):172–88.
51. Adams EA, Juran L, Ajibade I. 'Spaces of Exclusion' in community water governance: A Feminist Political Ecology of gender and participation in Malawi's Urban Water User Associations. Geoforum. 2018;95:133–42. https://doi.org/10.1016/j.geoforum.2018.06.016
52. International Water Association. The untapped resource: Gender and diversity in the water workforce. 2016.
53. Cleaver F, Hamada K. Good water governance and gender equity: A troubled relationship. Gend Dev. 2010;18(1):27–41.
54. Lofrano G, Brown J. Wastewater management through the ages: a history of mankind. Sci Total Environ. 2010;408(22):5254–64. https://doi.org/10.1016/j.scitotenv.2010.07.062 PMID: 20817263
55. Wolfe SE. Original Article: Women's "Choices" and Canadian Water Research and Policy: A Study of Professionals' Careers, Mentorship, and Experiential Knowledge. Environmental Practice. 2014;16(1):37–51. https://doi.org/10.1017/s1466046613000550
56. Rap E, Oré MT. Engineering Masculinities: How Higher Education Genders the Water Profession in Peru. Engineering Studies. 2017;9(2):95–119. https://doi.org/10.1080/19378629.2017.1342255
57. Kossek EE, Su R, Wu L. Opting out or pushed out? Integrating perspectives on women's career equality for gender inclusion and interventions. J Manage. 2017;43(1):228–54.
58. Hideg I, Shen W. Why still so few? A theoretical model of the role of benevolent sexism and career support in the continued underrepresentation of women in leadership positions. J Leadersh Organ Stud. 2019;26(3):287–303.
59. C. Klutsey J. Gender Biases against Women in the Workplace. IJBSS. 2020;11(2). https://doi.org/10.30845/ijbss.v11n2a3
60. Hoyt CL, Murphy SE. Managing to clear the air: Stereotype threat, women, and leadership. The Leadership Quarterly. 2016;27(3):387–99. https://doi.org/10.1016/j.leaqua.2015.11.002
61. Eagly AH. Female Leadership Advantage and Disadvantage: Resolving the Contradictions. Psychology of Women Quarterly. 2007;31(1):1–12. https://doi.org/10.1111/j.1471-6402.2007.00326.x
62. Mendelberg T, Karpowitz CF. Women's authority in political decision-making groups. The Leadership Quarterly. 2016;27(3):487–503. https://doi.org/10.1016/j.leaqua.2015.11.005
63. Faulkner W. Doing gender in engineering workplace cultures. I. Observations from the field. Engineering Studies. 2009;1(1):3–18. https://doi.org/10.1080/19378620902721322
64. Eagly AH, Johannesen-Schmidt MC, van Engen ML. Transformational, transactional, and laissez-faire leadership styles: a meta-analysis comparing women and men. Psychol Bull. 2003;129(4):569–91. https://doi.org/10.1037/0033-2909.129.4.569 PMID: 12848221
65. Katz IM, Rauvola RS, Rudolph CW, Zacher H. Employee green behavior: A meta-analysis. Corp Soc Responsibility Env. 2022;29(5):1146–57. https://doi.org/10.1002/csr.2260
66. Burns H, Vaught HD, Bauman C. Leadership for sustainability: theoretical foundations and pedagogical practices that foster change. International Journal of Leadership Studies. 2015;9(1).

67. Zacher H, Kühner C, Katz IM, Rudolph CW. Leadership and Environmental Sustainability: An Integrative Conceptual Model of Multi-level Antecedents and Consequences of Leader Green Behavior. Group & Organization Management. 2024;49(2):365–94. https://doi.org/10.1177/10596011241229891
68. Triana M del C, Miller TL, Trzebiatowski TM. The Double-Edged Nature of Board Gender Diversity: Diversity, Firm Performance, and the Power of Women Directors as Predictors of Strategic Change. Organization Science. 2014;25(2):609–32. https://doi.org/10.1287/orsc.2013.0842
69. Eagly AH. When Passionate Advocates Meet Research on Diversity, Does the Honest Broker Stand a Chance?. Journal of Social Issues. 2016;72(1):199–222. https://doi.org/10.1111/josi.12163
70. Bodenhausen GV, Kang SK, Peery D. Social categorization and the perception of social groups. In: Fiske ST, Macrae CN, editors. The Sage Handbook of Social Cognition. SAGE Publications Ltd. 2012. p. 311–29.
71. Pielke Jr RA. The Honest Broker. Cambridge University Press. 2007.
72. Eagly AH, Karau SJ. Role congruity theory of prejudice toward female leaders. Psychol Rev. 2002;109(3):573–98. https://doi.org/10.1037/0033-295x.109.3.573 PMID: 12088246
73. Sczesny S, Bosak J, Neff D, Schyns B. Gender Stereotypes and the Attribution of Leadership Traits: A Cross-Cultural Comparison. Sex Roles. 2004;51(11–12):631–45. https://doi.org/10.1007/s11199-004-0715-0
74. Stein JH, Cropanzano R. Death awareness and organizational behavior. J Organ Behavior. 2011;32(8):1189–93. https://doi.org/10.1002/job.715
75. Okeukwu-Ogbonnaya A, Amariucai G, Natarajan B, Kim HJ. Towards quantifying the communication aspect of resilience in disaster-prone communities. Sci Rep. 2024;14(1):8837. https://doi.org/10.1038/s41598-024-59192-3 PMID: 38632294
76. Hoyt CL, Simon S, Reid L. Choosing the best (wo)man for the job: The effects of mortality salience, sex, and gender stereotypes on leader evaluations. Leadersh Q [Internet]. 2009 Apr 1 [cited 2023 Apr 18];20(2):233–46. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1048984309000162
77. Hoyt CL, Simon S, Innella AN. Taking a Turn Toward the Masculine: The Impact of Mortality Salience on Implicit Leadership Theories. Basic and Applied Social Psychology. 2011;33(4):374–81. https://doi.org/10.1080/01973533.2011.614173
78. Smith LKM, Wolfe SE. Dead in the water: Mortality messaging in water crisis communication and implications for pro-environmental outcomes. People and Nature. 2023;5(4):1336–52. https://doi.org/10.1002/pan3.10505
79. Wolfe SE, Brooks DB. Mortality awareness and water decisions: a social psychological analysis of supply-management, demand-management and soft-path paradigms. Water International. 2016;42(1):1–17. https://doi.org/10.1080/02508060.2016.1248093
80. Pyszczynski T, Solomon S, Greenberg J. Thirty years of terror management theory: From genesis to revelation. Adv Exp Soc Psychol. 2015;52:1–70.
81. Burke BL, Martens A, Faucher EH. Two decades of terror management theory: a meta-analysis of mortality salience research. Pers Soc Psychol Rev. 2010;14(2):155–95. https://doi.org/10.1177/1088868309352321 PMID: 20097885
82. Rosenblatt A, Greenberg J, Solomon S, Pyszczynski T, Lyon D. Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. J Pers Soc Psychol. 1989;57(4):681–90. https://doi.org/10.1037//0022-3514.57.4.681 PMID: 2795438
83. Greenberg J, Pyszczynski T, Solomon S, Rosenblatt A, Veeder M, Kirkland S. Evidence for Terror Management Theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. J Pers Soc Psychol. 1990;58(2):308–18.
84. Schimel J, Hayes J, Sharp M. A consideration of three critical hypotheses. In: Routledge C, Vess M, editors. Handbook of Terror Management Theory. Elsevier. 2019. p. 1–30. https://doi.org/10.1016/b978-0-12-811844-3.00001-9
85. Kosloff S, Anderson G, Nottbohm A, Hoshiko B. Proximal and distal terror management defenses: A systematic review and analysis. In: Routledge C, Vess M, editors. Handbook of Terror Management Theory. New York: Elsevier Inc. 2019. p. 31–63.
86. Pyszczynski T, Greenberg J, Solomon S. A dual-process model of defense against conscious and unconscious death-related thoughts: an extension of terror management theory. Psychol Rev. 1999;106(4):835–45. https://doi.org/10.1037/0033-295x.106.4.835 PMID: 10560330
87. Weise DR, Arciszewski T, Verlhiac JF, Pyszczynski T, Greenberg J. Terror management and attitudes toward immigrants: Differential effects of mortality salience for low and high right-wing authoritarians. Eur Psychol. 2012;17(1):63–72.
88. Chatard A, Arndt J, Pyszczynski T. Loss Shapes Political Views? Terror Management, Political Ideology, and the Death of Close Others. Basic and Applied Social Psychology. 2010;32(1):2–7. https://doi.org/10.1080/01973530903539713
89. Greenberg J, Schimel J, Martens A, Solomon S, Pyszczynski T. Sympathy for the devil: Evidence that reminding Whites of their mortality promotes more favorable reactions to White racists. Motiv Emot. 2001;25(2):113–33.
90. Nelson TE, Oxley ZM, Clawson RA. Toward a psychology of framing effects. Polit Behav. 1997;19(3):221–46.
91. Castano E. In case of death, cling to the ingroup. Eur J Soc Psychol. 2004;34(4):375–84.
92. Goldenberg JL. A body of terror: Denial of death and the creaturely body. In: Shaver PR, Mikulincer M, editors. Meaning, Mortality, and Choice: The Social Psychology of Existential Concerns. American Psychological Association. 2012. p. 93–110.
93. Wolfe SE, Tubi A. Terror management theory and mortality awareness: a missing link in climate response studies?. WIREs Climate Change. 2019;10(2):1–13.

94. Smith LKM, Ross HC, Shouldice SA, Wolfe SE. Mortality management and climate action: A review and reference for using Terror Management Theory methods in interdisciplinary environmental research. WIREs Climate Change. 2022;13(4). https://doi.org/10.1002/wcc.776
95. Naidu PA, Glendon AI, Hine TJ. Climate change risk and terror management theory. Journal of Risk Research. 2022;26(1):19–36. https://doi.org/10.1080/13669877.2022.2107050
96. Fritsche I, Häfner K. The malicious effects of existential threat on motivation to protect the natural environment and the role of environmental identity as a moderator. Environ Behav. 2012;44(4):570–90.
97. Baron AS, Schmader T, Cvencek D, Meltzoff AN. The gendered self-concept: How implicit gender stereotypes and attitudes shape self-definition. In: Leman PJ, Tenenbaum HR, editors. Gender and Development. East Sussex: Psychology Press. 2014. p. 109–32.
98. Wood W, Eagly AH. Two Traditions of Research on Gender Identity. Sex Roles. 2015;73(11–12):461–73. https://doi.org/10.1007/s11199-015-0480-2
99. Arndt J, Greenberg J, Schimel J, Pyszczynski T, Solomon S. To belong or not to belong, that is the question: terror management and identification with gender and ethnicity. J Pers Soc Psychol. 2002;83(1):26–43. https://doi.org/10.1037//0022-3514.83.1.26 PMID: 12088130
100. Hoyt CL, Simon S, Reid L. Choosing the best (wo)man for the job: The effects of mortality salience, sex, and gender stereotypes on leader evaluations. Leadersh Q. 2009;20(2):233–46.
101. Cohen F, Solomon S, Maxfield M, Pyszczynski T, Greenberg J. Fatal attraction: the effects of mortality salience on evaluations of charismatic, task-oriented, and relationship-oriented leaders. Psychol Sci. 2004;15(12):846–51. https://doi.org/10.1111/j.0956-7976.2004.00765.x PMID: 15563330
102. Nduneseokwu CK, Harder MK. Developing environmental transformational leadership with training: Leaders and subordinates environmental behaviour outcomes. J Clean Prod. 2023;403:136790.
103. Glick P, Fiske ST. The ambivalent sexism inventory: Differentiating hostile and benevolent sexism. J Pers Soc Psychol. 1996;70(3):491–512.
104. Peer E, Rothschild D, Gordon A, Evernden Z, Damer E. Data quality of platforms and panels for online behavioral research. Behav Res Methods. 2022;54(4):1643–62. https://doi.org/10.3758/s13428-021-01694-3 PMID: 34590289
105. Cox CR, Darrell A, Arrowood RB. The method behind the science: A guide to conducting terror management theory research. Handbook of Terror Management Theory. Elsevier Inc. 2018. p. 85–132.
106. Greenberg J, Arndt J, Simon L, Pyszczynski T, Solomon S. Proximal and distal defenses in response to reminders of one's mortality: evidence of a temporal sequence. Pers Soc Psychol Bull. 2000;26(1):91–9.
107. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. J Pers Soc Psychol. 1988;54(6):1063–70. https://doi.org/10.1037//0022-3514.54.6.1063 PMID: 3397865
108. Rosenberg M. Rosenberg Self-Esteem Scale (RSES). 1965.
109. Spielberger CD. State-Trait-Anxiety-Inventory. Redwood, California: Mind Garden Inc. 1977.
110. Steinman CT, Updegraff JA. Delay and death-thought accessibility: a meta-analysis. Pers Soc Psychol Bull. 2015;41(12):1682–96. https://doi.org/10.1177/0146167215607843 PMID: 26443599
111. Moss-Racusin CA, Dovidio JF, Brescoll VL, Graham MJ, Handelsman J. Science faculty's subtle gender biases favor male students. Proc Natl Acad Sci U S A. 2012;109(41):16474–9. https://doi.org/10.1073/pnas.1211286109 PMID: 22988126
112. Butler J. Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory. Theatre Journal. 1988;40(4):519. https://doi.org/10.2307/3207893
113. Heidari S, Babor TF, De Castro P, Tort S, Curno M. Sex and Gender Equity in Research: rationale for the SAGER guidelines and recommended use. Res Integr Peer Rev. 2016;1:2. https://doi.org/10.1186/s41073-016-0007-6 PMID: 29451543
114. Anderson NH. Likableness ratings of 555 personality-trait words. J Pers Soc Psychol. 1968;9(3):272–9. https://doi.org/10.1037/h0025907 PMID: 5666976
115. Supplemental Material for A Systematic Review of the Ambivalent Sexism Literature: Hostile Sexism Protects Men's Power; Benevolent Sexism Guards Traditional Gender Roles. Psychological Bulletin. 2023. https://doi.org/10.1037/bul0000400.supp
116. Glick P, Diebold J, Bailey-Werner B, Zhu L. The Two Faces of Adam: Ambivalent Sexism and Polarized Attitudes Toward Women. Pers Soc Psychol Bull. 1997;23(12):1323–34. https://doi.org/10.1177/01461672972312009
117. Sakalli-Ugurlu N, Beydogan B. Turkish college students' attitudes toward women managers: the effects of patriarchy, sexism, and gender differences. J Psychol. 2002;136(6):647–56. https://doi.org/10.1080/00223980209604825 PMID: 12523452
118. Chonody JM, Teater B. Why do I dread looking old?: A test of social identity theory, terror management theory, and the double standard of aging. J Women Aging. 2016;28(2):112–26.
119. Stiller M, Di Masso A. Queer Terror Management: The effect of death attitudes on gender stereotypes. In: Moffett S, Barrett S, Reid A, editors. Proceedings of the 6th International Conference on Gender Research. Reading: Academic Conferences International Ltd; 2023. p. 224–31.
120. Aiken LS, West SG. Multiple regression: Testing and interpreting interactions. [Internet]. London: Sage Publications, Inc.; 1995 [cited 2023 Jun 25]. Available from: https://psycnet.apa.org/record/1991-97932-000

121. Greenberg J, Simon L, Pyszczynski T, Solomon S, Chatel D. Terror management and tolerance: does mortality salience always intensify negative reactions to others who threaten one's worldview?. J Pers Soc Psychol. 1992;63(2):212–20. https://doi.org/10.1037//0022-3514.63.2.212 PMID: 1403612

122. Motyl M, Hart J, Pyszczynski T, Weise D, Maxfield M, Siedel A. Subtle priming of shared human experiences eliminates threat-induced negativity toward Arabs, immigrants, and peace-making. J Exp Soc Psychol. 2011;47(6):1179–84.

123. Hewstone M, Rubin M, Willis H. Intergroup bias. Annu Rev Psychol. 2002;53:575–604. https://doi.org/10.1146/annurev.psych.53.100901.135109 PMID: 11752497

124. Van Assche J, Swart H, Schmid K, Dhont K, Al Ramiah A, Christ O, et al. Intergroup contact is reliably associated with reduced prejudice, even in the face of group threat and discrimination. Am Psychol. 2023;78(6):761–74. https://doi.org/10.1037/amp0001144 PMID: 36892922

125. Eagly AH, Mladinic A, Otto S. Are Women Evaluated More Favorably Than Men?: An Analysis of Attitudes, Beliefs, and Emotions. Psychology of Women Quarterly. 1991;15(2):203–16. https://doi.org/10.1111/j.1471-6402.1991.tb00792.x

126. Eagly AH, Mladinic A. Are people prejudiced against women? Some answers from research on attitudes, gender stereotypes, and judgments of competence. Eur Rev Soc Psychol. 1994;5(1):1–35.

127. King EB, Botsford W, Hebl MR, Kazama S, Dawson JF, Perkins A. Benevolent sexism at work: gender differences in the distribution of challenging developmental experiences. J Manage. 2012;38(6):1835–66.

128. Hideg I, Ferris DL. The compassionate sexist? How benevolent sexism promotes and undermines gender equality in the workplace. J Pers Soc Psychol. 2016;111(5):706–27. https://doi.org/10.1037/pspi0000072 PMID: 27414234

129. Sunil J. Why mentoring is essential in creating support systems for women. J Int Womens Stud. 2022;24(7):1–7.

130. Schulz DJ, Enslin C. The female executive's perspective on career planning and advancement in organizations: Experiences with cascading gender bias, the double-bind, and unwritten rules to advancement. Sage Open. 2014;4(4).

131. Kahn KB, van Breen JA, Barreto M, Kaiser CR. When is women's benevolent sexism associated with support for other women's agentic responses to gender-based threat?. Br J Soc Psychol. 2021;60(3):786–807. https://doi.org/10.1111/bjso.12441 PMID: 33455018

132. Fernández S, Branscombe NR, Saguy T, Gómez Á, Morales JF. Higher moral obligations of tolerance toward other minorities: An extra burden on stigmatized groups. Pers Soc Psychol Bull. 2014;40(3):363–76.

133. Smith LKM, Wolfe SE. Beyond the watery grave: death and water reminders as (un)expected ways to increase environmental identity. PsyEcology [Internet]. 2025 Feb 9 [cited 2025 Apr 13];16(1):83–116. Available from: https://journals.sagepub.com/doi/full/10.1177/21711976241309249

134. Courtney EP, Goldenberg JL, Boyd P. The contagion of mortality: A terror management health model for pandemics. Br J Soc Psychol. 2020;59(3):607–17. https://doi.org/10.1111/bjso.12392 PMID: 32557684

135. Emanuel L, Solomon S, Fitchett G, Chochinov H, Handzo G, Schoppee T, et al. Fostering Existential Maturity to Manage Terror in a Pandemic. J Palliat Med. 2021;24(2):211–7. https://doi.org/10.1089/jpm.2020.0263 PMID: 32552500

136. Barth M, Masson T, Fritsche I, Ziemer C-T. Closing ranks: Ingroup norm conformity as a subtle response to threatening climate change. Group Processes & Intergroup Relations. 2017;21(3):497–512. https://doi.org/10.1177/1368430217733119

137. Fritsche I, Cohrs JC, Kessler T, Bauer J. Global warming is breeding social conflict: The subtle impact of climate change threat on authoritarian tendencies. Journal of Environmental Psychology. 2012;32(1):1–10. https://doi.org/10.1016/j.jenvp.2011.10.002

138. Giannakakis AE, Fritsche I. Social identities, group norms, and threat: on the malleability of ingroup bias. Pers Soc Psychol Bull. 2011;37(1):82–93. https://doi.org/10.1177/0146167210386120 PMID: 20956355

139. Klein RA, Cook CL, Ebersole CR, Vitiello C, Nosek BA, Hilgard J, et al. Many Labs 4: Failure to Replicate Mortality Salience Effect With and Without Original Author Involvement. Collabra: Psychology. 2022;8(1). https://doi.org/10.1525/collabra.35271

140. Hoogeveen S, Berkhout SW, Gronau QF, Haaf JM, Wagenmakers EJ. Improving Statistical Analysis in Team Science: The Case of a Bayesian Multiverse of Many Labs 4. 2023.

141. Chen L, Benjamin R, Guo Y, Lai A, Heine SJ. Managing the terror of publication bias: A systematic review of the mortality salience hypothesis. J Pers Soc Psychol. 2025;129(1):20–41. https://doi.org/10.1037/pspa0000438 PMID: 40193452

142. Florian V, Mikulincer M, Hirschberger G. Validation of personal identity as a terror management mechanism: evidence that sex-role identity moderates mortality salience effects. Pers Soc Psychol Bull. 2001;27(8):1011–22.

143. DiTomaso N. Why Difference Makes a Difference: Diversity, Inequality, and Institutionalization. J Management Studies. 2021;58(8):2024–51. https://doi.org/10.1111/joms.12690

144. Miller T, Del Carmen Triana M. Demographic Diversity in the Boardroom: Mediators of the Board Diversity–Firm Performance Relationship. J Management Studies. 2009;46(5):755–86. https://doi.org/10.1111/j.1467-6486.2009.00839.x

145. Hall W, Schmader T, Cyr E, Bergsieker H. Collectively constructing gender-inclusive work cultures in STEM. Eur Rev Soc Psychol. 2022;33.

146. Fritz C, van Knippenberg D. Gender and leadership aspiration: The impact of work–life initiatives. Hum Resour Manage. 2018;57(4):855–68.

147. Moreno-Colom S. The gendered division of housework time: Analysis of time use by type and daily frequency of household tasks. Time & Society. 2017;26(1):3–27.

148. Cousins EM. Mobilizing motherhood: The gendered burden of environmental protection. Sociol Compass. 2021;15(5):e12879. https://doi.org/10.1111/soc4.12879 PMID: 35813840

149. Ibarra H. A lack of sponsorship is keeping women from advancing into leadership. Harvard Business Review. 2019.

150. Glick P, Fiske ST. An ambivalent alliance. Hostile and benevolent sexism as complementary justifications for gender inequality. Am Psychol. 2001;56(2):109–18. https://doi.org/10.1037//0003-066x.56.2.109 PMID: 11279804

151. Brescoll VL, Dawson E, Uhlmann EL. Hard won and easily lost: the fragile status of leaders in gender-stereotype-incongruent occupations. Psychol Sci. 2010;21(11):1640–2. https://doi.org/10.1177/0956797610384744 PMID: 20876882

152. Pettigrew TF. Intergroup contact theory. Annu Rev Psychol. 1998;49:65–85. https://doi.org/10.1146/annurev.psych.49.1.65 PMID: 15012467

153. Gaertner SL, Dovidio JF, Nier JA, Banker BS, Ward CM, Houlette M. The Common Ingroup Identity Model for Reducing Intergroup Bias: Progress and Challenges. Social Identity Processes: Trends in Theory and Research. SAGE Publications Ltd. 2012. p. 133–48.

154. Dobbin F, Kalev A. Why Doesn't Diversity Training Work? The Challenge for Industry and Academia. Anthropology Now. 2018;10(2):48–55. https://doi.org/10.1080/19428200.2018.1493182

155. Rice C, Harrison E, Friedman M. Doing justice to intersectionality in research. Cult Stud Crit Methodol. 2019;19(6):409–20.