



## A Confirmatory Study of the Relations Between Workplace Sexism, Sense of Belonging, Mental Health, and Job Satisfaction Among Women in Male-Dominated Industries

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### Abstract

The present study investigated the mediating role of sense of belonging in the relations between workplace sexism and (a) mental health and (b) job satisfaction. Participants were 190 women from a large Australian trade union that represented mainly male-dominated jobs. They completed an online survey that contained measures of sexism, sense of belonging in the industry, mental health, and job satisfaction. As predicted, sense of belonging mediated the associations between organizational sexism and both mental health and job satisfaction. In addition, sense of belonging mediated the association between interpersonal sexism and mental health. These results are discussed in relation to strategies for supporting women and mitigating the effects of sexism in male-dominated workplaces. The Open Science Framework webpage for this project is at: <https://osf.io/a3yqc/>

*Keywords:* male-dominated workplaces; mental health; job satisfaction; sense of belonging; sexism.

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I worked in an almost exclusively male salesroom. Sexual comments about me or others, either to me or overheard in my presence, were a fact of daily working life. (Anonymous testimony submitted to the TUC & The Everyday Sexism Project, 2016, p. 22).

Sexism is a pervasive and detrimental force in the workplace. Examples include women receiving unwelcome sexual advances, being touched inappropriately, receiving inappropriate comments about their body or appearance, being exposed to sexist jokes and comments, and being exposed to pornography (Leitner, 08/02/17; TUC & The Everyday Sexism Project, 2016). Sexism can also take a more institutional form that follows either directly or indirectly from the policies and procedures of organizations, such as gender differences in job stability, salaries, and opportunities for training and promotion (e.g., TUC & The Everyday Sexism Project, 2016).

Sexism in the workplace is a very common experience. For example, following allegations of sexual harassment against Hollywood film producer Harvey Weinstein, women used the #MeToo hashtag in social media descriptions of their own experiences of sexism, many of which took place in the workplace. The hashtag went viral within a few days, with over a million people using it to share their stories of sexual abuse and harassment (Brocklebank, 18/10/17). Even the most senior and highly respected women can become the targets of sexism in the workplace. For example, on March 28, 2017, the British newspaper *The Daily Mail* published a photograph of the Scottish First Minister, Nicola Sturgeon, and the British Prime Minister, Theresa May, sitting together wearing knee-length skirts after discussing the U.K.'s exit from the European Union. "Never mind Brexit, who won Legs-it!" proclaimed the headline.

How and why does workplace sexism impact women? In the present study, we investigated the associations between workplace sexism and women's sense of belonging in their industry, their mental health, and their job satisfaction. We focused on women who worked in male-dominated industries because we were particularly interested in understanding how sexism impacts women when they represent a minority group in their industry. We assumed that women's minority status in male-dominated industries places them at greater risk of experiencing workplace sexism and poorer mental health and job satisfaction. This assumption is based on prior research and theory that predicts increased sexism against women in male-dominated workplaces as a function of their counterstereotypicality, lower social status, and reduced levels of social support and social integration in the industry (Berdahl, 2007; Bergman & Hallberg, 2002; Penhaligon, Louis, & Restubog, 2013; Richman, Vandellen, & Wood, 2011; Rubin, Paolini, & Crisp, 2013; Seeman, 1996; Skaalvik & Skaalvik, 2011; Sojo Wood, & Genat, 2016; Thoits, 2011; TUC & The Everyday Sexism Project, 2016).

### **Sense of Belonging as a Mediator**

A substantial body of previous research has found that workplace sexism negatively predicts mental health and job satisfaction (e.g., Bergman & Hallberg, 2002; Bond, Punnett, Pyle, Cazeca, & Cooperman, 2004; Malik, Malik, Qureshi, & Atta, 2014; Manuel, Howansky, Chaney, & Sanchez, 2017; Munson, Hulin, & Drasgow, 2000; Schneider, Swan, & Fitzgerald, 1997; Street, Gradus, Stafford, & Kelly, 2007; Szymanski & Feltman, 2015; for meta-analytic reviews, see Chan, Lam, Chow, & Cheung, 2008; Sojo, Wood, & Genat, 2016; Willness, Steel, & Lee, 2007). However, the psychological processes that link sexism to mental health and job satisfaction remain unclear. In the present research, we focused on women's sense of belonging in their industry as a potential mediating variable.

Previous research has found that workplace sexism leads to a reduced sense of belonging in the workplace among women (Richman et al., 2011; Rubin, Subašić, Giacomini,

& Paolini, 2017; Stout & Dasgupta, 2011), most likely because workplace sexism represents a form of bullying, rejection, and ostracism by men against their female co-workers (e.g., Smart Richman & Leary, 2009). Similar results have been found in the case of women in male-dominated science, technology, engineering, and mathematics degrees at university (e.g., Lawson, Kooiman, & Kuchta, 2017; Moss-Racusin, Sanzari, Caluori, & Rabasco, 2018; Pietri, Johnson, Ozgumus, & Young, 2018).

Poorer sense of belonging and social connectedness have also been found to be related to poorer mental health (Hagerty, Williams, Coyne, & Early, 1996; Rubin & Kelly, 2015; Rubin et al., 2017; Saeri, Cruwys, Barlow, Stronge, & Sibley, 2017; Stebleton, Soria, & Huesman, 2014), most likely due to feelings of loneliness, alienation, and ostracism (Mellor, Stokes, Firth, Hayashi, & Cummins, 2008). In addition, poorer sense of belonging at work is also associated with lower job satisfaction (e.g., Borrott, Day, Sedgwick, & Levett-Jones, 2016; Skaalvik & Skaalvik, 2011; Van Dick et al., 2004; Van Dick, van Knippenberg, Kerschreiter, Hertel, & Wieseke, 2008; Winter-Collins & McDaniel, 2000). Given these prior findings, it is possible that workplace sexism reduces women's sense of belonging in their industry, and that this reduced sense of belonging then impacts negatively on their mental health and job satisfaction. To date, however, only one previous study has explored this potential mediation model (Rubin et al., 2017).

Rubin et al. (2017) surveyed 263 women miners from Australian and other international mine sites that were owned by an Australian-based mining company. Using an exploratory factor analysis, they found that many of the items that they used to measure gender-based workplace issues aggregated into three higher-order factors, which they described as *organizational sexism*, *interpersonal sexism*, and *sense of belonging*. Organizational sexism relates to gender-based inequality vis-à-vis formal aspects of the organization, such as pay and job stability. In contrast, interpersonal sexism relates to sexist behaviors from specific individuals within the organization, such as sexual harassment and sexist comments. Multiple regression analyses found that organizational and interpersonal sexism were positive independent predictors of mental health and job satisfaction. Furthermore, mediation analyses found that women's sense of belonging in the mining industry mediated the associations between organizational sexism and (a) mental health and (b) job satisfaction. Rubin et al. concluded that workplace sexism may adversely affect women miners's mental health and job satisfaction by lowering their sense of belonging.

### **Overview of the Present Research**

Rubin et al.'s (2017) research suffered from two key limitations. First, their research approach was exploratory rather than confirmatory. As they explained, they did not have a priori hypotheses about which higher-order factors would emerge from their exploratory factor analysis of gender-based workplace issues. Consequently, they conceded that their research findings were tentative in nature and requiring replication. This call for replication is especially important in the context of recent research that suggests that only approximately 40% of psychology effects are replicable (Open Science Collaboration, 2015). Consequently, a key aim of the present research was to undertake a confirmatory conceptual replication of Rubin et al.'s (2017) predictions. To this end, we preregistered our hypotheses and key analyses with As.Predicted, which is an online repository of research protocols. Our preregistered research protocol is available at: <https://aspredicted.org/vm6bv.pdf> This preregistration approach prevents researchers from engaging in (a) undisclosed analytical flexibility ("*p*-hacking") and (b) undisclosed hypothesizing after the results are known (HARKing; Kerr, 1998; Simmons, Nelson, & Simonsohn, 2011; Rubin, 2017b).

A second limitation with Rubin et al.'s (2017) study is that they recruited their participants from a single company in a single male-dominated industry (mining). Hence, it is

possible that their results were limited to this particular company or industry. The present research addressed this limitation by recruiting participants from several different male-dominated companies and industries that were represented by a national Australian trade union.

We also extended Rubin et al.'s (2017) approach by investigating perceived femininity as a potential moderator of the associations between sexism, mental health, and job satisfaction. Given that social norms prescribe masculinity in male-dominated workplaces (e.g., Heilman, 2012), we expected that women who regard themselves as being particularly feminine would be most likely to experience workplace sexism and to suffer from poorer mental health and job satisfaction as a result (cf. Denissen, 2010).

Finally, we undertook an exploratory investigation of the roles of the need to reduce femininity at work, women's perceived status in the industry, and work-life balance. Women who experience sexism may react by reducing their femininity in the workplace in order to avoid subsequent sexism. They may also feel a lowered sense of status in their industry. In addition, they may attempt to work harder in order to demonstrate their value in the workplace. Reducing femininity at work, lowered perceived status in the industry, and poorer work-life balance may all have a negative effect on mental health and job satisfaction. Consequently, we tested these variables as additional potential mediators in our analyses.

### **Hypotheses**

Following Rubin et al. (2017), and as indicated in our As.Predicted preregistration document, we tested the following research hypotheses:<sup>1</sup>

1. Organizational and interpersonal sexism should independently negatively predict mental health and job satisfaction among women who work in male-dominated workplaces.
2. Sense of belonging in the industry should mediate these associations.
3. Women who perceive themselves to be particularly feminine will report being particularly at risk of greater sexism and poorer mental health and job satisfaction.

In addition to the above preregistered hypotheses, we undertook an exploratory investigation of the potential mediating roles of need to reduce femininity at work, perceived status in the industry, and work-life balance.

### **Method**

#### **Significance Level and A Priori Power Analysis**

The criterion for determining significance was set at the conventional level of .05. Each individual hypothesis was tested separately at this level (Rubin, 2017a).

Rubin et al. (2017) found that the smallest effect for the associations between sexism, sense of belonging, mental health, and job satisfaction was  $r = |.27|$ . Using G\*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007), an a priori power analysis was used to calculate the sample size required to detect an effect of this size using a two-tailed correlation test with a power level of .95 and a significance level of .05. The required sample size was 172 participants.

#### **Participants**

In total, 305 participants started the research survey, and 209 participants completed the survey, including the informed consent item at the end of the survey. This represented a response rate of 6.64%.

We included an informed consent item at the end of the online survey, rather than at the beginning, because it is only at the end of the survey that participants are fully aware of all of the items in the survey and, consequently, it is only at this point that they can make a fully informed decision about whether or not to include their responses in the research. There were 96 participants who stopped completing the survey partway through and, as a result, did not complete this informed consent item. A further 10 participants completed the survey but

indicated that they wanted their data to be deleted. The data from these 106 participants were excluded from the analyses, leaving 199 participants. Note that, because the 106 excluded participants did not provide their informed consent for their data to be analyzed, we were unable to compare their data with the data from the rest of the sample in order to investigate the possibility of a selection bias.

Eight participants indicated that they completed a similar survey last year. These participants were excluded from the analyses because they may have been debriefed about the results of a similar study that was conducted in 2016. All of these exclusions were preregistered in our As.Predicted research protocol. Finally, one participant identified as “other” when asked to indicate their gender. Given that the focus of the study was on women, we excluded this participant from the data analyses.

These exclusions left a final total of 190 women, which is larger than that required to detect the smallest effect size of interest ( $N = 172$ ,  $r = .27$ ). The women ranged in age from 19 to 60 years ( $M = 39.72$ ,  $SD = 10.11$ ). In terms of ethnicity, 90.0% of participants were White ( $n = 171$ ), 5.8% were “other” ( $n = 11$ ), 3.7% were Aboriginal ( $n = 7$ ), and 0.5% were Asian ( $n = 1$ ).

Most women belonged to one of three main subgroups in the union: 53.2% ( $n = 101$ ) belonged to the mining and energy group, 32.1% ( $n = 61$ ) belonged to the construction and general industries group, and 7.9% ( $n = 15$ ) belonged to the forestry and furnishing products group. The remaining 6.8% ( $n = 13$ ) belonged to other groups. On average, the women had worked for 8.72 years in their current industry ( $SD = 5.79$ ).

The vast majority of participants indicated that they were “standard workers” (82.6%,  $n = 157$ ) rather than “other” (6.3%,  $n = 12$ ), support staff (4.7%,  $n = 9$ ), supervisors (3.7%,  $n = 7$ ), or managers (2.6%,  $n = 5$ ). In addition, most participants indicated that they were full-time permanent workers (68.4%,  $n = 130$ ), with the next largest group indicating that they were casual workers (25.8%,  $n = 49$ ). The remaining participants indicated that they were part-time permanent workers (3.7%,  $n = 7$ ) or independent contractors (2.1%,  $n = 4$ ). Finally, in terms of relationship status, 71.1% ( $n = 135$ ) indicated that they were in a relationship (63 married, 67 in a serious/stable relationship, and 5 in a casual relationship) and 28.9% ( $n = 55$ ) indicated that they were single.

## Procedure

This research had ethical clearance from the University of Newcastle, Australia. Human Research Ethics Committee (Approval number: H-2015-0446).

Participants were recruited using a convenience sampling approach from a large industrial workers’ trade union in Australia. The union contained around 125,900 members. Approximately 2.75% of members were women. Hence, this was clearly a male-dominated union.

Union staff identified employees’ gender and contact details based on an internal employee database. A message advertising the study was sent to 1,838 email addresses and 2,607 SMS phone number on July 20, 2017. The message included a hyperlink to the online survey. A reminder email was sent out on August 8, 2017. The survey was closed on August 21, 2017 after collecting data from 305 participants.<sup>2</sup>

The survey was titled “[union name]’s women’s survey,” and it was introduced as investigating women’s experiences of working in the industries represented by the union. People were eligible to participate if they were female, 18 years or older, and a member of the union. It was made clear to prospective participants that participation was voluntary and anonymous.

The order of presentation of the scales and the items within each scale was randomized for each participant. However, the section containing the demographic items was always

presented at the end of the survey. The median completion time was 12.49 minutes.

If participants missed a response to an item on a page of the online survey, then the survey software automatically reminded them to respond to that item, and it did not allow them to continue until they had done so. Hence, there was no missing data other than for some demographic variables for which participants were given the opportunity to decline a response if they were concerned that their response may reveal their personal identity.

## Measures

**Predictor variables: organizational and interpersonal sexism.** Our key predictor variables were organizational and interpersonal sexism. We measured organizational sexism items using seven items. Four of these items were adapted from Rubin et al.'s (2017) study: "I have received fewer opportunities for promotion and career progression than men"; "I have had less job stability and security than men"; "I have received fewer training opportunities than men"; and "I have been underpaid relative to men." We supplemented these items with three items that were developed for the present study: "I have been treated unfairly by my employer, boss, or supervisors because I am a woman"; "I have been treated unfairly by my co-workers because I am a woman"; and "people at work have failed to show me the respect that I deserve because I am a woman."

We measured interpersonal sexism using six items. Two of these items were adapted from Rubin et al.'s (2017) study: "I have seen inappropriate images of women at work (e.g., pornography)," and "I have experienced sexual harassment." We supplemented these items with four items that were adapted from the Schedule of Sexist Events (Klonoff & Landrine, 1995): "People at work have called me sexist names (e.g., bitch)"; "people at work have made fun of me, picked on me, or teased me because I am a woman"; "people at work have made sexist jokes in my presence"; and "people at work have made sexist comments in front of me."

Participants were asked to refer to the last 12 months when they responded to these organizational and interpersonal sexism items. They responded using a 7-point scale that was anchored *strongly disagree* (1) and *strongly agree* (7).

**Mediator variable: sense of belonging.** Our proposed mediator variable was sense of belonging. This variable was measured using five items. Three items were adapted from Rubin et al.'s (2017) study: "I felt a sense of belonging in the industry"; "I received good support from my co-workers"; and "I felt accepted by my co-workers." We supplemented these items with two items that were developed for the present study: "I felt like a bit of an outsider in the industry (reverse-scored)," and "I didn't feel like I fitted in well at work (reverse-scored)." Participants responded to these items with reference to the past 12 months using the same response scale as for the sexism items.

**Exploratory mediators.** Perceived need to reduce femininity at work was measured using two items: "I felt that I should try to be less feminine at work," and "I felt that I should try to be more masculine at work" (reverse-scored). Women's perceived status in the industry was measured using two items: "Women in my job have a lower status than men," and "men are better regarded than women in my job." Finally, work-life balance was measured using two items: "I had a relatively poor work-life balance" (reverse-scored), and "I found a good balance between my work and other responsibilities."

Participants responded to these items with reference to the past 12 months using the same response scale as for the sexism items. Scores on the perceived status items were reverse-scored so that higher scores reflected higher status for women.

**Moderator variable: perceived femininity.** We measured participants' perceived femininity as a potential predictor of sexism, mental health, and job satisfaction and a potential moderator of their associations. Participants indicated their perceived femininity on a sliding scale that was anchored *not at all feminine* (0) and *extremely feminine* (100). For a similar single-item measure, see Steele, Everett, and Hughes (2017).

**Outcome variables: mental health problems and job satisfaction.** Our outcome variables were mental health problems and job satisfaction. We measured mental health problems using the short form Depression Anxiety Stress Scale (Lovibond & Lovibond, 2004). This scale consists of three 7-item subscales that assess depressive symptoms, anxiety, and stress. Example items are "I felt that life was meaningless" (depressive symptoms), "I felt scared without any good reason" (anxiety), and "I found it difficult to relax" (stress). Participants responded to these items with reference to the past week using a 4-point scale anchored *never* (0) and *almost always* (3).

We measured job satisfaction using the 4-item Index of Affective Job Satisfaction (Thompson & Phua, 2012). The items are as follows: "I find real enjoyment in my job"; "I like my job better than the average person"; "most days I am enthusiastic about my job"; and "I feel fairly well satisfied with my job." Participants responded to these items with reference to the past 12 months using the same response scale as for the sexism items.

**Demographic variables.** Participants also responded to items assessing their gender, age, and ethnic background (*White, Aboriginal, Torres Strait Islander, African, Asian, and Other*). In addition, participants indicated their subjective social class using a sliding scale that was anchored *lowest income, education, and occupation* (0) and *highest income, education, and occupation* (100; Adler & Stewart, 2007). Participants also indicated their relationship status using the following scale: *single, in a casual relationship, in a serious/stable relationship, married*.

Participants indicated the general category of industry in which they had been employed over the last 12 months: *construction and general, mining and energy, forestry and furnishing products, and other*. These categories corresponded to official groups used by the trade union from which we recruited participants. Participants also indicated the number of years that they had worked in the industry in which they currently worked. In addition, participants indicated their work role (*standard worker, support staff, supervisor, manager, and other*) and their employment status (*independent contractor, casual worker, permanent [part-time], and permanent [full-time]*). They also indicated the percentage of people (a) in their industry and (b) in their specific work role that were women. Responses to these two items were made on sliding scales ranging from 0% to 50%.

Finally, participants indicated whether they had problems understanding the survey on a 7-point scale anchored *strongly disagree* (1) and *strongly agree* (7; reverse-scored), and whether they remembered completing a similar survey last year (1 = *yes*, 2 = *no*).

At the end of the survey, participants indicated their informed consent for their data to be included in the analyses. A copy of the research survey and de-identified data set is available at: <https://osf.io/a3yqc/>

## Results

### Exploratory Factor Analysis

Following the approach used by Rubin et al. (2017), we performed an exploratory principal axis factor analysis on the sexism and sense of belonging items. An exploratory factor analysis was used instead of a confirmatory factor analysis because we did not use the same items that were used by Rubin et al. (2017) in our measures of sexism and sense of belonging.

In particular, we only used four of the seven items that Rubin et al. used to measure organizational sexism, and we added three new items to this scale. In addition, we only used two of the three items that Rubin et al. used to measure interpersonal sexism, and we added four new items to this scale. Finally, we only used three of the four items that Rubin et al. used to measure sense of belonging, and we added two new items to this scale. Given these substantial variations to the composition of each scale, an exploratory factor analysis was more appropriate than a confirmatory factor analysis. We should also note that our sample size of 190 participants would provide imprecise estimates for a confirmatory factor analysis (Kline, 2015).

Three factors had eigenvalues greater than 1.0, and a scree test suggested that 1 to 3 factors should be extracted. To provide a clearer assessment, we conducted a parallel analysis (Horn, 1965) using Watkins' (2000) Monte Carlo simulation. Specifically, we simulated factor analyses on 100 random data sets, each comprising 18 variables and 190 participants. Only the first three factors in the real data set had eigenvalues that were larger than the first three factors from the simulated data sets (real eigenvalues: 8.65, 1.77, and 1.55). Hence, we specified the extraction of three factors. Following Russell (2002, p. 1638), we used the Promax method of oblique rotation during factor extraction ( $\kappa = 3$ ) in order to allow the factors to correlate with one another. Table 1 shows the factor loadings of items that loaded greater than or equal to .50 on one of the three extracted factors in the pattern matrix.

Table 1  
*Factor Loadings of Sexism and Sense of Belonging Items*

	Factor		
	1	2	3
Eigenvalue	8.65	1.77	1.55
Percentage of Variance	48.07%	9.83%	8.60%
<b>Interpersonal sexism</b>			
People at work have made sexist jokes in my presence.	<b>.96</b>	-.03	.15
People at work have made sexist comments in front of me.	<b>.89</b>	-.00	.10
People at work have called me sexist names (e.g., bitch).	<b>.76</b>	-.01	-.08
I have experienced sexual harassment.	<b>.67</b>	.03	-.11
I have seen inappropriate images of women at work (e.g., pornography).	<b>.66</b>	-.02	.06
People at work have made fun of me, picked on me, or teased me because I am a woman.	<b>.58</b>	.20	-.19
<b>Organizational sexism</b>			
I have received fewer opportunities for promotion and career progression than men.	-.11	<b>.93</b>	.03
I have received fewer training opportunities than men.	-.08	<b>.85</b>	-.03
I have been treated unfairly by my employer, boss, or supervisors because I am a woman.	.11	<b>.76</b>	.03
I have had less job stability and security than men.	.21	<b>.55</b>	-.01
<b>Sense of belonging</b>			
I felt accepted by my co-workers.	.14	.09	<b>.97</b>
I received good support from my co-workers.	.09	-.01	<b>.88</b>
I felt a sense of belonging in the industry.	-.09	-.18	<b>.55</b>
I didn't feel like I fitted in well at work.	-.22	.03	<b>.53</b>
<b>Excluded items</b>			
People at work have failed to show me the respect that I deserve because I am a woman.	<b>.55</b>	.12	-.30
I have been treated unfairly by my co-workers because I am a woman.	.45	.22	-.34
I felt like a bit of an outsider in the industry.	-.37	-.05	.41
I have been underpaid relative to men.	.11	.45	.01

*Note.* Loadings in bold are above the cut-point criteria of .50.

As can be seen in Table 1, seven items loaded  $\geq .58$  on the first factor. However, one of these items (“people at work have failed to show me the respect that I deserve because I am a woman”) had a cross-loading of  $-.30$  on the third factor. Consequently, this item was excluded from the final scale. The remaining six items did not load  $> |.20|$  on either of the other factors. These six items related to experiencing sexist jokes, comments, and names at work; sexual harassment and seeing inappropriate images of women at work; and being teased and picked on as a woman. Following Rubin et al. (2017), we described this factor as interpersonal sexism.

Four items loaded  $\geq .55$  on the second factor and not  $> |.21|$  on the other two factors. These items related to organizational disadvantages relative to men, including fewer opportunities for promotion, career progression, and training than men; being treated unfairly by employers, bosses, or supervisors due to being a woman; and less job stability and security than men. Following Rubin et al. (2017), we described this factor as organizational sexism.

Finally, four items loaded  $\geq .53$  on the third factor and not  $> |.22|$  on the other two factors. These items related to feeling accepted by and receiving support from co-workers; feeling a sense of belonging in the industry; and feeling like one fits in at work. Following Rubin et al. (2017), we described this factor as sense of belonging.

### **Preliminary Analyses**

**Internal consistency.** As can be seen in Table 2, Cronbach alpha values were above the conventional threshold of  $.70$  for all scales apart from for the 2-item scale that assessed the percentage of women working in participants’ jobs. However, the alpha value for this scale was close to the threshold value ( $.67$ ), the Spearman-Brown coefficient was also close to the threshold value ( $.69$ ), and the correlation between the two items was high ( $r = .52, p < .001$ ). Consequently, we decided to compute the mean of these two items, as we did for the other scales.

In contrast to the other scales, we summed rather than averaged scores for the mental health measure because this is the conventional method of aggregating scores for this measure (Henry & Crawford, 2005). Hence, scores on this measure could range from 0 to 61, with higher scores indicating poorer mental health.

**Mean values.** Table 2 also provides the means and standard deviations for the key continuous variables. On average, participants indicated that they “moderately agreed” that they understood the survey ( $M = 5.89, SD = 1.57$ ). Furthermore, participants indicated that they believed that only 14.11% of the people in their job were women ( $SD = 11.35$ ). Hence, we confirmed that our participants perceived themselves as working in male-dominated industries.

Participants’ mean scores for both organizational sexism ( $M = 3.96$ ) and interpersonal sexism ( $M = 3.80$ ) were close to the “neutral” scale midpoint of 4.00. Notably, participants scored higher on the measure of mental health problems ( $M = 12.38$ ) than (a) a sample of the general population in the United Kingdom ( $M = 9.43$ ; Henry & Crawford, 2005) and (b) a sample of female miners in Australia ( $M = 8.09$ ; Rubin et al., 2017).

Table 2  
*Descriptive Statistics and Zero Order Correlation Coefficients*

Measure	<i>M</i>	<i>SD</i>	$\alpha$	1	2	3	4	5	6	7	8	9	10	11	12
1. Organizational sexism	3.96	2.01	.86	–											
2. Interpersonal sexism	3.80	1.88	.90	.55**	–										
3. Sense of belonging	5.68	1.62	.82	-.49**	-.49**	–									
4. Mental health problems	12.38	10.77	.95	.41**	.37**	-.49**	–								
5. Job satisfaction	5.08	1.65	.92	-.31**	-.18*	.42**	-.41**	–							
6. Age	39.72	10.11	–	-.00	-.15*	.09	-.05	.02	–						
7. Years in industry	8.72	5.80	–	.02	.12	.02	.05	-.06	.45**	–					
8. Social class	64.22	17.89	–	-.09	-.06	.13	-.20**	.06	.13	.10	–				
9. Femininity	66.75	22.49	–	-.07	-.13	.14	-.09	-.01	.19*	.00	.19*	–			
10. Need to reduce femininity	3.49	2.06	.90	.44**	.50**	-.48**	.39**	-.12	-.26**	-.06	-.16*	-.19*	–		
11. Women’s status	3.10	1.83	.81	-.66**	-.53**	.51**	-.26**	.26**	.04	.02	.12	.13	-.49**	–	
12. % of women in job	14.11	11.35	.67	-.04	-.16*	.06	.20**	-.10	.06	-.01	-.00	-.14	-.07	-.17*	–
13. Work-life balance	4.48	1.81	.75	-.47**	-.34**	.35**	-.42**	.30**	.20**	.10	.10	.05	-.37**	-.32**	-.02

*Note.* % women in same job = perceived percentage of women who work in the same job as the participant. All *ns* = 190 apart from age, for which *n* = 171 due to missing data. All scales have a theoretical range from 1 to 7 apart from mental health problems (0 to 61), social class (0 to 100), and % women in job (0 to 100).

\* *p* < .05. \*\* *p* < .01.

**Union group differences.** We undertook exploratory comparisons between members of the two different union groups that had the largest sample sizes (mining and energy  $n = 101$ ; construction and general  $n = 61$ ) in order to determine if they differed on our key variables. We did not investigate differences between the two smaller union groups because the sample sizes for these groups were too small to yield informative results ( $ns = 15$  and  $13$ ). Women in the mining and energy group were less satisfied with their jobs ( $M = 4.69$ ,  $SD = 1.61$ ) than those in the construction and general group ( $M = 5.67$ ,  $SD = 1.49$ ),  $t(160) = -3.88$ ,  $p < .001$ , Cohen's  $d = -0.63$ . However, there were no significant differences between these groups in terms of their sexism, sense of belonging, or mental health ( $ps \geq .184$ ). Notably, although the reported percentage of women in their industry was larger for participants in the mining group ( $M = 16.23$ ,  $SD = 10.18$ ) than those in the construction group ( $M = 11.39$ ,  $SD = 11.79$ ),  $t(160) = 2.76$ ,  $p = .006$ , Cohen's  $d = 0.45$ , the reported status of women was lower for participants in the mining group ( $M = 2.79$ ,  $SD = 1.71$ ) compared to those in the construction group ( $M = 3.47$ ,  $SD = 1.83$ ),  $t(160) = -2.38$ ,  $p = .018$ , Cohen's  $d = -0.39$ . Compared to those in the construction group, participants in the mining group also reported having more years in the industry and higher social class ( $ps \leq .01$ ). The social class difference may be related to income differences, with miners typically paid more than construction workers. In summary, although there were no union group differences in sexism, sense of belonging, or mental health, there were differences in job satisfaction, percentage of women in the industry, status of women in the industry, and years in the industry.

**Zero-order correlations.** As can be seen in Table 2, the association between organizational and interpersonal sexism was  $r = .55$ , which is similar to that obtained by Rubin et al. (2017;  $r = .49$ ). The size of this association provides evidence of convergent validity between these two aspects of sexism, but it does not threaten their divergent validity, which is also confirmed by the results of the exploratory factor analysis.

As predicted, the correlation results showed that both forms of sexism were positively associated with mental health problems and negatively associated with sense of belonging and job satisfaction. Hence, the more sexism that women reported experiencing over the past year, the less of a sense of belonging they felt in their industry, the more mental health problems they reported experiencing over the past week, and the less job satisfaction they had over the past year. The size of these effects (average  $r = |.38|$ ) was consistent with that obtained by Rubin et al. (2017; average  $r = |.31|$ ). In addition, sense of belonging was negatively associated with mental health and positively associated with job satisfaction (average  $r = |.46|$ ; Rubin et al. average  $r = .41$ ). Hence, the pattern of results was consistent with the predicted mediation effects.

We predicted that women who perceived themselves to be particularly feminine would report greater sexism and poorer mental health and job satisfaction. Contrary to this prediction, there were no significant relations between perceived femininity and these variables ( $rs \leq |.14|$ ).

Notably, age had a small-to-medium sized negative association with interpersonal sexism: Younger women experienced greater interpersonal sexism. Rubin et al. (2017) found a similar relation between age and both interpersonal and organizational sexism.

Finally, consistent with their potential role as mediators, the perceived need to reduce femininity at work, women's status in the industry, and work-life balance tended to have significant medium-sized associations with our key variables.

### Multiple Regression Analyses

The correlation results indicated that both organizational and interpersonal sexism were significantly associated with the proposed mediator and outcome variables. However, the large association between organizational and interpersonal sexism ( $r = .55$ ) means that we need to be cautious about attributing unique associations to either construct (Rubin et al., 2017). For example, the association between organizational sexism and other variables could be due to its shared variance with interpersonal sexism. To address this issue, we conducted multiple regression analyses in which we included organizational sexism and interpersonal sexism as simultaneous predictors. This approach controlled for the variance associated with one type of sexism when investigating associations with the other type of sexism.

Consistent with predictions, both organizational sexism and interpersonal sexism were significant negative predictors of sense of belonging ( $\beta = -.31, p < .001$ ; and  $\beta = -.37, p < .001$ , respectively) and significant positive predictors of mental health problems ( $\beta = .30, p < .001$ ; and  $\beta = .20, p = .011$ , respectively). However, only organizational sexism emerged as a significant negative predictor of job satisfaction ( $\beta = -.30, p < .001$ ). Interpersonal sexism was not a significant predictor of job satisfaction when controlling for organizational sexism ( $\beta = -.01, p = .898$ ).

### Mediation Analyses

We used Hayes' (2013) PROCESS software to test our mediation models. This software uses a path analytical framework and bootstrapping to provide powerful estimates of indirect effects. We used 1,000 bootstrapping iterations to obtain bias-corrected bootstrapped 95% confidence intervals for indirect effects. We tested four mediation models in which either organizational or interpersonal sexism were the predictor variables, sense of belonging was the mediator variable, and either mental health problems or job satisfaction were the outcome variables. As in our multiple regression analyses, we controlled for one type of sexism when investigating the other type of sexism as a predictor variable. The results for each of our mediation tests are presented in Table 3.

The first mediation model investigated whether organizational sexism predicted mental health problems via sense of belonging while controlling for interpersonal sexism. As can be seen in Model 1 of Table 3, there was a significant positive total effect of organizational sexism on mental health problems. Consistent with the correlation analyses, greater organizational sexism was associated with more mental health problems. There was also a significant positive direct effect of organizational sexism on mental health problems when controlling for sense of belonging. However, the direct effect was smaller ( $b = 1.01$ ) than the total effect ( $b = 1.59$ ), indicating that controlling for sense of belonging led to a reduction in the size of the association between organizational sexism and mental health. The test of the indirect effect established whether this reduction in effect size was significant. The 95% confidence intervals for this indirect effect were both positive, indicating a significant difference between the size of the total and direct effects at the .05 significance level. In other words, the association between perceived organizational sexism over the past year and mental health problems over the past week was partially accounted for by variability in women's sense of belonging over the past year. Model 2 shows that sense of belonging also significantly mediated the association between organizational sexism and job satisfaction while controlling for interpersonal sexism.

Table 3  
*The Mediating Effect of Sense of Belonging*

Model	Model variables	Effect type	<i>b</i> ( <i>SE</i> )	95% CIs	<i>t</i>	<i>p</i>
Model 1	Predictor: Organizational sexism	Total effect	1.59 (0.42)	0.76, 2.42	3.78	< .001
	Outcome: Mental health	Direct effect	1.01 (0.42)	0.18, 1.83	2.41	.017
	Covariate: Interpersonal sexism	Indirect effect	0.59 (0.20)	0.29, 1.07	-	-
Model 2	Predictor: Organizational sexism	Total effect	-0.24 (0.07)	-0.38, -0.11	-3.57	< .001
	Outcome: Job satisfaction	Direct effect	-0.15 (0.07)	-0.28, -0.01	-2.15	.033
	Covariate: Interpersonal sexism	Indirect effect	-0.10 (0.03)	-0.17, -0.04	-	-
Model 3	Predictor: Interpersonal sexism	Total effect	1.16 (0.45)	0.27, 2.05	2.58	.011
	Outcome: Mental health	Direct effect	0.52 (0.45)	-0.36, 1.41	1.17	.245
	Covariate: Organizational sexism	Indirect effect	0.64 (0.22)	0.31, 1.21	-	-
Model 4	Predictor: Interpersonal sexism	Total effect	-0.01 (0.07)	-0.15, 0.14	-0.13	.899
	Outcome: Job satisfaction	Direct effect	0.10 (0.07)	-0.04, 0.24	1.37	.172
	Covariate: Organizational sexism	Indirect effect	-0.11 (.035)	-0.19, -0.06	-	-

*Note.* Sense of belonging is the mediator variable for all models. All models have Dfs of 2, 187. Following Hayes (2013) and Pek and Flora (2017), all beta values are unstandardized coefficients. Standardized zero-order effect sizes are available in Table 2. *SE* = standard error. 95% CIs = the upper and lower 95% confidence intervals; SEs and CIs for indirect effects are bootstrapped. If CIs are both positive or negative, then the indirect effect is significant at  $p < .05$ .

Turning to interpersonal sexism, Model 3 shows that sense of belonging significantly mediated the association between interpersonal sexism and mental health. In addition, Model 4 shows that sense of belonging significantly mediated the association between interpersonal sexism and job satisfaction. However, this latter effect needs to be interpreted with caution because the direct effect was larger than the total effect. This pattern of results suggests a suppression effect in which controlling for sense of belonging allows a previously suppressed association between interpersonal sexism and job satisfaction to manifest. However, the interpretation of this effect is further complicated by the fact that there was no significant direct effect of interpersonal sexism on job satisfaction. Given these complexities, we decided to treat this effect as null finding.

The completely standardized indirect effect sizes for the three remaining mediation effects were 0.10, -0.10, and 0.10, respectively. When considering mediation effects, a small effect = .01, a medium effect = .09, and a large effect = .25 (Kenny, 2016). Hence, these mediation effects were medium in size.

### **Robustness Analyses**

We reconducted our mediation analyses with and without outliers and with and without covariates in order to test their robustness to different analytical approaches. One multivariate outlier was identified in relation to the measures of organizational sexism, interpersonal sexism, sense of belonging, mental health problems, and job satisfaction using a critical chi-squared value of 15.09 ( $p < .01$ ). The pattern of significant and nonsignificant effects remained almost identical when mediation Models 1-4 were retested excluding this outlier. The exception was for Model 2's direct effect, which changed from being significant ( $p = .033$ ) to nonsignificant ( $p = .054$ ). This change did not affect the substantive conclusions that were reached regarding this model.

We also reconducted Models 1-4 including the following demographic variables as covariates: age, years in industry, social class, relationship status, union group (contrasting the mining and energy group with the construction and general group), employment status (contrasting the two largest categories of permanent [full-time] and casual worker), and understanding of the survey. The direct effects for Model's 1, 2, and 4 changed from being significant to being nonsignificant ( $ps \geq .053$ ). In addition, Model 3's total effect changed from being significant ( $p = .011$ ) to being nonsignificant ( $p = .056$ ). These changes may reflect a lack of power due to a reduced sample size for these analyses ( $N = 143$ ) that resulted following the exclusion of participants who belonged to low frequency categories in the union group and employment status variables (e.g., four independent contractors). Critically, however, all of the key mediation effects remained significant ( $ps < .05$ ).

### **Path Analysis**

We complemented our PROCESS mediation analyses with a path analysis that included our predicted direct and indirect paths between organizational and interpersonal sexism, sense of belonging, mental health, and job satisfaction. The path model is provided in Figure 1, and the standardized indirect effects are provided in Table 4.

As can be seen from Table 4, the indirect effects from Table 3 are all replicated in the path analysis.

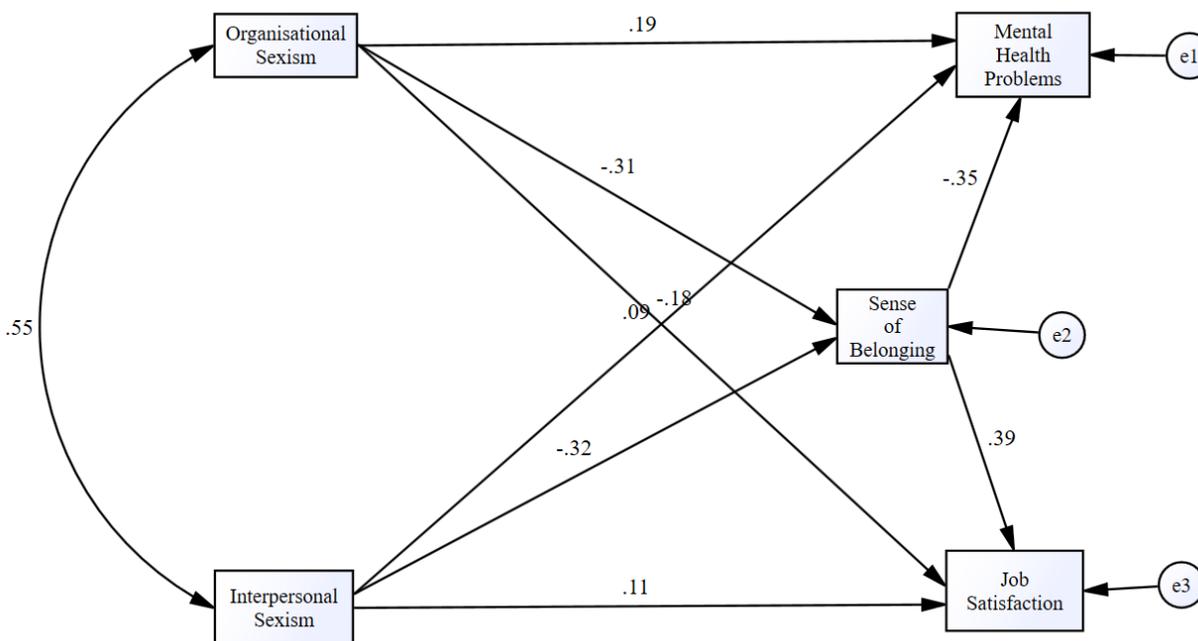


Figure 1. Path analysis of the direct and indirect paths in our mediation models. Estimates are standardized regression coefficients.

Table 4  
Indirect Effects for the Path Analysis in Figure 1

Predictor	Outcome	B	95% CIs	p
Organizational sexism	Mental health	.11	0.05, 0.20	.001
	Job satisfaction	-.12	-0.21, -0.06	.001
Interpersonal sexism	Mental health	.11	0.06, 0.18	.002
	Job satisfaction	-.12	-0.21, -0.06	.002

Note. Sense of belonging is the mediator variable for all indirect effects. All beta values are standardized coefficients. 95% CIs = lower and upper 95% bias-corrected bootstrapped confidence intervals.

### Exploratory Mediation Analyses

As noted previously, the perceived need to reduce femininity at work, women’s status in the industry, and work-life balance tended to have medium-sized associations with sexism, mental health, and job satisfaction. Hence, these variables also had the potential to mediate the associations between (a) sexism and mental health and (b) sexism and job satisfaction. To explore these possibilities, we conducted a series of four parallel mediation models (Hayes, 2013, Model 4) in which either organizational or interpersonal sexism were the predictor variables, either mental health or job satisfaction were the outcome variables, and either organizational or interpersonal sexism were covariates. In these models, sense of belonging, perceived need to reduce femininity at work, women’s status in the industry, and work-life balance were entered as four parallel mediator variables. This parallel mediation approach tests the unique mediating effect of each potential mediator while controlling for all other mediators in the model (Hayes, 2013). The results for of our exploratory mediation tests are provided in Table 5.

Table 5  
*The Parallel Mediating Effects of Sense of Belonging, Need to Reduce Femininity, Women’s Status, and Work-Life Balance*

Model	Model variables	Effect type	<i>b</i> ( <i>SE</i> )	95% CIs
Model 1	Predictor: Organizational sexism Outcome: Mental health Covariate: Interpersonal sexism	Total effect	1.59 (0.42)	0.76, 2.42
		Direct effect	1.01 (0.48)	0.07, 1.95
		IE: Sense of belonging	0.54 (0.20)	0.22, 1.02
		IE: Need to reduce femininity	0.18 (0.11)	0.02, 0.44
		IE: Women’s status	-0.58 (0.25)	-1.10, -0.13
		IE: Work-life balance	0.45 (0.17)	0.14, 0.79
Model 2	Predictor: Organizational sexism Outcome: Job satisfaction Covariate: Interpersonal sexism	Total effect	-0.24 (0.07)	-0.38, -0.11
		Direct effect	-0.09 (0.08)	-0.25, 0.06
		IE: Sense of belonging	-0.10 (0.04)	-0.19, -0.05
		IE: Need to reduce femininity	0.03 (0.02)	0.00, 0.09
		IE: Women’s status	-0.02 (0.04)	-0.10, 0.06
		IE: Work-life balance	-0.06 (0.03)	-0.12, -0.01
Model 3	Predictor: Interpersonal sexism Outcome: Mental health Covariate: Organizational sexism	Total effect	1.16 (0.45)	0.27, 2.05
		Direct effect	0.41 (0.45)	-0.48, 1.30
		IE: Sense of belonging	0.59 (0.22)	0.26, 1.12
		IE: Need to reduce femininity	0.30 (0.17)	0.02, 0.67
		IE: Women’s status	-0.28 (0.15)	-0.66, -0.04
		IE: Work-life balance	0.14 (0.11)	-0.01, 0.42
Model 4	Predictor: Interpersonal sexism Outcome: Job satisfaction Covariate: Organizational sexism	Total effect	-0.01 (0.07)	-0.15, 0.14
		Direct effect	0.08 (0.08)	-0.07, 0.23
		IE: Sense of belonging	-0.11 (0.04)	-0.20, -0.05
		IE: Need to reduce femininity	0.05 (0.03)	-0.00, 0.12
		IE: Women’s status	-0.01 (.020)	-0.05, 0.03
		IE: Work-life balance	-0.02 (0.02)	-0.06, 0.00

*Note.* All models have Dfs of 2, 187. Following Hayes (2013) and Pek and Flora (2017), all beta values are unstandardized coefficients. Standardized zero-order effect sizes are available in Table 2. IE = indirect effect. *SE* = bootstrapped standard error. 95% CIs = lower and upper 95% bias-corrected bootstrapped confidence intervals. If CIs are both positive or negative, then the indirect effect is significant at  $p < .05$ .

As can be seen in Table 5, in all four models, sense of belonging continued to operate as a significant mediator variable. The other three mediator variables showed significant indirect effects in Models 1-3 and no significant effects in Model 4. The exception to this pattern of results was women's status, which did not show a significant effect in Model 2. Hence, sense of belonging was not the only mediator between sexism and mental health and job satisfaction. Both types of sexism were also associated with an increased need to reduce femininity at work, a decreased perception of women's status in the industry, and a decreased sense of work-life balance, and these variables tended to predict poorer mental health and job satisfaction. The mediation analyses showed that these variables also mediated the associations between both types of sexism and mental health and between organizational sexism and job satisfaction.

### **Moderation Analysis**

Finally, we used PROCESS (Model 1) to test the moderating effect of perceived femininity on the associations between the two types of sexism and (a) mental health and (b) job satisfaction while controlling for each corresponding type of sexism. Variables were mean centered prior to analysis. There was no significant moderating effect of perceived femininity for either type of sexism when mental health was the outcome ( $bs \leq -.02$ ,  $ps \geq .192$ ) or when job satisfaction was the outcome ( $bs < -.01$ ,  $ps \geq .503$ ). Hence, perceived femininity did not appear to play a significant moderating role.

### **Discussion**

The present study represents the first confirmatory (preregistered) investigation of the associations between workplace sexism, sense of belonging, mental health, and job satisfaction. Consistent with predictions, organizational and interpersonal sexism were independent negative predictors of sense of belonging and mental health problems. In addition, organizational sexism was an independent negative predictor of job satisfaction. However, contrary to predictions, interpersonal sexism did not predict job satisfaction.

The present study also confirmed a psychological mechanism through which sexism is associated with mental health and job satisfaction. As predicted, sense of belonging mediated the associations between organizational sexism and both mental health and job satisfaction. In addition, sense of belonging mediated the association between interpersonal sexism and mental health. Hence, sexism was associated with a poorer sense of belonging in the industry, which was associated with poorer mental health and job satisfaction.

This pattern of results fits a theoretical model in which workplace sexism reduces sense of belonging because it represents a form of bullying, rejection, and ostracism by men against their female co-workers (e.g., Smart Richman & Leary, 2009). This reduced sense of belonging then impacts negatively on women's mental health and job satisfaction due its association with feelings of loneliness and alienation (e.g., Mellor et al., 2008).

Contrary to predictions, women's self-reported femininity was not related to these effects. Hence, women who reported being more feminine did not report being the subject of greater levels of sexism and mental health problems and lower levels of sense of belonging and job satisfaction. In addition, perceived femininity did not moderate any of the key associations. It is difficult to draw conclusions from this null finding. It is possible that perceived femininity is unrelated to perceived sexism. It is also possible that women are strategic in their displays of femininity (Denissen, 2010), and that this strategy may protect them from negative outcomes. Alternatively, our single-item measure of perceived femininity may have lacked sufficient sensitivity and/or been

too susceptible to error to yield reliable results. Future research may wish to use a more sensitive, less error-prone, multi-item measure of perceived femininity in order to address this possibility.

Finally, exploratory analyses found that sense of belonging may not be the only mediator between sexism and mental health and job satisfaction. Additional mediators included the perceived need to reduce femininity at work, perception of women's status in the industry, and sense of work-life balance. These variables mediated the associations between (a) organizational sexism and (i) mental health and (ii) job satisfaction (apart from women's status) and (b) interpersonal sexism and mental health.

### **Comparison with Previous Research**

The present findings have several key similarities and differences with those obtained by Rubin et al. (2017). First, our exploratory factor analysis replicated the two-factor structure of sexism that was initially identified by Rubin et al. The associated distinction between interpersonal and organizational sexism maps on to the factors of "perceived burdens on women" and "sexual harassment" that were identified in Bergman and Hallberg's (2002) investigation of women in a male-dominated industry. It also reflects Sojo et al.'s (2016) more recent distinction between "personal experiences of discrimination because of one's gender versus experiences of a work environment that devalues women in general (Settles et al., 2006)" (p. 33). Sojo et al. argued that this "distinction in conceptualization and measurement should be made clear in future studies" (p. 27). Certainly, we have found it to be an important distinction in the current study because the two aspects of sexism yielded unique patterns of results that have different theoretical and practical implications.

Like Rubin et al. (2017), we found that both organizational sexism and interpersonal sexism positively predicted mental health problems, and that organizational sexism negatively predicted job satisfaction. In addition, like Rubin et al., we found that sense of belonging mediated the association between organizational sexism and mental health. However, contrary to Rubin et al., we did not find that interpersonal sexism predicted job satisfaction when we controlled for its association with organizational sexism. In addition, contrary to the present findings, Rubin et al. did not find that interpersonal sexism predicted sense of belonging in the industry independent of organizational sexism. In general then, interpersonal sexism had less reliable associations with sense of belonging in the industry and job satisfaction across these two studies. Consistent with Rubin et al.'s conclusions, these less reliable associations may be due to differences in the specificity of the two types of sexism. Interpersonal sexism is a broader society-based form of sexism that has the potential to take place inside and outside the workplace. In contrast, organizational sexism is a more specific group-based form of sexism that is contingent on the organizational setting. Following Fishbein and Ajzen's (1975) measurement correspondence argument, the unreliable associations between interpersonal sexism and organizational variables (sense of belonging and job satisfaction) may reflect a lack of correspondence between broad predictors and more specific outcomes. In contrast, the more reliable associations between organizational sexism and organizational variables may reflect a higher level of measurement correspondence.

### **Limitations**

The present research used a cross-sectional correlational research design. Although this type of design is the dominant approach in this area (for a review, see Sojo et al., 2016), it does not allow clear conclusions to be reached regarding the causal direction of the proposed processes.

In particular, we assumed that sexism leads to a poorer sense of belonging in the industry, which then leads to poorer mental health and job satisfaction. However, our results may fit with other causal models. For example, poor mental health may lead to a lack of sense of belonging, which then increases the likelihood of experiencing sexism and other negative behaviors from co-workers. A longitudinal research design is required in order to distinguish between alternative causal models such as these.

Notably, there is already longitudinal evidence that (a) sexism causes poorer mental health and job satisfaction (Glomb, Munson, Hulin, Bergman, & Drasgow, 1999; Munson, Hulin, & Drasgow, 2000; Rinehart, Espelage, & Bub, 2017), and that (b) sense of belonging (social connectedness) causes better mental health (Saeri et al., 2017). However, similar longitudinal evidence is missing in regards to job satisfaction. Having now confirmed the basic mediation effects in cross-sectional studies, it is time to invest in longitudinal tests of mediation models.

It is also possible that the self-report measures in our study were associated with one another due to common method variance. To examine this possibility, we used Harman's one-factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Specifically, we included our key variables (e.g., interpersonal sexism, organizational sexism, sense of belonging, mental health, and job satisfaction) in an exploratory principal axis factor analysis and examined the unrotated factor solution. The largest factor accounted for 53.26% of the variance. The next largest factors accounted for 17.91%, 11.05%, 9.64%, and 8.14% of the variance. Hence, although one large factor was evident, it only accounted for around half of the covariance among the five key measures. It is also important to note that the average absolute correlation between the key measures was only  $r = .41$ . Hence, there was evidence of divergent validity between the measures. Harman's one-factor test suffers from some interpretational problems (Podsakoff et al., 2003). Nonetheless, this pattern of results suggests that although common method variance may have had some influence on the results, it is unlikely to fully explain the various associations between the measures.

### **Implications and Directions for Future Research**

The present research suggests that the associations between sexism, sense of belonging, and mental health and job satisfaction are to some extent replicable and generalizable from a single mining company (Rubin et al., 2017). Again, we are not in a position to make causal claims based on the current results. However, we may speculate that strategies that help women to integrate more thoroughly into male-dominated industries may increase their mental health and job satisfaction. Certainly, previous research has found that organizational practices that are supportive of women are positively associated with women's mental health and job satisfaction (Burke, Burgess, & Fallon, 2006). The current research suggests that it may be important to develop a sense of belonging in the industry as part of these strategies.

Future research should also investigate sense of belonging as a moderator of reactions to workplace sexism. Mallett and Melchiori (2014) assumed that women who have a higher sense of belonging are less likely to be motivated by a need to be liked and fit in and more likely to be motivated by a need to receive respect from their male co-workers. Consistent with this assumption, these researchers found that women who thought about a time when they felt that they belonged to a group were more assertive in response to sexist interview questions (e.g., "Do you have a boyfriend?" "Do you think it is important for women to wear bras to work?") compared to those who reflected on a time when they felt rejected. Hence, sense of belonging may not only mediate the effects of workplace sexism, but also empower women to fight against sexism.

The present research also obtained some preliminary evidence that sexism has a negative impact on not only women's sense of belonging, but also their expression of femininity, organizational status, and work-life balance. Future research should attempt to incorporate these variables into a theoretically integrative model that can be tested on an a priori basis. For example, it is possible that sexism causes a decrease in psychological variables, such as women's sense of belonging and status in the industry, and that decreases in these psychological variables then cause changes in behaviors that relate to femininity-expression and work-life balance as women try to fit in more by becoming less feminine and working harder. These behavioral reactions may then cause poorer mental health and job satisfaction.

A further important issue for future research is to determine the extent to which the current findings generalize from male-dominated industries to more gender-balanced industries. Of relevance, Sojo et al. (2016) recently conducted a meta-analysis of 88 studies that examined harmful workplace experiences and women's occupational well-being. They tested for the moderating effect of male-dominated versus gender-balanced work environments on the negative association between sexual harassment and mental health. They found no significant moderating effect, suggesting that this negative association remained relatively constant across the two types of work environment. Consistent with this null finding, in the current study, perceived percentage of women who work in the same job as the participant did not act as a significant moderator of the associations between sexism and either mental health or job satisfaction ( $ps \geq .150$ ). Despite these null findings, it is interesting to note that Sojo et al. found that "all the facets of sexual harassment...had stronger negative associations with women's mental health when they were working in male-dominated contexts than for women working in mixed settings" (p. 27). Hence, it remains possible that the associations observed in the current study will be weaker in more gender-balanced working environments.

Finally, we have focused on variables that mediate the relation between sexism and mental health and job satisfaction with a view to potentially mitigating the effects of sexism on these variables. However, our research approach should not be taken as one that in any way accepts sexism as an inevitable aspect of work life or life in general. In this sense, we agree that a much more direct and desirable approach to this issue is to reduce sexism, rather than to reduce the effects of sexism. Hence, future research should also investigate interventions to reduce both organizational sexism and interpersonal sexism more broadly. Increasing gender equality in the workplace is likely to represent the most effective approach in this respect.

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### Endnotes

1. As indicated in our As.Predicted preregistered research protocol, we also tested a separate set of hypotheses that (a) higher levels of perceived self-to-group similarity (e.g., “I am quite similar to other women in my job”) and in-group ties (e.g., “I feel strong ties with other women in my job”) would reduce the negative association between women’s low status minority position and their mental health and job satisfaction, whereas (b) higher levels of perceived importance of the female worker identity (e.g., “Being a woman in my job is an important part of my self-image”) would increase the size of these negative associations. These hypotheses were based on Rubin and Stuart’s (2018) proposal that different types of social identification amplify and buffer the relation between membership in high and low status groups and mental health. Due to an error, we did not include a measure of ingroup ties in the current survey. However, we did include four items that measured perceived self-to-group similarity and four items that measured perceived importance of female worker identity. To test the above hypotheses, we conducted moderation tests (Hayes, 2013, Model 1) in which either women’s status or perceived percentage of women in participants’ jobs were the predictor variables, either depression, anxiety, or stress were the outcome variables, and either perceived self-to-group similarity or perceived importance of female worker identity was the moderator variable. These tests did not yielded any significant interaction effects ( $ps \geq .206$ ). Hence, we did not replicated Rubin and Stuart’s (2018) initial findings. These null results may have occurred due to (a) Type I errors in the original study, (b) Type II errors in the current study due to less powerful measures, or (c) a genuine change in the results that have been caused by changes in the methodology between the two studies.
2. Data from 305 participants were collected instead of from 304 participants due to an imprecision in the timing of closing the survey.

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### Conflict of Interest

The authors declare no conflicts of interest.