

## RESEARCH ARTICLE

# Mind the gap: Wise reasoning attenuates gender pay gap scepticism in men

Justin P. Brienza<sup>1</sup> | Anna Dorfman<sup>2</sup>  | D. Ramona Bobocel<sup>3</sup> 

<sup>1</sup>UQ Business School, The University of Queensland, St. Lucia, Australia

<sup>2</sup>Department of Psychology, Bar-Ilan University, Ramat Gan, Israel

<sup>3</sup>Department of Psychology, University of Waterloo, Waterloo, Canada

## Correspondence

Justin P. Brienza, The University of Queensland Business School, Brisbane, Queensland, Australia.  
Email: [j.brienza@uq.edu.au](mailto:j.brienza@uq.edu.au)

Anna Dorfman, Department of Psychology, Bar-Ilan University, Ramat Gan, Israel.  
Email: [anna.dorfman@biu.ac.il](mailto:anna.dorfman@biu.ac.il)

Justin P. Brienza and Anna Dorfman denote equal authorship.

## Abstract

We draw from theory on motivated reasoning to suggest that men would be more prone toward gender pay gap scepticism (PGS) than women because doing so maintains a valued but illusory belief that society is currently fair. Integrating theory on wisdom and *wise reasoning*—a self-transcendent thinking process composed of intellectual humility, contextualism, perspectivism and dialecticism—we also hypothesised that men who engaged in stronger (vs. weaker) wise reasoning about the pay gap would be less prone toward PGS. Two pre-registered studies ( $N = 651$ ) supported the predictions: generally, men were more prone toward gender PGS than women, while wise reasoning tended to attenuate scepticism in men. The patterns of effects remained stable when controlling for income, education, political orientation, and perceptions of the effects of COVID-19 on women's economic and psychological well-being. Our studies pave the way for interventions that alter how people reason about inequities such as the gender pay gap in an effort to create fairer workplaces and societies.

## KEYWORDS

gender pay gap, motivated reasoning, scepticism, wisdom, wise reasoning

## 1 | INTRODUCTION

The *gender pay gap* refers to the global phenomenon that women are still economically disadvantaged relative to men, with only a few nations reporting average percentage differences as low as the single digits (most nations >10%; Aragão, 2023; European Commission, 2020; IZA, 2014; Penner et al., 2023; WGEA, 2021; White, 2021; Xinhua, 2020; Yamaguchi, 2019). Although on the decline overall since the 1980s, the gender pay gap continues to be a persistent and well-documented phenomenon (Aragão, 2023; Oakley, 2000; Terjesen & Singh, 2008; Wang et al., 2019), including in academia (e.g., Wiedman, 2020).

The fact that women are generally worse off economically than men has gradually become more salient with increased scholarship and pub-

lic discourse on the topic over time, as well as the COVID-19 pandemic experience (UN Women, 2021; USGLC, 2022; World Economic Forum, 2021; see also Caprino, 2020). The pandemic clarified that women are not only more likely to receive lower pay and hold more dangerous frontline and service positions (e.g., USGLC, 2022), but they are also more likely to take on a heavier burden than men in terms of caring for children and aging parents, home-schooling and managing household duties (e.g., Escalante & Maisonnave, 2022; Flor et al., 2022).

The causes of the gender pay gap are complex (Ammerman & Groysberg, 2021; Blau & Kahn, 2017; Sayers, 2012) and an examination of them is outside the scope of the current research. However, there is variability in the extent to which people express *gender pay gap scepticism* (henceforth PGS).<sup>1</sup> Thus, the current research aims to better understand whether and when people engage in PGS. This focus is

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2023 The Authors. *European Journal of Social Psychology* published by John Wiley & Sons Ltd.

important because PGS can thwart efforts to achieve fairness. Indeed, when adopted by a large or influential subset of the workforce, PGS can undermine efforts toward gender equity (e.g., increasing representation of women in higher status jobs; see Bugeja et al., 2012; Gupta et al., 2018; Malladi & Mean, 2021) and contribute to discrimination and decreased recognition of structural barriers (Stephens & Levine, 2011). Significant evidence from census and national polls indicates that men are more prone toward PGS than women, although to our knowledge empirical evidence for this claim is surprisingly lacking in the academic literature (Renzulli, 2019; see also Lips, 2016). Thus, in two studies, we aimed to examine whether men are on average more prone toward PGS than women. Importantly, we also aimed to investigate a psychological mechanism—wise reasoning—that may mitigate this tendency.

In this article, we suggest that PGS reflects motivated reasoning (Kunda, 1990), which can explain why men are more prone toward it than women. PGS may function to protect a desired, albeit illusory, worldview that society is fair (e.g., just world beliefs; Lerner, 1980). What might help men overcome this tendency? In philosophy, the ability to see through illusory beliefs and attitudes (e.g., personal biases) has been discussed within theories of wisdom (Glück & Weststrate, 2022; McKee & Barber, 1999). In the present studies, we therefore situate wisdom research within the gender pay gap context to examine whether engaging in *wise reasoning* (Brienza et al., 2018; Grossmann et al., 2010, 2020; Kross & Grossmann, 2012) about the gender pay gap relates to less PGS. Taken together, our research contributes to the psychological and social justice literatures through a novel integration of motivated reasoning theories and theories of wisdom. The results also have practical implications for wise-reasoning interventions that could hasten organisational and societal progress toward gender equality and fairness.

## 2 | THEORETICAL BACKGROUND AND HYPOTHESES

### 2.1 | Motivated reasoning and gender pay gap scepticism

Evidence from several decades of psychology research indicates that people's motives guide their reasoning: reasoning is not “cold” and “purely cognitive.” Rather, it can be used to arrive at and support desired conclusions, regardless of whether those conclusions align with objective evidence (Kunda, 1990). People can choose whether and how they reason based on what they wish to accomplish. Namely, reasoning can be *directional*—skewed toward maintaining or justifying existing beliefs—or it can be *balanced*—used impartially to reveal truth and facts. Examples of directional reasoning include assigning undue weight to evidence that supports one's existing beliefs and selectively ignoring or discrediting unresponsive evidence (e.g., Dawson et al., 2002). People can also use their reasoning to “double down” on desired beliefs even in the face of contradictory evidence. In short, people are

willing and able to engage in “mental gymnastics” (Barclay et al., 2017) to uphold the beliefs that serve their purposes.

Research on motivated reasoning has utility for explaining who might be more prone toward PGS. Some studies support the idea that directional motivated reasoning is coordinated around self-centred or egocentric goals (Epley & Gilovich, 2016), suggesting that a person would be more prone toward PGS if doing so benefits the self in some way. For example, early motivated reasoning studies showed that people adjust their cognitive processes to maintain self-esteem or positive self-concept (e.g., Kunda & Sanitioso, 1989), reduce dissonance between attitudes and behaviour (e.g., Festinger & Carlsmith, 1959; Keller & Block, 1999), see their strengths as more influential in their success than their weaknesses (e.g., Dunning et al., 1989) and support wishful thinking about personal health (Ditto et al., 1988).

Similarly, research has shown that people can deny scientific findings and objective evidence to uphold egocentric goals. In many of the early studies, the results indicated that people are more sceptical of, or outright deny, scientific evidence when such evidence poses a threat to the self. Several studies cited by Kunda (1990) showed that when participants receive evidence from a (purported or actual) scientific study that has negative implications for the self, they are more likely to endorse criticisms of the study (e.g., design flaws; Kunda, 1987; Lord, Ross, & Lepper, 1979; Wyer & Frey, 1983). Recent research supports the notion that concerns about the self can drive motivated scepticism in the form of doubt, critique or denial of considerable scientific evidence (Hornsey, 2020b; Washburn & Skitka, 2018).

In the present research, we suggest that men may be more prone toward PGS than women because, for men, acknowledging its importance can be self-threatening. Acknowledging the importance of the gender pay gap could make salient an unfair societal advantage toward men, which could undermine men's sense of competence or subjective social status. Consequently, men may more likely engage in directional motivated reasoning than women to protect the self. Thus, when presented with information about the pay gap (e.g., in a news article), men may be more prone toward PGS than women.

Importantly, recent scholarship on the psychology of wisdom (e.g., Grossmann et al., 2020) suggests a possible boundary condition for such directional reasoning among men. We argue that wisdom-based reasoning can counteract PGS because it is a more balanced (Brienza et al., 2018) form of reasoning that expands an individual's scope of relevance beyond a myopic focus on the self.

### 2.2 | Wisdom and wise reasoning

The philosophical concept of wisdom goes back thousands of years across different cultures (e.g., see Grossmann & Kung, 2019; Yang & Intezari, 2019). In theory, wisdom involves earnest reflection, motivation to seek truth, seeing through illusion or bias and an orientation toward balance and virtue (e.g., McKee & Barber, 1999; Staudinger & Glück, 2011; Sternberg, 1998). Recent psychological research has conceptualised wisdom as a context-specific process of managing challenges (e.g., Brienza et al., 2018; Grossmann, 2017;

Kristjánsson et al., 2021). This conceptualisation also answers recent calls to apply wisdom pragmatically in organizations and society (Grossmann & Brienza, 2018; Nonaka & Takeuchi, 2011; Rooney & McKenna, 2007; Sternberg, 2001; Sternberg et al., 2019; Sternberg & Karami, 2021). A focus on process implies that wisdom can be developed and improved through training or interventions (Grossmann et al., 2021; Kross & Grossmann, 2012) and provides the foundation for research investigating the actions that people can take to improve how they face daily challenges. Accordingly, the practical aspects of wisdom have drawn attention in applied contexts (e.g., Koetke et al., 2022; Puryear & Gray, 2021), and may be particularly timely in this age of societal uncertainty, misinformation and polarisation (Newport, 2019; Glück & Weststrate, 2022; Grossmann & Brienza, 2018; Hornsey, 2020a; Pennycook et al., 2015).

Researchers have convened on a unified set of reasoning strategies that enhance people's ability to face modern challenges pragmatically with wisdom (Grossmann et al., 2020). Such reasoning integrates *intellectual humility* (i.e., acknowledging the limits of one's knowledge), *contextualism* (i.e., acknowledging the bigger picture and possibility of change), *perspectivism* (i.e., looking at an issue from multiple angles and different perspectives) and *dialecticism* (i.e., searching for collaborative solutions; integrating different interests; Brienza et al., 2018; Grossmann et al., 2020). In contrast to directional motivated reasoning, wisdom-related reasoning (henceforth, *wise reasoning*) is not aimed at bolstering one's own existing or desired beliefs. Rather, by transcending self-centred thinking and integrating contextual evidence and different perspectives, wise reasoning enhances a habitual egocentric view with a broader and more nuanced understanding of situations (Brienza et al., 2018; Grossmann et al., 2020). Wise reasoning therefore enables people to break free from self-centred, biased conclusions to arrive at more objective and balanced point of view that permits amicable resolution of social challenges (Brienza et al., 2021; Glück & Weststrate, 2022).

Emerging research supports the benefits of wise reasoning, showing that it is positively related to more balanced, less biased attitudes and less selfish, more prosocial behaviours. Brienza et al. (2018) found that people who use stronger wise reasoning in their own social and workplace conflicts show less egocentric bias (e.g., bias blind spot—the tendency to see others as more biased than the self; Pronin et al., 2002), less biased attributions (i.e., accepting more equal share of the blame for conflicts) and more balanced conflict resolution style (i.e., both asserting one's own interests and adjusting to the other person's interests). Other studies found that wise reasoning relates to fair and balanced dealings with others, such as higher contribution in public goods games (Grossmann et al., 2017). At the group level, wise reasoning relates to more adaptive, balanced responses to interpersonal conflicts (Dorfman et al., 2021), as well as more charitable behaviours toward disadvantaged outgroups (Brienza et al., 2021).

Importantly, studies have demonstrated that wise reasoning, as a unified multidimensional construct, predicts adaptive outcomes more reliably than any of its constituent parts (e.g., intellectual humility; Brienza et al., 2018). Further, another study specifically tested differences in predictive validity between wise reasoning and perspective

taking alone. This study showed that wise reasoning predicts less bias across different groups, while perspective taking alone does not (Brienza et al., 2021). These findings are in line with wisdom theory and empirical studies that most commonly specify wisdom as a multifaceted construct, for which different components can complement and reinforce each other in practice (Baltes & Staudinger, 2000; Glück & Weststrate, 2022; Grossmann et al., 2020; Kristjánsson et al., 2021). As such, the current research focussed on wise reasoning as an integrated construct (vs. single components, such as perspective taking).

## 2.3 | Integration and hypotheses

In summary, gender PGS can be a form of directional motivated reasoning aimed at protecting the self. As such, we expected that men on average will be more prone toward PGS than women because it may safeguard a satisfying but illusory belief that men are not unfairly advantaged as a social group.

**Hypothesis 1.** Men will be more prone toward PGS than women.

However, because wise reasoning can reveal a more nuanced and balanced viewpoint on an issue and because it involves transcending a myopic egocentric view for a more balanced perspective, we expect that wise reasoning will attenuate the gender difference in PGS.

**Hypothesis 2.** Wise reasoning will be associated with lower PGS in men such that it will attenuate the gender difference in PGS.

We tested our hypotheses in two pre-registered studies (Study 1 pre-registration <https://osf.io/3yxn8>; Study 2 pre-registration <https://osf.io/qzxt4>). In what follows, we focus our report on the pre-registered tests on the focal variables of gender, wise reasoning and PGS. We also report a pre-registered test with participants' general justice beliefs as an outcome variable in Study 1. The data supporting the findings from these studies are available at <https://osf.io/6m95t/files/>. The studies were approved by the Human Research Ethics Board at The University of Waterloo (ORE# 41385).

## 3 | STUDY 1

### 3.1 | Method

#### 3.1.1 | Participants and procedure

We aimed to recruit a minimum of 100 men and 100 women to test the hypotheses, oversampling by 50% (e.g., to account for partial completion and bot-like responses). We recruited 301 North American participants via Amazon's Mechanical Turk (Paolacci & Chandler, 2014) to complete a survey hosted on the Qualtrics platform. We omitted responses from two participants who reported "Other" in response

to our gender identity demographic question and another 54 participants who were flagged prior to data analysis for providing nonsense responses to an open-ended question (see section *News article and open-text response*) as specified in the pre-registration. This left us with a final sample of 245 (95 women;  $M_{\text{age}} = 36.40$ ,  $SD_{\text{age}} = 12.00$ ). Computing sensitivity analysis using G\*Power (Faul et al., 2007) gave us 0.99 power ( $\alpha = .05$ ) to detect a small- to medium-sized interaction effect in a multiple regression. The sample mostly identified as White ( $n = 176$ ), with the remainder identified as Black or African ( $n = 17$ ), Hispanic/Latinx ( $n = 15$ ), East or Southeast Asian ( $n = 21$ ), mixed ( $n = 13$ ), other ( $n = 2$ ) and Aboriginal/Native American ( $n = 1$ ).

As in previous research (Brienza et al., 2021), we first asked participants to reflect on a portion of a news article that presented descriptive information about the gender pay gap (see section *News article*). Then, we assessed the focal constructs (see next section) and collected participant demographic information. Finally, we thanked, debriefed and paid the participants (\$1.75). See the [Supporting Information](#) for all study materials.

## 3.2 | Materials and measures

### 3.2.1 | News article and open-text response

Participants read a brief (~220 words) news article presenting general information about the gender pay gap (see the [Appendix](#)). As our purpose of presenting this information was to engage participants' naturalistic thinking about the topic, we selected and adapted a real BBC article (BBC News, 2019) that provided *general* information. We presented only descriptive information from the BBC article to avoid biasing or polarising participants. The news information pertained to factual information about a median pay gap, namely different pay between middle-ranking men and women in the same companies. We also concealed the source of the article to focus participants on the content of information rather than the source. We restricted participants from moving forward to the next page for at least 20 s to ensure enough time for them to read the information in the article.

To further engage participants' reflection on the topic (and to detect nonsense and bot responses), once the participants indicated having finished reading the article, the next page of the survey asked:

*What are your thoughts about the news story you just read?  
Please write whatever thoughts and feelings come to your  
mind—your responses are anonymous and cannot be linked  
to you personally. We are hoping for at least a few sentences,  
but you can write as much as you like:*

[multi-line text response box]

We conducted content analyses of participants' open-text responses. Specifically, the first authors individually coded the blinded reflections for mentions of PGS (Cohen's  $\kappa = .91$ ). All

disagreements were then resolved via discussion until perfect agreement was reached. See the Supporting Information for full code book. This analysis supported the ecological and construct validity of our gender PGS items: First, it showed variation in people's reactions to the news story as expected and indicated that 21.63% of participants responded with statements similar or identical to our items. Second, the coded PGS in these naturalistic reflections (reported *before participants* saw our PGS items) was strongly correlated with scores on our PGS measure,  $r = 0.70$ ,  $p < .001$ .

### 3.2.2 | Wise reasoning

We used Brienza et al.'s (2018) 21-item Situated Wise Reasoning Scale (SWiS). Participants rated the extent to which they engaged in each of the wise reasoning practices as they reflected on the gender pay gap and the news article (e.g., "Looked for any extraordinary circumstances before forming my opinion"; "Looked for different solutions to the issue") on a 5-point scale (1 = *not at all*, to 5 = *very much*). We calculated the average across all items for an index of wise reasoning ( $\alpha = .94$ ).

### 3.2.3 | Gender pay gap scepticism

We created a set of items to assess participants' levels of PGS in reaction to the news article stimulus. As a starting point in creating these items, we referenced Jost and Kay's (2005) measure of gender-specific system justification. However, in the interest of ecological validity, we also referenced online media and comments sections (e.g., Lips, 2016) to assist in generating item content that would align with the various statements that people make regarding the gender pay gap in real-life discussions. Participants responded to seven items (e.g., "The gender pay gap is an important societal problem," reverse-coded; "On average, women earn less than men," reverse-coded) on sliders from 0 = *very much disagree* to 100 = *very much agree*.<sup>2</sup> We conducted an exploratory factor analysis (maximum likelihood factoring; Promax rotation) on the seven scepticism items, finding a single factor (65.00% variance explained; all items loading  $>0.60$ ). We therefore reverse-coded the relevant items (see the [Appendix](#)) and averaged all items for a composite score PGS, with higher scores indicating greater PGS. Scale reliability was high ( $\alpha = .92$ ), supporting recommendations to use the term "scepticism" as an umbrella term for varying levels of doubt about scientific findings (Haltinner & Sarathchandra, 2021).

### 3.2.4 | Justice beliefs

We included an individual differences measure of justice beliefs (Lucas et al., 2011). The scale included two dimensions—beliefs about justice for others (eight items) and beliefs about justice for the self (eight items). Items were assessed on a 7-point scale (1 = *Strongly disagree* to 7 = *Strongly agree*). We adapted the lead-in to the *others* (vs. self)

subscale to measure *general* justice beliefs (e.g., “People usually receive the outcomes that they deserve”; see the Appendix and the Supporting Information for scale items), as we were interested in people’s beliefs about societal justice in general. Scale reliabilities were high for both justice beliefs—general ( $\alpha = .97$ ) and justice beliefs—self ( $\alpha = .96$ ). For Study 1, we report analysis on the *general* measure in the main text and tests on the *self* measure in the Supporting Information for brevity.

### 3.2.5 | Demographics

Participants provided demographic information on their gender identity (women = 0, men = 1), age, education, income, ethnic identity and political orientation.

### 3.3 | Results and discussion

All analyses in this article were conducted using R software (version 2023.06.1.524). Descriptives and zero-order correlations are presented in Table 1. To test our main pre-registered hypotheses, we conducted a multiple regression analysis with gender (effect-coded), mean-centred wise reasoning and the gender  $\times$  wise reasoning interaction entered as predictors, and PGS as the outcome variable. The model was significant,  $F(3, 240) = 11.898, p < .001, R_{adjusted}^2 = 0.119$ .

In the first step, we found a significant main effect of gender (men:  $M = 36.27, SD = 26.81$ ; women:  $M = 24.19, SD = 21.37$ ),  $B = 12.083, S.E. = 3.258, 95\% CI (5.665, 18.501), t = 3.708, p < .001$ , supporting Hypothesis 1 (H1) that men would be more prone toward PGS than women. We found no main effect of wise reasoning,  $B = -2.382, S.E. = 1.947, 95\% CI (-6.217, 1.453), t = -1.223, p = .222$ . Importantly, the main effect of gender was qualified by a significant gender  $\times$  wise reasoning interaction in the second step of the regression,  $B = -16.879, S.E. = 3.841, 95\% CI (-24.446, -9.313), t = -4.394, p < .001$ , supporting Hypothesis 2 (H2). The interaction remained significant when controlling for demographic variables (age, education, income, political orientation and self-identification as White vs. person of colour),  $B = -15.557, S.E. = 3.513, 95\% CI (-22.478, -8.635), t = -4.428, p < .001$ .

Next, we conducted simple slopes analyses to examine the pattern of the gender  $\times$  wise reasoning interaction. As Figure 1 (left panel) shows, among those who engaged in weaker wise reasoning ( $-1 SD$ ), men showed more PGS than women,  $t = 5.827, p < .001$ . However, wise reasoning negatively predicted PGS among men,  $t = -3.746, p < .001$ , such that the gender difference in PGS was attenuated among participants who engaged in stronger wise reasoning ( $+1 SD$ ),  $t = -0.390, p = .697$ . We also found an unpredicted positive relation between wise reasoning and PGS for women,  $t = 2.625, p = .009$ .

We pre-registered a test of the effects of participant gender, wise reasoning, and their interaction on *general* justice beliefs, and therefore report those tests here (identical test using justice beliefs—*self* as the outcome variable is reported in the Supporting Information). We conducted a multiple regression analysis with gender (effect-coded), mean-centred wise reasoning and the gender  $\times$  wise reasoning inter-

**TABLE 1** Descriptive statistics and correlations for Study 1.

	1	2	3	4	5	6	7	8	9	10
1) Age	Mean (SD)									
	36.42 (12.03)									
2) Education (Med)	-.054									
3) Income (Med)	-.035	.332****								
4) Ethnicity	-.186***	.012	-.002							
5) Political orientation	-.019	-.041	.006	-.0001						
6) Gender	-.193***	.057	.004	.070	.009					
7) SWIS	-.110*	.028	.016	.061	.089	.004				
8) PGS	-.109*	-.042	.039	.069	.426****	.231****	-.076			
9) Justice general	.035	.071	.191***	-.010	.420****	.126**	.179***	.428****		
10) Justice self	.033	.066	.252****	-.059	.260****	.071	.120*	.264****	.759****	
11) Coded PGS	.074	-.114*	-.049	-.085	.253****	.160***	-.246****	.701****	.225	.149***

Note: In the table, we report percentage of participants who expressed any gender pay gap scepticism and correlations with the extent of scepticism expressed (0 = no PGS, 0.5 = implied PGS, 1 = one PGS comment, 2 = two PGS comments, 3 = three PGS comments). Political orientation is measured on a 7-point scale (1 = very liberal, 7 = very conservative). Abbreviations: Coded PGS, open-text responses coded for expression of gender pay gap scepticism; Justice general, general justice beliefs; Justice self, justice beliefs about the self; Med, median; PGS, pay gap scepticism (0 = very much disagree to 100 = very much agree); SWIS, Situated Wise Reasoning Scale. \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$ , \*\*\*\* $p < .001$ .



**FIGURE 1** Scatterplots and simple slopes of the relation between gender, wise reasoning and their interaction on gender pay gap scepticism (PGS) in Study 1 (left) and Study 2 (right).

action entered as predictors and general justice beliefs as the outcome variable. The model was significant,  $F(3, 241) = 4.144, p = .007$ ,  $R_{\text{adjusted}}^2 = 0.037$ . In the first step, we found a significant main effect of wise reasoning,  $B = 0.323, \text{S.E.} = 0.114, 95\% \text{ CI}(0.099, 0.547), t = 2.844, p = .005$ , and a main effect of gender,  $B = 0.378, \text{S.E.} = 0.190, 95\% \text{ CI}(0.004, 0.752), t = 1.989, p = .048$ . The gender  $\times$  wise reasoning interaction was not significant,  $B = -0.142, \text{S.E.} = 0.233, 95\% \text{ CI}(-0.601, 0.316), t = -0.610, p = .542$ .

In summary, Study 1 provided initial support for our predictions that men would be more prone toward PGS than women (H1), and that wise reasoning would attenuate PGS in men (H2). Among participants with weaker wise reasoning about the pay gap, men were over 25% more likely to respond with PGS compared to women, and among participants with stronger wise reasoning there was no significant gender difference in PGS. Results were consistent when controlling for age, education, income, and political orientation. We also found a positive association between wise reasoning and PGS among women in Study 1. Although we did not predict this effect and it may have been a chance finding, we speculate on potential explanations in the discussion. Finally, we found no interaction effect of wise reasoning and participant gender on general justice beliefs.

## 4 | STUDY 2

Shortly after we conducted Study 1 (in late 2019), the world changed significantly with the onset of the COVID-19 pandemic. During this time, daily news, blogs and social media were proliferating information regarding the disproportionate negative effects of the pandemic on women (e.g., Caprino, 2020), highlighting an increased economic vulnerability of women (e.g., losing more jobs, enduring more risky front-line work; Flor et al., 2022; UN Women, 2021). Given this information, we speculated as to whether Study 1 findings would replicate during the pandemic. Potentially, the crisis could have had a silver

lining such that men would not be more prone to gender PGS than women. Thus, this time of massive global upheaval represented an opportunity to conduct a conservative pre-registered replication test over a year after Study 1.<sup>3</sup>

## 4.1 | Method

### 4.1.1 | Participants and procedure

We pre-registered a sample size of 200 participants. However, before collecting data, we discussed the COVID-related concerns noted above and opted to double the sample size to 400 to maximize our ability to detect potentially smaller effect sizes than those found in Study 1. We collected responses from Prolific Academic rather than Mechanical Turk for generalisability (Peer et al., 2021). A total of 411 North American participants completed the study. As in Study 1, the data were screened for quality prior to analysis as pre-registered. Three responses came from duplicate IP addresses, and we kept only the first response from each IP address. Two participants reported their gender as "other" and were therefore not included in the analyses, leaving a final sample of 406 (154 females;  $M_{\text{age}} = 27.95, \text{SD}_{\text{age}} = 9.31$ ). Computing sensitivity analysis using G\*Power (Faul et al., 2007) gave us 0.99 power ( $\alpha = .05$ ) to detect a small sized interaction effect in a multiple regression analysis. The sample was mostly identified as White ( $n = 319$ ), with the remainder identified as Black or African ( $n = 17$ ), Hispanic/Latinx ( $n = 34$ ), East or Southeast Asian ( $n = 22$ ), Mixed ( $n = 7$ ), Middle Eastern ( $n = 8$ ) and other ( $n = 2$ ). Study procedure was identical to that of Study 1. Participants were compensated £7.50/h for their time.

## 4.2 | Materials and measures

### 4.2.1 | News article and open-text response

We used the same material as in Study 1. Similar to Study 1, we coded participants' naturalistic reflections for scepticism statements. We found that 17.66% of participants responded with statements similar or identical to our gender PGS items, and the coded scepticism in participants' open-text reflections correlated with PGS,  $r = 0.59, p < .001$ .

### 4.2.2 | Wise reasoning

We used the SWiS (Brienza et al., 2018) as in Study 1 ( $\alpha = .90$ ).

### 4.2.3 | Gender pay gap scepticism

We used the same seven items as Study 1. As in Study 1, we conducted an exploratory factor analysis (maximum likelihood factoring; Promax rotation) on the items, finding a single factor (55.00% variance

explained; all items loading >|0.55|). Again, we reverse-coded the relevant items and averaged all items for a composite score of PGS. Reliability was high ( $\alpha = .89$ ).

### 4.2.4 | Justice beliefs

We used the same scale as in Study 1 (Lucas et al., 2011), this time only assessing the *general* justice beliefs dimension (eight items,  $\alpha = .97$ ). We list this measure here for transparency; however, we report the results on this variable as an outcome measure (same test as in Study 1, main text) in the Supporting Information because it was not pre-registered in Study 2.

### 4.2.5 | Demographics

Participants provided demographic information on their gender identity (women = 0, men = 1), age, education, income, ethnicity and political identity.

### 4.2.6 | Awareness of impact of COVID-19 on women

Given our concerns regarding potential awareness of COVID-19 pandemic effects on women, we created four items to assess participants' opinions about relative negative impact of the pandemic on women as compared to men (e.g., "Women suffered more in COVID-related job losses than men,"  $\alpha = .90$ ) on a slider (0 = *very much disagree*, 100 = *very much agree*). We computed the average of these items to create an index of opinions about the impact of COVID-19 on women (vs. men).

## 4.3 | Results and discussion

Descriptives and zero-order correlations are presented in Table 2. As in Study 1, to test our hypotheses we conducted a multiple regression analysis with gender (effect-coded), mean-centred wise reasoning and the gender  $\times$  wise reasoning interaction entered as predictors, and PGS as the outcome variable. The model was significant,  $F(3, 402) = 21.908, p < .001, R_{adjusted}^2 = 0.134$ . In the first step of the regression, we found a significant main effect of gender (men:  $M = 34.18, SD = 21.03$ ; women:  $M = 18.72, SD = 16.71$ ),  $B = 15.659, S.E. = 2.001, 95\% CI(11.726, 19.592), t = 7.827, p < .001$ , providing further support for H1, and no main effect of wise reasoning,  $B = -1.907, S.E. = 1.563, 95\% CI(-4.980, 1.166), t = -1.220, p = .223$ . We found a marginal gender  $\times$  wise reasoning interaction in the second step of the regression,  $B = -6.240, S.E. = 3.242, 95\% CI(-12.613, 0.134), t = -1.925, p = .055$ . This trend remained when controlling for demographic variables (age, education, income, political orientation and self-identification as White vs. person of colour),  $B = -4.242, S.E. = 2.891, 95\% CI(-9.925, 1.441), t = -1.468, p = .143$  and when controlling for awareness of the impact

**TABLE 2** Descriptive statistics and correlations for Study 2.

	1	2	3	4	5	6	7	8	9	10
1) Age	Mean (SD)									
	27.95 (9.31)									
2) Education (Med)	.367****									
3) Income (Med)	.750****	.107								
4) Ethnicity	-.178****	-.030	.072							
5) Political orientation	.065	.005	.001	-.073						
6) COVID women	.132****	.051	.004	.154****	-.232****					
7) Gender	-.133****	-.128****	-.013	-.069	.126****	-.331****				
8) SWIS	.008	.018	.037	.031	.074	.048	.081			
9) PGS	-.079	-.062	.055	-.156****	.459****	-.539****	.360****	-.027		
10) Justice general	-.033	-.08	.078	-.119**	.328****	-.128****	.157****	.154**	.305****	
11) Coded PGS	-.050	-.029	.005	-.074	.183****	-.408****	.214****	-.018	.586****	.057

Note: In the table, we report percentage of participants who expressed any gender pay gap scepticism and correlations with the extent of scepticism expressed (0 = no PGS, 0.5 = implied PGS, 1 = one PGS comment, 2 = two PGS comments, 3 = three PGS comments). Political orientation is measured on a 7-point scale (1 = very liberal, 7 = very conservative). Abbreviations: Coded PGS, open-text responses coded for expression of gender pay gap scepticism; COVID women, opinion about the experience of women (vs. men) during the COVID-19 pandemic (0 = very much disagree, 100 = very much agree); Justice general, general justice beliefs; Med, median; PGS, pay gap scepticism (0 = very much disagree to 100 = very much agree); SWIS, Situated Wise Reasoning Scale. \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$ , \*\*\*\* $p < .001$ .

of COVID-19 on women,  $B = -5.225$ ,  $S.E. = 2.883$ , 95% CI  $(-10.892, 0.442)$ ,  $t = -1.813$ ,  $p = .071$ .

Although the gender  $\times$  wise reasoning interaction did not meet the conventional  $p < .05$  cut off, given that our hypothesis was directional and specific to men we examined the simple slopes to test H2. As Figure 1 (right panel) shows, the critical findings from Study 1 were replicated, namely, (i) among participants who engaged in weaker wise reasoning ( $-1SD$ ), men showed more PGS than women,  $t = 6.982$ ,  $p < .001$ , and (ii) among men, there was a negative relation between wise reasoning and PGS,  $t = -2.135$ ,  $p = .033$ . Among those with stronger wise reasoning ( $+1SD$ ), the gender difference in PGS was still significant, albeit smaller,  $t = 4.007$ ,  $p < .001$ . Different from Study 1, we found no effect of wise reasoning on PGS among women,  $t = 0.801$ ,  $p = .424$ .

Study 2 provided further support for our hypotheses and replicated the primary findings of Study 1: men were more prone toward PGS than women (H1) and wise reasoning attenuated PGS in men (H2). Different from Study 1, we did not find an association between wise reasoning and PGS among women.

## 5 | DISCUSSION

In two pre-registered studies, conducted before and during the COVID-19 pandemic, we established and replicated a male proneness toward gender PGS relative to women. Although the overall average level of PGS was below the midpoint of the scale, the gender bias which we observed, particularly among individuals with low wise reasoning, is likely to be consequential. Given that men constitute a large portion of the workplace and are disproportionately represented in leadership positions in organisations (e.g., Hoyt, 2010), our findings may help to explain one way in which the gender pay gap persists. Namely, if many organisational stakeholders—especially those represented in positions of power—deny the problem, then there will be no effort to address it. However, our research also introduces a thought process—wise reasoning—that may attenuate PGS among men. Together, the studies provide a starting point for psychological research on ameliorating PGS.

### 5.1 | Theoretical and practical implications

The current research contributes to theory by connecting the literature on motivated reasoning (Barclay et al., 2017; Kunda, 1990) with emerging psychological research on wisdom and wise reasoning (e.g., Grossmann et al., 2020). More specifically, we suggest that wise reasoning might be opposed to *directional* motivated reasoning processes, and as such it may provide a buffer against the general tendency to think in ways that uphold one's desired beliefs without corresponding to truth. Indeed, wise reasoning and directional motivated reasoning are conceptually differentially linked to egocentrism. Although directional reasoning embraces the myopic self, focusing on desired information and blocking or denying contradictory information, wise

reasoning transcends the self, enabling individuals to engage in a more balanced and critical examination of a situation and the people involved. Our studies extend previous research showing that wise reasoning relates negatively to maladaptive egocentric tendencies (e.g., bias blind spot, Brienza et al., 2018; free riding, Grossmann et al., 2017). The effect observed in the current study—namely, wise reasoning attenuating the gender-based differences in PGS— dovetails with recent research showing that wise reasoning attenuates attitude polarisation (Brienza et al., 2021).

The findings also contribute to current theory on wisdom specifying that wisdom-related processes are context specific—differentially relevant for different people in different situations (Gluck & Weststrate, 2022; Grossmann, 2017) and with different identity-based motivations (Brienza et al., 2021). In our studies, the relationship between wise reasoning and PGS showed different strength and direction among different groups (i.e., men vs. women) and at different times (before vs. during COVID-19). Most predominately, the different associations between wise reasoning and PGS for men (consistently negative) compared to women (positive/null) are in line with our theoretical framework and hypotheses. The difference in associations was evident in a more nuanced way among women in Study 1 (positive relation) versus Study 2 (null relation) and Study 1 follow-up conducted at the same time as Study 2 (null relation). We speculate on these latter differences in the next section. However, the different findings for wise reasoning in general provide conceptual support for the context specificity of wisdom.

This research could also pave the way for developing interventions that promote wise reasoning regarding the gender pay gap among male employees. These may provide practical benefits to employees, organisations and society. Given past research showing that wise-reasoning interventions can produce significant prosocial benefits (e.g., Brienza, et al., 2021; Grossmann & Kross, 2014; Kross & Grossmann, 2012), they may be beneficial for organisations to encourage wise reasoning about the pay gap to garner greater support among men, especially those in high status (Brienza & Grossmann, 2017) leadership positions, for policies aimed at improving equality.

### 5.2 | Limitations and future directions

While the present research suggests a promising avenue for organisational and social change, the studies also have limitations that can lay groundwork for future research.

First, we found a positive association between wise reasoning and PGS for women in Study 1, which did not replicate in Study 2 or in Study 1 follow-up (see the Supporting Information). It is possible that the positive association in Study 1 was due to chance, as it was not predicted nor replicated. Nevertheless, the difference in wise reasoning effects for women may be theoretically meaningful. In particular, this difference may relate to the context specificity of wise reasoning and specifically the timing of Study 2 in relation to COVID-19. That is, pre-COVID (Study 1), women who engaged in greater wise reasoning about the gender pay gap information could have reflected



more openly and critically on PGS statements, for example, questioning the *causes* of the gap. This could have resulted in a positive relation between wise reasoning and PGS in women in Study 1, pulling women back from more extreme responses (as with men in both studies, albeit in the opposite direction due to opposing identity-related motivations). The social context became less ambiguous mid-COVID, at the time Study 2 was conducted, with much media attention directed toward economic gender disparity. This salience of gender disparity could have rendered questioning the causes of the gender pay gap less relevant, resulting in the null relation between wise reasoning and PGS among women in Study 2 (and in the Study 1 follow-up, see the Supporting Information). If the relation between wise reasoning and PGS among women in Study 1 was not due to chance, this explanation aligns with theory arguing that wisdom is context sensitive and may be more impactful in ambiguous situations (Gluck & Weststrate, 2022; Grossmann et al., 2020).

Another potential limitation arises from our news article stimulus. This article included information about a median pay gap (see Appendix) that could have led participants to consider within-jobs pay gaps. Because within-jobs pay gaps are arguably becoming less common and less egregious over time (see Penner et al., 2023), and because standardized within-jobs pay scales are common in some organisations, our stimulus could have motivated polarised responses to our PGS items. It could have provided men with justification to push back more than they would have against (for example) information about pay gaps due to lack of representation of women in higher paying roles and in top management positions. Future studies could investigate whether more (vs. less) controversial claims produce more polarised reactions and whether wise reasoning is more impactful as a moderator in more (vs. less) controversial situations. Given that wisdom-related qualities are theoretically most necessary in complex life challenges (vs. straightforward situations; Glück & Weststrate, 2022), wise reasoning may be a more impactful moderator in more controversial social situations. The reliable finding that wise reasoning relates to less attitude polarisation across volatile societal conflicts around the world (Brienza et al., 2021) lends support to this idea. Future research should examine this question explicitly by assessing or experimentally manipulating the level of controversy in information.

Another limitation arises from our reliance on North American samples. It is important to investigate the cross-cultural generalizability of our findings, as cultural norms may present powerful boundary conditions. For example, in masculine cultures and those with high tolerance for power distance, gender pay gaps may be deemed relatively acceptable. In such contexts, wise reasoning may be a particularly crucial-but-neglected factor for highlighting the importance of eliminating the gender pay gap.

The current research focussed squarely on identity-based PGS, but our findings raise the question of whether wise reasoning can attenuate other forms of directional motivated reasoning. Motivated reasoning may play a harmful role in many important social situations (Barclay et al., 2017; Kunda, 1990), sparking divisions and conflict and leading to poor or even dangerous decision making. The current findings build on other recent studies showing that wise reasoning could

minimise maladaptive motivated responses (e.g., intergroup hostility; Brienza et al., 2021). We suggest that future research should expand the current work to a broad range of domains (e.g., racial bias and discrimination, ingroup favouritism and responses to misinformation) and explore the conditions that might contribute to the observed positive effects of wise reasoning.

Finally, as the current research is correlational, we do not make causal claims (e.g., that wise reasoning *reduced* PGS). However, as noted above, past research has demonstrated that experimentally inducing wise reasoning processes can reduce bias and increase prosocial behaviour (e.g., Brienza et al., 2021). Still, it will be important in future research to examine whether inducing wise reasoning not only reduces PGS among men but also whether it increases their actions in support of processes or policies that can serve to reduce pay gaps (among other workplace equality and inclusiveness issues). Such interventions to induce wise reasoning should ideally be situated in concrete contexts, such as in organisations that have identified a gender pay gap, or in organisations with low salience of the pay gap.

## 6 | CONCLUSION

Two studies showed that men were more prone toward gender pay gap scepticism than women. We integrated wisdom theory to suggest a moderator of this phenomenon. Our findings indicate that engaging in an integrative thought process—*wise reasoning*—relates to less gender PGS among men. As such, the studies may pave the way for positive change. We hope that these studies will motivate researchers and practitioners to test interventions that alter how people reason about inequities such as the gender pay gap in an effort to create fairer workplaces and societies.

## AUTHOR CONTRIBUTIONS

Justin P. Brienza and Anna Dorfman developed the research question, pre-registered the studies, analysed the data, and drafted the manuscript, contributing equally. All authors were involved in study conceptualization and revising the manuscript.

## ACKNOWLEDGEMENTS

This research was supported by an Insight Grant from the Social Sciences and Humanities Research Council of Canada awarded to D. Ramona Bobocel (#435-2017-0616) and internal seed funding from UQ Business School awarded to Justin P. Brienza.

Open access publishing facilitated by The University of Queensland, as part of the Wiley - The University of Queensland agreement via the Council of Australian University Librarians.

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

## DATA AVAILABILITY STATEMENT

All data and code can be retrieved at <https://osf.io/6m95t/files/>.

## ETHICS STATEMENT

This study was approved by the University of Waterloo Research Ethics Board (ORE#41385).

## ORCID

Anna Dorfman  <https://orcid.org/0000-0002-4175-1631>

D. Ramona Bobocel  <https://orcid.org/0000-0001-8721-8114>

## ENDNOTES

<sup>1</sup> Consistent with recommendations from research on reactions to climate change (Haltinner & Sarathchandra, 2021), we use the umbrella term “scepticism” to refer to a range of reactions to the gender pay gap, from expressing that the pay gap is justified to outright denial that the gender pay gap exists.

<sup>2</sup> Measured alongside these items was an additional item that did not assess scepticism but rather a controversial “solution” to the pay gap; we did not include this item in the analyses (see the Appendix for all items).

<sup>3</sup> We also attempted to recruit participants from Study 1 to replicate on the same sample 1 year later to examine potential longitudinal effects. In this follow-up sample, we replicated the primary hypothesised results from Studies 1 and 2, namely, that men showed more PGS than women and that wise reasoning attenuated PGS in men. The positive association between wise reasoning and PGD among women was no longer significant in the follow-up sample. However, given that we received responses from only 48% of the original participants, we do not include the follow-up tests in the main text. See the Supporting Information (Study 1: Follow-up Sample) for full description of the method, analyses and results.

## REFERENCES

- Ammerman, C., & Groysberg, B. (2021). How to close the gender gap. *Harvard Business Review*. <https://hbr.org/2021/05/how-to-close-the-gender-gap>
- Aragão, C. (2023). Gender pay gap in US hasn't changed much in two decades. <https://www.pewresearch.org/short-reads/2023/03/01/gender-pay-gap-facts/>
- Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. *American Psychologist*, 55(1), 122–136. <https://doi.org/10.1037/0003-066X.55.1.122>
- Barclay, L. J., Bashshur, M. R., & Fortin, M. (2017). Motivated cognition and fairness: Insights, integration, and creating a path forward. *Journal of Applied Psychology*, 102(6), 867–889. <https://doi.org/10.1037/apl0000204>
- Gender pay: Fewer than half of UK firms narrow gap. (2019, April 5). BBC News. <https://www.bbc.com/news/business-47822291>
- Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55(3), 789–865. <https://doi.org/10.1257/jel.20160995>
- Brienza, J. P., & Grossmann, I. (2017). Social class and wise reasoning about interpersonal conflicts across regions, persons and situations. *Proceedings of the Royal Society B: Biological Sciences*, 284(1869), 20171870.
- Brienza, J. P., Kung, F. Y. H., & Chao, M. M. (2021). Wise reasoning, intergroup positivity, and attitude polarization across contexts. *Nature Communications*, 12(1), 3313. <https://doi.org/10.1038/s41467-021-23432-1>
- Brienza, J. P., Kung, F. Y. H., Santos, H. C., Bobocel, D. R., & Grossmann, I. (2018). Wisdom, bias, and balance: Toward a process-sensitive measurement of wisdom-related cognition. *Journal of Personality and Social Psychology*, 115(6), 1093. <https://doi.org/10.1037/pspp0000171>
- Bugeja, M., Matolcsy, Z. P., & Spiropoulos, H. (2012). Is there a gender gap in CEO compensation? *Journal of Corporate Finance*, 18(4), 849–859.
- Caprino, K. (2020, July 13). How the pandemic is negatively impacting women more than men, and what has to change. <https://www.forbes.com/sites/kathycaprino/2020/07/13/how-the-pandemic-is-negatively-impacting-women-more-than-men-and-what-has-to-change/>
- Dawson, E., Gilovich, T., & Regan, D. T. (2002). Motivated reasoning and performance on the was on selection task. *Personality and Social Psychology Bulletin*, 28(10), 1379–1387. <https://doi.org/10.1177/014616702236869>
- Dorfman, A., Oakes, H., Santos, H. C., & Grossmann, I. (2021). Self-distancing promotes positive emotional change after adversity: Evidence from a micro-longitudinal field experiment. *Journal of Personality*, 89(1), 132–144.
- Ditto, P. H., Jemmott III, J. B., & Darley, J. M. (1988). Appraising the threat of illness: a mental representational approach. *Health Psychology*, 7(2), 183.
- Dunning, D., Story, A. L., & Tan, P. L. (1989). The self as model of excellence in social evaluation. Unpublished manuscript, Cornell University.
- Epley, N., & Gilovich, T. (2016). The mechanics of motivated reasoning. *Journal of Economic Perspectives*, 30(3), 133–140. <https://doi.org/10.1257/jep.30.3.133>
- Escalante, L. E., & Maisonnave, H. (2022). Gender and Covid-19: Are women bearing the brunt? A case study for Bolivia. *Journal of International Development*, 34(4), 754–770.
- European Commission. (2020). The gender pay gap situation in the EU. European Commission. [https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu\\_en](https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equal-pay/gender-pay-gap-situation-eu_en)
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191.
- Flor, L. S., Friedman, J., Spencer, C. N., Cagney, J., Arrieta, A., Herbert, M. E., Stein, C., Mullany, E. C., Hon, J., Patwardhan, V., Barber, R. M., Collins, J. K., Hay, S. I., Lim, S. S., Lozano, R., Mokdad, A. H., Murray, C. J. L., Reiner, R. C., Sorensen, R. J. D., ... Gakidou, E. (2022). Quantifying the effects of the COVID-19 pandemic on gender equality on health, social, and economic indicators: A comprehensive review of data from March, 2020, to September, 2021. *The Lancet*, 399(10344), 2381–2397. [https://doi.org/10.1016/S0140-6736\(22\)00008-3](https://doi.org/10.1016/S0140-6736(22)00008-3)
- Newport, F. (2019). The impact of increased political polarization. Gallup. <https://news.gallup.com/opinion/polling-matters/268982/impact-increased-political-polarization.aspx>
- Glück, J., & Weststrate, N. M. (2022). The wisdom researchers and the elephant: An integrative model of wise behavior. *Personality and Social Psychology Review*, 26(4), 342–374. <https://doi.org/10.1177/10888683221094650>
- Grossmann, I., Na, J., Varnum, M. E. W., Park, D. C., Kitayama, S., & Nisbett, R. E. (2010). Reasoning about social conflicts improves into old age. *Proceedings of the National Academy of Sciences of the United States of America*, 107(16), 7246–7250. <https://doi.org/10.1073/pnas.1001715107>
- Grossmann, I., & Kross, E. (2014). Exploring Solomon's paradox: Self-distancing eliminates the self-other asymmetry in wise reasoning about close relationships in younger and older adults. *Psychological Science*, 25(8), 1571–1580.
- Grossmann, I. (2017). Wisdom in context. *Perspectives on Psychological Science*, 12(2), 233–257.
- Grossmann, I., Brienza, J. P., & Bobocel, D. R. (2017). Wise deliberation sustains cooperation. *Nature Human Behaviour*, 1(3), Article 0061. <https://doi.org/10.1038/s41562-017-0061>
- Grossmann, I., & Brienza, J. P. (2018). The strengths of wisdom provide unique contributions to improved leadership, sustainability, inequality, gross national happiness, and civic discourse in the face of contemporary world problems. *Journal of Intelligence*, 6(2), 22.
- Grossmann, I., & Kung, F. Y. H. (2019). Wisdom and culture. In D. Cohen & S. Kitayama (Eds.), *Handbook of cultural psychology* (2nd ed., pp. 343–364). The Guilford Press.
- Grossmann, I., Weststrate, N. M., Ardelt, M., Brienza, J. P., Dong, M., Ferrari, M., Fournier, M. A., Hu, C. S., Nusbaum, H. C., & Vervaeke, J. (2020).

- The science of wisdom in a polarized world: Knowns and unknowns. *Psychological Inquiry*, 31(2), 103–133.
- Grossmann, I., Dorfman, A., Oakes, H., Santos, H. C., Vohs, K. D., & Scholer, A. A. (2021). Training for wisdom: The distanced-self-reflection diary method. *Psychological Science*, 32(3), 381–394.
- Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *The Journal of abnormal and social psychology*, 58(2), 203.
- Gupta, V. K., Mortal, S. C., & Guo, X. (2018). Revisiting the gender gap in CEO compensation: Replication and extension of Hill, Upadhyay, and Beekun's (2015) work on CEO gender pay gap. *Strategic Management Journal*, 39(7), 2036–2050. <https://doi.org/10.1002/smj.2905>
- Haltinner, K., & Sarathchandra, D. (2021). Considering attitudinal uncertainty in the climate change skepticism continuum. *Global Environmental Change*, 68, 102243. <https://doi.org/10.1016/j.gloenvcha.2021.102243>
- Hornsey, M. J. (2020a). Conspiracy theories. In A. Maher (Ed.), *Together apart: The psychology of COVID-19* (pp. 41–46). SAGE Publications.
- Hornsey, M. J. (2020b). Why facts are not enough: Understanding and managing the motivated rejection of science. *Current Directions in Psychological Science*, 29(6), 583–591.
- Hoyt, C. L. (2010). Women, men, and leadership: Exploring the gender gap at the top. *Social and personality psychology compass*, 4(7), 484–498.
- IZA. (2014, August 4). *Korea's gender wage gap tops OECD ranking for over a decade*. <https://wol.iza.org/news/koreas-gender-wage-gap-tops-oecd-ranking-for-over-a-decade>
- Jost, J. T., & Kay, A. C. (2005). Exposure to benevolent sexism and complementary gender stereotypes: consequences for specific and diffuse forms of system justification. *Journal of personality and social psychology*, 88(3), 498.
- Keller, P. A., & Block, L. G. (1999). The effect of affect-based dissonance versus cognition-based dissonance on motivated reasoning and health-related persuasion. *Journal of Experimental Psychology: Applied*, 5(3), 302–313. <https://doi.org/10.1037/1076-898X.5.3.302>
- Koetke, J., Schumann, K., & Porter, T. (2022). Intellectual humility predicts scrutiny of COVID-19 misinformation. *Social Psychological and Personality Science*, 13(1), 277–284. <https://doi.org/10.1177/1948550620988242>
- Kristjánsson, K., Fowers, B., Darnell, C., & Pollard, D. (2021). Phronesis (practical wisdom) as a type of contextual integrative thinking. *Review of General Psychology*, 25(3), 239–257.
- Kross, E., & Grossmann, I. (2012). Boosting wisdom: Distance from the self enhances wise reasoning, attitudes, and behavior. *Journal of Experimental Psychology: General*, 141(1), 43–48. <https://doi.org/10.1037/a0024158>
- Kunda, Z. (1987). Motivated inference: Self-serving generation and evaluation of causal theories. *Journal of personality and social psychology*, 53(4), 636.
- Kunda, Z., & Sanitioso, R. (1989). Motivated changes in the self-concept. *Journal of Experimental Social Psychology*, 25(3), 272–285.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108(3), 480–498. <https://doi.org/10.1037/0033-2909.108.3.480>
- Lerner, M. J. (1980). *The belief in a just world*. Springer.
- Lips, K. A. (2016, April 12). Don't buy into the gender pay gap myth. *Forbes*. <https://www.forbes.com/sites/karinagness/2016/04/12/dont-buy-into-the-gender-pay-gap-myth/>
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of personality and social psychology*, 37(11), 2098.
- Lucas, T., Zhdanova, L., & Alexander, S. (2011). Procedural and distributive justice beliefs for self and others. *Journal of Individual Differences*, 32(1), 14–25.
- Malladi, R. K., & Mean, J. D. (2021). Is it a gender representation issue or a gender pay gap issue? A study of the replaced executives in the USA. *Business Economics*, 56(2), 67–80. <https://doi.org/10.1057/s11369-021-00208-5>
- McKee, P., & Barber, C. (1999). On defining wisdom. *The International Journal of Aging & Human Development*, 49(2), 149–164. <https://doi.org/10.2190/8G32-BNVO-NVP9-7V6G>
- Nonaka, I., & Takeuchi, H. (2011, May). The big idea: The wise leader. *Harvard Business Review*. <https://hbr.org/2011/05/the-big-idea-the-wise-leader>
- Oakley, J. G. (2000). Gender-based barriers to senior management positions: Understanding the scarcity of female CEOs. *Journal of Business Ethics*, 27(4), 321–334. <https://doi.org/10.1023/A:1006226129868>
- Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding mechanical Turk as a participant pool. *Current Directions in Psychological Science*, 23(3), 184–188. <https://doi.org/10.1177/0963721414531598>
- Peer, E., Rothschild, D., Gordon, A., Evernden, Z., & Damer, E. (2021). Data quality of platforms and panels for online behavioral research. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-021-01694-3>
- Penner, A. M., Petersen, T., Hermansen, A. S., Rainey, A., Boza, I., Elvira, M. M., Godechot, O., Hällsten, M., Henriksen, L. F., Hou, F., Mrčela, A. K., King, J., Kodama, N., Kristal, T., Křížková, A., Lippényi, Z., Melzer, S. M., Mun, E., Apascaritei, P., ... Tufail, Z. (2023). Within-job gender pay inequality in 15 countries. *Nature Human Behaviour*, 7(2), Article 2. <https://doi.org/10.1038/s41562-022-01470-z>
- Pennycook, G., Cheyne, J. A., Barr, N., Koehler, D. J., & Fugelsang, J. A. (2015). On the reception and detection of pseudo-profound bullshit. *Judgment and Decision Making*, 10(6), 549.
- Pronin, E., Lin, D. Y., & Ross, L. (2002). The bias blind spot: Perceptions of bias in self versus others. *Personality and Social Psychology Bulletin*, 28(3), 369–381.
- Puryear, C., & Gray, K. (2021). *Using "balanced pragmatism" in political discussions increases cross-partisan respect*. PsyArXiv. <https://doi.org/10.31234/osf.io/yhpdt>
- Renzulli, K. A. (2019, April 4). *46% of American men think the gender pay gap is made up*. CNBC. <https://www.cnn.com/2019/04/04/46percent-of-american-men-think-the-gender-pay-gap-is-made-up.html>
- Rooney, D., & McKenna, B. (2007). Wisdom in organizations: Whence and whither. *Social Epistemology*, 21(2), 113–138. <https://doi.org/10.1080/02691720701393434>
- Sayers, R. C. (2012). The cost of being female: Critical comment on block. *Journal of Business Ethics*, 106(4), 519–524. <https://doi.org/10.1007/s10551-011-1017-4>
- Staudinger, U. M., & Glück, J. (2011). Psychological wisdom research: Commonalities and differences in a growing field. *Annual Review of Psychology*, 62(1), 215–241. <https://doi.org/10.1146/annurev.psych.12.12.08.131659>
- Stephens, N. M., & Levine, C. S. (2011). Opting out or denying discrimination? How the framework of free choice in American society influences perceptions of gender inequality. *Psychological Science*, 22(10), 1231–1236. <https://doi.org/10.1177/0956797611417260>
- Sternberg, R. J. (1998). A balance theory of wisdom. *Review of General Psychology*, 2(4), 347–365. <https://doi.org/10.1037/1089-2680.2.4.347>
- Sternberg, R. J. (2001). Why schools should teach for wisdom: The balance theory of wisdom in educational settings. *Educational Psychologist*, 36(4), 227–245. [https://doi.org/10.1207/S15326985EP3604\\_2](https://doi.org/10.1207/S15326985EP3604_2)
- Sternberg, R. J., & Karami, S. (2021). What is wisdom? A unified 6P framework. *Review of General Psychology*, 25, 134–151. <https://doi.org/10.1177/1089268020985509>
- Sternberg, R. J., Nusbaum, H. C., & Glück, J. (2019). *Applying wisdom to contemporary world problems*. Springer.
- Terjesen, S., & Singh, V. (2008). Female presence on corporate boards: A multi-country study of environmental context. *Journal of Business Ethics*, 83(1), 55–63. <https://doi.org/10.1007/s10551-007-9656-1>
- UN Women. (2021). *How COVID-19 impacts women and girls*. UN Women. <https://interactive.unwomen.org/multimedia/explainer/covid19/en/index.html>
- USGLC. (2022). *COVID-19 brief: Impact on women and girls*. USGLC. <https://www.usglc.org/coronavirus/women-and-girls/>
- Wang, J. C., Markóczy, L., Sun, S. L., & Peng, M. W. (2019). She'-E-O compensation gap: A role congruity view. *Journal of Business Ethics*, 159(3), 745–760. <https://doi.org/10.1007/s10551-018-3807-4>

- Washburn, A. N., & Skitka, L. J. (2018). Science denial across the political divide: Liberals and conservatives are similarly motivated to deny attitude-inconsistent science. *Social Psychological and Personality Science*, 9(8), 972–980.
- WGEA. (2021). *Australia's gender pay gap statistics*. WGEA. <https://www.wgea.gov.au/publications/australias-gender-pay-gap-statistics>
- White, N. J. (2021). Gender pay gap in the UK: 2021. Office for National Statistics. <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/genderpaygapintheuk/2021>
- Wiedman, C. (2020). Rewarding collaborative research: Role congruity bias and the gender pay gap in academe. *Journal of Business Ethics*, 167(4), 793–807. <https://doi.org/10.1007/s10551-019-04165-0>
- World Economic Forum. (2021). Global gender gap report 2021. World Economic Forum. <https://www.weforum.org/reports/global-gender-gap-report-2021/>
- Wyer Jr, R. S., & Frey, D. (1983). The effects of feedback about self and others on the recall and judgments of feedback-relevant information. *Journal of Experimental Social Psychology*, 19(6), 540–559.
- Xinhua. (2020). *Gender wage gap narrows in China as more women enter management: Report*. Xinhuanet. [http://www.xinhuanet.com/english/2020-03/07/c\\_138853146.htm](http://www.xinhuanet.com/english/2020-03/07/c_138853146.htm)
- Yamaguchi, K. (2019, March). Japan's gender gap. IMF Finance & Development. <https://www.imf.org/external/pubs/ft/fandd/2019/03/gender-equality-in-japan-yamaguchi.htm>
- Yang, S., & Intezari, A. (2019). Non-western lay conceptions of wisdom. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 429–452). Cambridge University Press. <https://doi.org/10.1017/9781108568272.020>

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Brienza, J. P., Dorfman, A., & Bobocel, D. R. (2023). Mind the gap: Wise reasoning attenuates gender pay gap scepticism in men. *European Journal of Social Psychology*, 1–14. <https://doi.org/10.1002/ejsp.3009>

## APPENDIX: PRIMARY STUDY MATERIALS (STUDIES 1 AND 2)

News Article



### Fewer than half of the biggest employers have succeeded in narrowing their gender pay gap, analyses have found

Across 45% of firms the discrepancy in pay increased in favour of men, while at a further 7% there was no change. Overall, 78% of companies had a pay gap in favour of men.

The total is roughly the same as last year, although it is unclear how many firms have failed to respond. Overall, the median pay gap in favour of men lowered slightly from 9.7% last year to 9.6% this year. The median pay gap is calculated by comparing the difference in pay between the middle-ranking woman and middle-ranking man in the same companies.

The Fawcett Society, which campaigns for gender equality, described the figures as "disappointing, but not surprising". Sam Smethers, Fawcett Society chief executive, said: "The regulations are not tough enough. It's time for action plans, not excuses. Governments must now require employers to set a five-year strategy for closing their gender pay gaps, with meaningful sanctions in place for those who do not comply." Some employers have begun to cut male employees' pay in order to reduce or even reverse their gender pay gap.

### Measure of gender pay gap scepticism (PGS)

How do you feel about the following statements or ideas, at this specific moment?

Your answers are confidential and anonymous.



Note: Items 1, 2, 3, 6 and 7 were reverse coded to reflect gender pay gap scepticism. Item 8 was not included in the main analyses.

**Situated Wise Reasoning Scale (SWiS)**

What went through your mind as you reflected on the social issue described in the article you read, while you wrote about your thoughts and feelings, and while you responded to questions in this survey?

Please recall what you did as you reflected on the issue and responded to questions in this survey.

None of the statements listed below are supposed to be "good" or "bad," so we ask you to answer these questions as accurately and honestly as possible.

While I was reflecting on the social issue, I did the following:

- 1. Put myself in different parties' shoes (e.g., someone with a different opinion than yours).
- 2. Thought about the things different parties might have in common.
- 3. Made an effort to take different parties' perspectives.
- 4. Took time to consider different opinions on the matter before coming to a conclusion.
- 5. Looked for different solutions to the issue.
- 6. Considered alternative solutions as I learned about the issue.
- 7. Believed the situation could lead to a number of different outcomes.
- 8. Thought the situation could unfold in many different ways.
- 9. Double-checked whether my opinion on the situation might be incorrect.
- 10. Considered whether opinions different from my own might be correct.
- 11. Looked for any extraordinary circumstances before forming my opinion.
- 12. Behaved as if there may be some information to which I did not have access.
- 13. Tried my best to accommodate different perspectives.
- 14. Though it may not have been possible, I thought about solutions that could result in all parties being satisfied.
- 15. Considered first whether a compromise was possible in resolving the situation.
- 16. Viewed it as very important that the parties resolve the situation.
- 17. Thought about how the different parties can resolve the issue.

18. Wondered what I would think if I was somebody else considering the situation.
19. Tried to see the situation from the point of view of an uninvolved person.
20. Asked myself what other people might think or feel if they were considering the conflict.
21. Thought about whether an outside person might have a different opinion from mine about the situation.