

VOICE MATTERS: BUFFERING THE IMPACT OF A NEGATIVE CLIMATE FOR WOMEN IN SCIENCE

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The current study examined whether women scientists' perceptions of voice moderate the impact of poor workplace climates on job satisfaction and whether effective leadership and mentoring promote women's voice. Survey data were collected from 135 faculty women in the natural sciences. The results from multiple regression analyses indicated that negative (e.g., sexist, hostile) departmental climates were related to lower job satisfaction. However, voice interacted with climate, such that women who perceived that they had more voice in departmental matters showed higher levels of job satisfaction than those who perceived having less voice. An additional regression indicated that mentoring by other women (but not men) in academia and effective departmental leadership were positively related to women's sense of voice. Theoretical and practical implications for the retention and success of women in male-dominated fields are discussed.

Despite national recognition of the need to attract more diverse scientists (National Science Board, 2003), women in science face a host of obstacles to their career success. These include fewer opportunities for leadership (Carr, Szalacha, Barnett, Caswell, & Inui, 2003; Niemeier & Gonzalez, 2004; Wright et al., 2003), greater social isolation from male peers (Wright et al., 2003; Xie & Shauman, 2003), slower advancement, and less representation at top levels (Valian, 2004). Such obstacles may contribute to women scientists' experience of their work environments as negative, and such climates have been linked to negative job outcomes, including decreased satisfaction and—usually later—attrition (e.g., Carr, Schmidt, Ford, & DeShon, 2003; Gunter & Furnham, 1996; Higgins & Thomas, 2001; Preston, 1994, 2004; Sourdif, 2004; Yoder & Aniakudo, 1996; Zeitz, 1990).

Given the consistent findings in this area, it is important to identify factors that may buffer women in science from

the negative effects of a poor workplace climate. We suggest that voice may be one such factor, because voice is critical to perceptions of personal agency and worth (Belenky, Clinchy, Goldberger, & Tarule, 1986; Jack, 1991; Jack & Dill, 1992), fairness, and control over organizational procedures and outcomes (Thibaut & Walker, 1975). Further, we suggest that two organizational resources may promote voice for women scientists: effective leadership and female mentoring. In sum, we develop a model that integrates organizational resources for women's empowerment with women's own agency, or voice, to specify conditions under which women can survive and thrive, even in negative organizational contexts. We tested these predictions among women natural scientists in academia. Figure 1 presents a conceptual diagram of the hypotheses that follow.

Workplace Climate

Workplace climate refers to perceptions of the work environment, or perceptions of organizational policies, practices, and procedures, that can be formed through interactions and communication with others in the organization (Kickul & Liao-Troth, 2003; Seibert, Silver, & Randolph, 2004). Individual perceptions of the workplace are particularly relevant when seeking to understand individual outcomes, because it is people's perceptions of their environment and situation that often determine how they respond to it. Importantly, these perceptions need not be accurate assessments of the organization (Seibert et al., 2004), nor must they agree with others' perceptions in the same environment to be meaningful and consequential,

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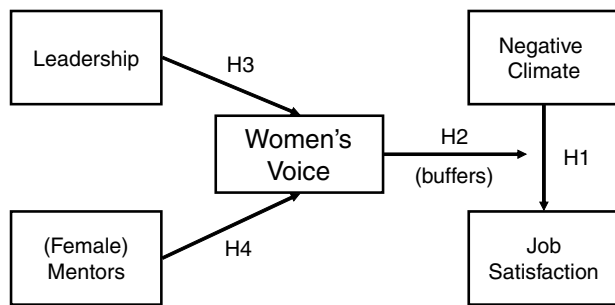


Fig. 1. Conceptual diagram of proposed relationships.

because each individual's environment may be distinctive (Rousseau, 1988). Importantly, individuals often make decisions to exit environments based on those perceptions (Preston, 1994, 2004). In the current study, we examine the job outcomes associated with both a general, negative climate, as well as a sexist climate, for women in science. Whereas a generally negative (e.g., hostile, disrespectful) climate may affect all workplace employees, a sexist climate could be especially problematic for female employees. This may be particularly true for women in science because of the unique characteristics that constitute their workplace environment.

Women in science may find their work environment to be especially poor for several reasons. First, because science is an extremely male-dominated domain (Barbercheck, 2001; National Science Foundation, 2000, 2004), negative experiences, such as sexual harassment, are more likely to occur (e.g., Fitzgerald, Drasgow, Hulin, Gelfand, & Magley, 1997; Fitzgerald, Drasgow, & Magley, 1999; Hesson-McInnis & Fitzgerald, 1997). Second, the cultural stereotype of the scientist is both consistent with gender-normative prescriptions for men (e.g., objective, rational, single-minded) and inconsistent with prescribed norms for women (Barbercheck, 2001). Thus, women scientists who violate these gender-stereotypic prescriptions may face social and professional penalties (e.g., Heilman, 2001; Heilman, Wallen, Fuchs, & Tamkins, 2004). Finally, the culture of science has been described as aggressive and competitive (Robinson & McIlwee, 1991) and often involves the exclusion, isolation, and negative treatment of women by their male peers (Wyer, Barbercheck, Geisman, Öztürk, & Wayne, 2001). For these reasons, women scientists may find their workplace climate to be particularly negative as well as sexist.

Positive versus negative workplace climates have been related to work outcomes for both women and men. For example, Gunter and Furnham (1996) found that job satisfaction was predicted by several aspects of positive climate, including perceptions of job clarity, encouragement, and job importance and challenge. Other studies have found work satisfaction to be related to other interpersonal aspects of the climate, including support, teamwork, and positive treatment from coworkers and supervisors (Donovan,

Drasgow, & Munson, 1998; Johnson & McIntye, 1998; Joyce, Slocum, & von Glinow, 1982). Similarly, a meta-analysis of 51 studies found a positive relationship between job satisfaction and affective aspects of the climate that reflect positive interpersonal interactions in the workplace (Carr, Schmidt et al., 2003).

Some studies of climate and job outcomes for women have focused on environments that are specifically sexist. Female firefighters who perceived the climate to be "chilly" (i.e., more negative) toward women reported feeling less accepted, important to, and valued by their station than those who felt the climate was more positive (Yoder & Aniakudo, 1996). Further, researchers have found that workplace tolerance of sexual harassment is associated with negative job outcomes, including lower satisfaction with work, coworkers, and supervisors (Hesson-McInnis & Fitzgerald, 1997) and more job withdrawal (Hulin, Fitzgerald, & Drasgow, 1996). Similar effects have emerged for women working in stereotypically male domains (e.g., the military; Fitzgerald et al., 1999; Williams, Fitzgerald, & Drasgow, 1999). In sum, previous research has found that positive climates are associated with positive job outcomes, whereas sexist climates are associated with poor job outcomes, especially for women in male-dominated fields. Consistent with this literature, we hypothesized that perceptions of the workplace climate as more negative and sexist would be related to lower job satisfaction for women scientists (Hypothesis 1).

The Moderating Role of Voice

Given the negative impact that a poor workplace climate can have on job outcomes, especially for women, it is important to identify factors that may buffer employees from these negative effects. We propose voice or influence to be one such moderating variable. *Voice* has been conceptualized in feminist theorizing as a precondition for a sense of personal agency and human value (Fine, 1988; Jack, 1991; Jack & Dill, 1992; Martin, 1996; Tolman, 2002). The absence of voice is associated with low self-confidence and depression (Cramer, Gallant, & Langlois, 2005; Jack, 1991; Rogers, Brown, & Tappan, 1994), eating disorders (Steiner-Adair, 1991), and underachievement (Fine & Weis, 2003; Weis & Fine, 1993). Gilligan (1988), drawing links to Hirschman's (1970) discussion of exit and voice as alternative responses to difficulties in organizations, proposed that women's commitment to dialogue and relationships, rather than exit, leads them to seek ways to find their voices within relationships—and by extension, within organizations composed of relationships. She argued that Hirschman's notion of "loyalty" implies the kind of relational connection that women have been socialized to value more highly than men. Thus, "voice—the attempt to change rather than escape from an objectionable situation—contains the potential for transformation by bringing the self into connection with others" (Gilligan, 1988, p. 154). In this way, even women in

negative and sexist climates should feel more included and hopeful when they experience the possibility of voice, and voice may be an especially important option for women in such environments.

Similarly, within the organizational literature, voice has been defined broadly as having input or influence in an organization in which one is a member (a workplace, a voluntary association, etc.), regardless of level of satisfaction with the organization. Voice, used in this sense, is a key component of procedural justice (e.g., Thibaut & Walker, 1975; Tyler, Rasinski, & Spodick, 1985), which is the perception that the process through which decisions are made about employee outcomes is fair (in contrast to distributive justice, or the perceived fairness of the actual outcomes received; Aryee, Budhwar, & Chen, 2002; Colquitt, 2001). Research has consistently found procedural justice (operationalized as including voice) to predict positive job outcomes, such as job satisfaction (e.g., Judge & Colquitt, 2004), trust in the organization (e.g., Aryee et al., 2002), and workgroup or organizational commitment (for meta-analytic reviews, see Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Cohen-Charash & Spector, 2001).

The voice component of procedural justice may also moderate relationships between workplace experiences and job outcomes. For example, Skarlicki and Folger (1997) found that perceptions of unfair pay (distributive injustice) were related to engaging in more organizational retaliatory behaviors only when employees felt (a) that procedures were unfair, and they had little say in their workplace (low voice/procedural justice), and (b) they were treated poorly by supervisors (low interactional justice). Similarly, Fields, Pang, and Chiu (2000) found that procedural justice, including the extent to which employees have input, moderated the relationship between perceptions that workplace outcomes are fair and job satisfaction among Hong Kong workers.

In sum, prior research has shown that voice is important to women's well-being and that procedural justice, including voice, moderates outcomes of negative workplace experiences. We therefore predicted that voice would attenuate the effects of poor workplace climates on job satisfaction among female scientists. That is, we expected that poor climates—both a general negative climate as well as a specifically sexist climate—would be associated with greater declines in job satisfaction when women scientists' voice was low, compared to when they had greater input into departmental matters (Hypothesis 2).

Organizational Resources Promoting Voice

If voice does provide buffering benefits to women, it is critical that we identify resources that promote working women's voices. Given the centrality of relational contexts to voice, according to the feminist literature (Gilligan, 1988; Jack, 1991), the resources we examine are relationships with important individuals in the workplace: leaders

and mentors. Research suggests that perceptions of voice can be fostered within the workplace by effective leaders, including transformational leaders (Pillai, Schriesheim, & Williams, 1999), servant-leaders (Ehrhart, 2004), and empowering leaders (Arnold, Arad, Rhoades, & Drasgow, 2000). Academic leadership fits neither traditional hierarchical models nor more contemporary empowered "team" models; it has instead been characterized as a "loosely coupled system" (Clark, 1983; Orton & Weick, 1990; Weick, 1976), in which linked elements preserve their independence and logical separateness. Normally the highest-level institutional administrators articulate a vision and goals for the institution, yet these are typically quite remote from the daily lives of the faculty, which take place primarily in departments and programs led by chairs (Bennett & Figuli, 1990; Lucas, 2000). Department chairs can be critical agents of faculty well-being, particularly that of women and minorities (Jordan & Bilimoria, 2005; McIlwee & Robinson, 1992). For these reasons, we focused on the role of department chairs and predicted that effective leadership from department chairs would promote voice for women science faculty (Hypothesis 3).

Mentors may also increase individuals' sense that they have voice or influence within the workplace. Mentors are generally conceptualized as senior individuals who provide support to more junior persons and advocate for them, typically from within the organization. In fact, mentoring often involves multiple relationships, both formal and informal (Ragins, 1999). Mentors can provide their protégés with three types of support: career development (e.g., work opportunities, advice/coaching, increased protégé visibility and protection), psychosocial support (e.g., friendship, counseling), and role modeling (Higgins & Thomas, 2001; Scandura, 1997; Wallace, 2001). Mentoring facilitates individuals' socialization into the organization by helping protégés learn what is expected of them and how the organization works (Scandura, 1997). Mentors may also provide protégés with inside information that makes workplace procedures appear more transparent and fair (Wallace, 2001). Further, mentors may offer advice about voicing concerns within the organization and even raise concerns on protégés' behalf. Accordingly, mentored employees tend to report more procedural justice, including having voice, compared to their nonmentored peers (Scandura, 1997; Wallace, 2001).

Mentoring may be especially important for women in male-dominated fields because they are more likely to engage in cross-gender relationships and face more barriers to career advancement (Kanter, 1977; Ragins, 1999; Wallace, 2001). In one study of female executives, 91% reported having a mentor, and this mentoring was identified as a key strategy for breaking through the glass ceiling (Ragins, Townsend, & Mattis, 1998). However, research also suggests that female protégées may derive different benefits from male versus female mentors. Male mentors have been found to confer financial benefits in terms of greater salary

(Dreher & Cox, 1996; Ragins & Cotton, 1999; Wallace, 2001), yet having a male mentor may not necessarily result in more work satisfaction or commitment on the part of women (Wallace, 2001). In contrast, female mentors may be more likely to serve as role models and provide psychosocial support, particularly for female protégées (Ragins & McFarlin, 1990; Noe, 1988). Thus, whereas male mentors may advocate directly for female protégées, perhaps female mentors facilitate protégées' ability to influence their own outcomes through greater voice and participation (i.e., self-advocacy). Based on these literatures, we predicted that women with more support from female mentors would feel a greater sense of voice, whereas support from male mentors would be unrelated to voice (Hypothesis 4).

The Current Study

The primary goal of the current study was to examine the benefits of voice, or influence over departmental procedures and outcomes, in mitigating the impact of negative climates on job satisfaction for women in science. We are not, then, proposing that voice directly affects the climate (which is, of course, multiply determined and likely out of any single individual's control). Instead, we argue that voice enables women to work within a negative climate with less cost to their personal satisfaction. Moreover, we propose that voice should have this effect in climates that are specifically sexist, as well as in climates that are more generically negative (unsupportive, hostile, etc.) without a specifically sexist tone. Our conceptualization, schematically represented in Figure 1, identifies individual voice as a key factor in buffering the impact of stubbornly negative climates and at the same time clarifies key organizational antecedent conditions (i.e., effective leadership and female mentors) for the development of individual voice.

METHOD

Procedure and Participants

In fall 2001, a 10-page survey was mailed to all female tenure-track natural science (including engineering) faculty, at or above the rank of assistant professor, at a large Midwestern university ($N = 259$). A second survey was sent to all nonrespondents 3 weeks later (for this purpose, respondents were identified from those who separately returned postcards indicating their name and that they had completed the survey; these postcards were destroyed immediately after the second survey was mailed). Survey responses were anonymous and confidential. With a 52% response rate ($N = 135$), no differences were found in race, rank, and college/school between respondents and the larger pool of all science and engineering faculty surveyed.

Respondents were evenly distributed across ranks (34% were assistant professors, 36% were associate professors, and 30% were full professors). All held doctoral degrees in natural science or engineering fields, and they came from

the engineering school (12%), the natural sciences division of the liberal arts college (13%; which includes such fields as math, physical, earth, atmospheric, and biological sciences), the schools of medicine (42%) and nursing (11%), and other colleges and schools (e.g., Public Health, Pharmacy, Kinesiology; 17%); six women did not report their college. Women ranged in age from 29 to 69 years, with an average of 46.52 years ($SD = 8.44$ years). They had worked for this university from 1 to 36 years, with a median of 7 to 11 years. Most participants self-identified as White (78%).

Measures

Workplace climate. The survey included two measures of workplace climate, one specifically related to gender and one general. Perceptions of a *sexist climate* were measured with two items from Riger, Stokes, Raja, and Sullivan (1997) and seven items from the Gender Fairness Environment Scale (Hostler & Gressard, 1993). These items were selected to assess perceptions of a departmental environment characterized by inequality between women and men (e.g., "Some faculty have a condescending attitude toward women," "Men are more likely than women to receive helpful career advice from colleagues," "Men receive preferential treatment in the areas of recruitment and promotions"). Responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). After reverse-coding appropriate items, a mean of all nine items was computed such that higher scores indicated a more sexist climate (Cronbach's $\alpha = .89$).

The *negative general climate* of the participant's department was measured using a scale adapted from the Texas A&M University Campus Climate Survey (Hurtado, 1998). Using a series of 5-point (1–5) semantic differential scales, in which each pair of descriptors served as the labels for the poles of a scale, participants rated their department on the following six dimensions: friendly–hostile, disrespectful–respectful, collegial–contentious, collaborative–individualistic, cooperative–competitive, and not supportive–supportive. Appropriate items were reversed, and a mean was computed such that higher scores indicated a more negative departmental climate ($\alpha = .89$).

To verify that these two scales were assessing different aspects of climate, we conducted a principal components analysis, with varimax rotation, of all climate items. Results supported the two distinct scales (sexist and general). All of the items from the general climate scale loaded onto a single factor with loadings over .70. All but one of the items from the sexist climate scale loaded onto a second factor with loadings over .55. One item from the sexist climate scale (i.e., "sexist remarks are heard in the classroom") loaded onto a third factor; this item cross-loaded onto the second factor comprising the other sexist climate items, albeit with a lower factor loading (.285). However, given the high reliability of the sexist climate scale, this item was included in the scale. Further, the two climate scales were correlated

($r = .53, p < .01$), but not so highly as to suggest a single underlying construct.

Leadership. Participants' perceptions of the leadership in their department were measured with nine items adapted from the University of Michigan Medical School Faculty Survey (Betz, 1994), to which we added six items created for this study. Respondents were asked to rate their unit chair or director's performance on a scale ranging from 1 (*poor*) to 5 (*superior*) on a broad range of specific practices that indicate effective leadership (e.g., "is an effective administrator," "creates a cooperative and supportive environment," "treats faculty in an even-handed way"). Based on a mean of these 15 items, higher scores indicated more effective chair leadership. A principal components analysis supported one overall factor underlying these items ($\alpha = .96$).

Mentoring. A scale was created for this survey based on interviews with approximately 30 women science faculty and items generated by a group of five women scientists. In a checklist format, participants indicated which of the following eight types of *mentoring* they received from individuals in their department/unit: serves as a role model, promotes my career through networking, advises about preparation for advancement, advises about getting my work published, advises about department politics, advises about obtaining resources I need, advocates for me, and advises about balancing work and family. Participants completed this measure twice, once for female mentors and once for male mentors in their department/unit. Thus, two mentoring variables were created: one variable assessed how many of the above types of mentoring (0 to 8) the participant received from all male mentors in her department/unit; the other variable assessed the number of types of mentoring (0 to 8) provided by all female mentors in her department/unit.

Voice. The extent to which women perceived that they had voice in departmental procedures and decision making was assessed using nine items from the University of Michigan Faculty Work-Life Study (Center for the Study of Higher and Postsecondary Education and Center for the Education of Women, 1999). On a scale from 1 (*really no influence*) to 5 (*tremendous influence*), participants rated how much influence they have over procedures related to educational matters ("unit curriculum decisions," "selecting new graduate students or residents/fellows"), resources ("securing the facilities or equipment I need for my research," "obtaining money for travel to professional meetings," "size of salary increases I receive"), faculty ("determining who gets tenure," "selecting new faculty members to be hired," "selecting the next unit head"), and the workplace climate ("affecting the overall unit climate/culture"). All items were averaged such that higher scores indicated perceptions of having more voice ($\alpha = .85$).

Job satisfaction. Participants' global satisfaction with their jobs in academic science was assessed using 13 items, 11 of which were adapted from the University of Michigan Faculty Work-Life Study (Center for the Study of Higher and Postsecondary Education and Center for the Education of Women, 1999) and 2 of which were created for the present study. Items asked about satisfaction with faculty interaction, resources and salary, being valued for scholarship and instruction, work-life balance, level of intellectual stimulation, and overall satisfaction with the current position at the university. Response scales ranged from 1 (*very dissatisfied*) to 5 (*very satisfied*). We averaged items such that higher scores indicated more overall job satisfaction ($\alpha = .86$).

Control variables. Perceptions of climate and voice are related to a number of characteristics other than gender. For example, aging employees and employees of color feel undervalued or excluded in many organizations (e.g., Barak, Cherin, & Berkman, 1998; Hedge, Borman, & Lammlein, 2006), which may foster negative climate perceptions and lower their sense of voice. It also seems likely that faculty members at higher ranks (i.e., full professors with tenure) have greater influence or voice in unit matters compared to untenured assistant professors. For these reasons, we controlled for age, ethnic minority status, and organizational rank in all analyses. Participants self-reported their *age* in years, *race/ethnicity* (coded such that 0 = woman of color, 1 = White woman), and the *rank* of their primary budgeted appointment (1 = assistant professor, 2 = associate professor, 3 = full professor).

RESULTS

Table 1 presents correlations, means, and standard deviations for all study variables. To test hypotheses, we performed three multiple regressions. The first two tested the moderating influence of voice on the relationship between workplace climate and job satisfaction. With job satisfaction as the dependent variable, age, race, and rank were entered as control variables on Step 1. On Step 2, the climate variable (either sexist climate or negative general climate) and voice were entered. Step 3 added the interaction between climate and voice (sexist climate \times voice or negative general climate \times voice). To reduce problems of multicollinearity, continuous variables were centered in both their main effect and interaction terms (Aiken & West, 1991).

Table 2 presents results with *sexist* climate in the model. Although the control variables in Step 1 had little effect, the climate and voice variables entered on Step 2 led to a significant 38% increase in variance accounted for in job satisfaction, $\Delta F(2, 114) = 35.64, p < .01$. Consistent with Hypothesis 1, a more sexist department climate was related to less job satisfaction. In addition, a greater sense of voice was related to more job satisfaction. In support of Hypothesis 2, the interaction between sexist climate and voice, entered on Step 3, was also significant, accounting for another

Table 1

Correlations, Means, and Standard Deviations

Variable	1	2	3	4	5	6	7	8	9	10
1. Age										
2. Race	.16 [†]									
3. Rank	.62**	.22*								
4. Sexist climate	-.22*	-.13	-.11							
5. Negative general climate	-.02	-.09	-.12	.53**						
6. Chair leadership	-.09	.17 [†]	.01	-.42**	-.65**					
7. Male mentors	-.32**	.19*	-.26**	.02	-.17*	.25**				
8. Female mentors	.03	.06	-.02	-.32**	-.27**	.30**	.12			
9. Voice	.21*	.29**	.22*	-.45**	-.40**	.51**	.06	.28**		
10. Job satisfaction	.08	.11	.06	-.54**	-.68**	.61**	.17*	.26**	.53**	
Mean	46.52	–	1.96	2.85	2.85	3.21	1.39 ^a	.86 ^b	2.60	3.56
Standard Deviation	8.44	–	.80	.91	.95	.98	2.12	1.96	.80	.78

Note. Race was coded such that 0 = Woman of color, 1 = White woman.

^a60% of participants indicated receiving no mentoring from males in their department/unit. ^b81% of participants indicated receiving no mentoring from females in their department/unit.

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

Table 2

Hierarchical Multiple Regression Analysis of Job Satisfaction Predicted by Sexist Climate, Voice, and Sexist Climate × Voice Interaction

Variable	Job satisfaction								
	Step 1			Step 2			Step 3		
	Δ <i>R</i> ²	<i>B</i> (β)	<i>SE</i>	Δ <i>R</i> ²	<i>B</i> (β)	<i>SE</i>	Δ <i>R</i> ²	<i>B</i> (β)	<i>SE</i>
Step 1:	.02								
Age		.01 (.12)	.01		-.01 (-.03)	.01		.01 (.03)	.01
Race		.12 (.05)	.22		-.18 (-.08)	.18		-.24 (-.10)	.17
Rank		.01 (.01)	.11		-.01 (-.01)	.09		-.02 (-.02)	.09
Step 2:				.38**					
Sexist climate					-.37 (-.43)**	.07		-.35 (-.41)**	.07
Voice					.32 (.33)**	.08		.36 (.37)**	.08
Step 3:							.04**		
Sexist Climate × Voice								.20 (.20)**	.08
Total <i>R</i> ²							.43**		

Note. Race was coded such that 0 = Woman of color, 1 = White woman. *R*² values do not sum to total *R*² because of rounding.

***p* < .01.

4% of the variance in job satisfaction, Δ*F*(1, 113) = 7.09, *p* < .01.

The interaction is illustrated in Figure 2. To further examine the nature of this relationship, simple slope analyses were conducted to determine whether each slope differed significantly from zero (Aiken & West, 1991). The simple slope analyses used conditional values for voice that were calculated to be one standard deviation above and one standard deviation below the mean (Aiken & West, 1991). Results indicated that the negative impact of sexist climate on job satisfaction was weaker for women scientists who had more voice (*B* = -.19, β = -.23, *SE* = .10, *p* < .05) than for those with less voice (*B* = -.51, β = -.60, *SE* = .09, *p* < .01).

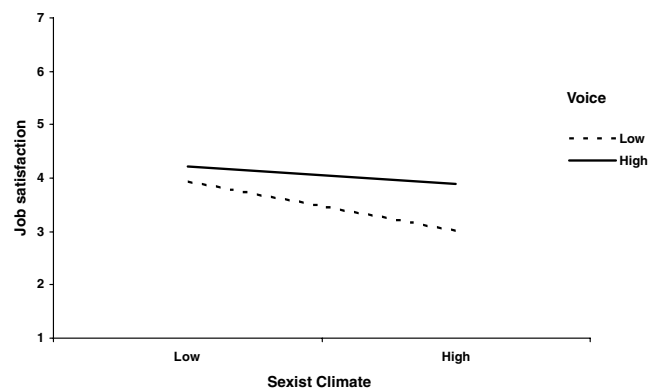


Fig. 2. Job satisfaction as a function of voice and sexist climate.

Table 3

Hierarchical Multiple Regression Analysis of Job Satisfaction Predicted by Negative General Climate, Voice, and Climate \times Voice Interaction

Variable	Job satisfaction								
	Step 1			Step 2			Step 3		
	R^2	B (β)	SE	R^2	B (β)	SE	R^2	B (β)	SE
Step 1:	.03								
Age		.01 (.10)	.01		.01 (.12)	.01		.01 (.14) [†]	.01
Race		.26 (.11)	.22		-.06 (-.03)	.15		-.12 (-.05)	.16
Rank		.01 (.01)	.12		-.13 (-.13)	.08		-.13 (-.13) [†]	.08
Step 2:				.52**					
Negative general climate					-.48 (-.57)**	.06		-.46 (-.55)**	.06
Voice					.32 (.32)**	.07		.32 (.33)**	.07
Step 3:							.01*		
Negative General Climate \times Voice								.14 (.13)*	.07
Total R^2								.56**	

Note. Race was coded such that 0 = Woman of color, 1 = White woman.

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

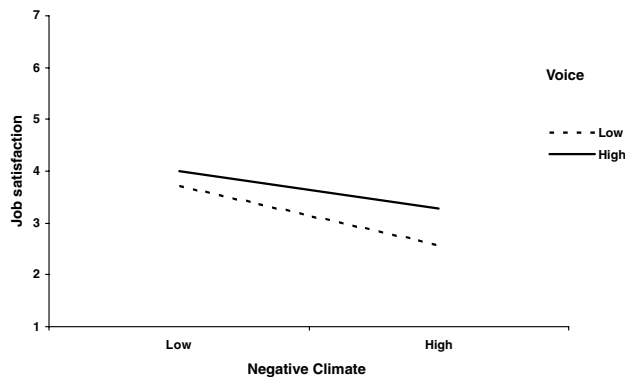


Fig. 3. Job satisfaction as a function of voice and negative general climate.

Tests of voice as a moderator between negative *general* climate and job satisfaction appear in Table 3. As in the previous analysis, none of the control variables had a significant effect, but negative climate and voice accounted for a significant additional 52% of the variance in job satisfaction, $\Delta F(2, 116) = 66.90, p < .01$. Again, poorer climates and lower voice perceptions were associated with lower job satisfaction. The interaction term entered on Step 3 led to a significant 1.4% increase in the variance accounted for in job satisfaction, $\Delta F(1, 115) = 3.78, p < .05$. As demonstrated by simple slopes analysis, and consistent with the previous analysis, the relationship between a negative climate and job satisfaction was weaker for women who felt that they had more voice in departmental procedures ($B = -.35, \beta = -.42, SE = .09, p < .01$) than for those who perceived less voice ($B = -.57, \beta = -.67, SE = .07, p < .01$); Figure 3 displays this effect.

The third multiple regression tested effective chair leadership, male mentoring, and female mentoring as predic-

tors of voice (see Table 4). Control variables accounted for significant variance in voice, with White women scientists reporting greater voice perceptions than women scientists of color, $F(3, 113) = 6.08, p < .01$. The variables entered on Step 2 accounted for a significant additional 25% of the variance in voice, $\Delta F(3, 110) = 15.37, p < .01$. Supporting Hypothesis 3, perceptions of more effective leadership were associated with greater feelings of voice. Consistent with Hypothesis 4, women being mentored by other women reported more voice; male mentoring bore no relation to voice perceptions.

DISCUSSION

Extensive research has documented the myriad of difficulties faced by women in nontraditional fields, including science (e.g., Valian, 2004; Wright et al., 2003). The current study adds to that literature by focusing not only on problems but also potential remedies. That is, we studied the benefits of voice in the work experiences of women in science. Our goals were threefold: (1) to corroborate the finding that negative climates relate to women's job satisfaction in the context of academic science, (2) to examine whether and how an important indicator of personal agency and procedural justice—perceived voice—moderates this relationship, and (3) to identify organizational relationships that might promote voice among women scientists. We are the first to test these processes in this population, and our results are intriguing and consistent with the theoretically grounded predictions summarized in Figure 1. They integrate and extend the literatures on voice, climate, leadership, and mentoring in novel ways.

In support of our first hypothesis, we found that women scientists who viewed their climate as more sexist, or generally poorer and more hostile, were less satisfied with their

Table 4
Hierarchical Multiple Regression Analysis of Voice Predicted by Chair Leadership, Male Mentors, and Female Mentors

Variable	Voice					
	Step 1			Step 2		
	R^2	$B (\beta)$	SE	R^2	$B (\beta)$	SE
Step 1:	.14**					
Age		.01 (.13)	.01		.02 (.16) [†]	.01
Race		.68 (.28)**	.22		.42 (.18)*	.19
Rank		.10 (.10)	.11		.09 (.09)	.10
Step 2:				.25**		
Chair leadership					.37 (.45)**	.07
Male mentors					-.01 (-.02)	.03
Female mentors					.07 (.16)*	.03
Total R^2				.39**		

Note. Race was coded such that 0 = Woman of color, 1 = White woman.

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

jobs than those who viewed their climate as less negative. Sexist climates may influence job satisfaction by increasing the likelihood that sexist or discriminatory behaviors take place; previous studies have found that organizational tolerance of sexism and ambient sexual harassment predict actual sexual harassment (e.g., Cortina, Fitzgerald, & Drasgow, 2002; Fitzgerald et al., 1997, 1999; Glomb et al., 1997; Hesson-McInnis & Fitzgerald, 1997; Newell, Rosenfeld, & Culbertson, 1995). Generally negative climates may reflect the extent to which women scientists are excluded, devalued, and isolated by colleagues. Such experiences may have adverse psychological and professional ramifications for working women in general (Kanter, 1977) and women scientists in particular (Sonnert & Holton, 1996). Thus, the chilly climate faced by women in science may take multiple forms, each with negative implications for their satisfaction.

Further, job satisfaction relates to organizational commitment (e.g., Lee, Carswell, & Allen, 2000; Mathieu & Zajac, 1990), organizational citizenship (Bateman & Organ, 1983; LePine, Erez, & Johnson, 2002; Organ & Ryan, 1995), productivity (e.g., Harter, Schmidt, & Hayes, 2002; Patterson, Warr, & West, 2004; Zeitz, 1990), and job turnover (e.g., Harter et al., 2002; Higgins & Thomas, 2001; Sourdif, 2004). Thus, negative workplace climates may help explain attrition among women scientists and make it imperative that organizations identify factors that buffer employees' job satisfaction from harmful influences.

The Importance of Voice

We found support for our second hypothesis; voice buffered job satisfaction from the negative effect of a poor workplace climate. In particular, the relationship between climate and satisfaction was weaker for women scientists who perceived that they had more voice in departmental matters. This is

a critical insight for women scientists who must struggle to succeed in a domain that is traditionally reserved for men (Kanter, 1977). As Gilligan (1988) suggested, voice may benefit women by fostering perceptions that they are changing the very environment that they find negative—for example, by ensuring that a new hire or chair is not sexist or helping to implement procedures that acknowledge issues of work and family balance. That is, through voice, women scientists may advocate for themselves and for other women.

Whether such influence actually effects change in the department climate is unknown. Researchers have found support for the value-expressive function of voice, which suggests that satisfaction is related to being able to express one's views (Jack, 2001) and may not be related to being able to influence actual outcomes (Tyler et al., 1985). Thus, women scientists may feel more satisfied with their job in poor climates when they perceive themselves to have an influence, even if their influence does not result in real changes or desired outcomes. Future research should examine whether women scientists' felt influence has a long-term impact on the climate in their departments. In addition, future research should examine the reason that voice has buffering benefits for women scientists. For example, do the benefits derive from an increased sense of decision control or process control, an increased impact on the unit, or simply an increased ability to make one's voice heard?

The data also supported our final two hypotheses. We found that mentoring by females (but not males) and effective departmental leadership were related to greater perceptions of voice. Thus, there appear to be key organizational members who can facilitate positive outcomes for women scientists. Effective leaders may promote voice in several ways. An effective chair may enhance psychological

empowerment (Spreitzer, 1995) by directly encouraging women (and men) to participate in departmental decision making, thereby communicating to women scientists that their ideas, perspectives, and experiences are valued (Lind & Tyler, 1988). Effective departmental leaders may also implement transparent policies that permit gender equity in the influence of faculty members on departmental matters, as well as discourage sexist behaviors that might otherwise serve to silence women (Bensimon, Ward, & Sanders, 2000). Thus, an effective chair may promote the voice of female employees through direct interactions with them as well as through general departmental procedures. Given that scholars have identified different types of effective leaders (e.g., empowering leaders, transformational leaders, servant-leaders), an important topic for future research will be the specific types or components of leadership that best promote women's voices.

We assessed experiences of various types of mentoring (e.g., role modeling, advising, advocacy) from male and female mentors and found that the more mentoring that female scientists received from other women, the greater their sense of voice. That is, women who were aided in multiple ways by other women felt more empowered and influential within their departments than women who were aided less by female mentors. Mentoring by males, in contrast, was unrelated to women scientists' perceptions of voice. The differential benefits of female versus male mentors may seem surprising; however, these results are consistent with prior research suggesting that mentoring outcomes vary by mentor gender (e.g., Noe, 1988; Ragins & Cotton, 1999; Ragins & McFarlin, 1990; Wallace, 2001).

Although male mentors may not promote female voice, they can serve many other important functions related to professional and personal success, including facilitating positive objective work outcomes, such as pay and promotion (Dreher & Cox, 1996; Ragins & Cotton, 1999; Wallace, 2001). Given that cross-gender mentoring is especially likely for women scientists, simply because there are fewer women in science to serve as mentors, it is important for research to identify why male mentoring does not promote women protégés' voice (e.g., because voice is more automatic for men, do they underestimate the importance of encouraging it?; Cramer et al., 2005) and whether targeted training could expand the mentoring repertoires of both men and women (Bensimon et al., 2000).

Generally, mentors can help protégés learn what is expected of them and how things work (Ragins, 1999; Scandura, 1997); this mentoring may be especially important for women scientists because the "masculine" culture of many science departments may make it difficult for women to fit in (Robinson & McIlwee, 1991). Female mentors can serve as role models of appropriate organizational behavior (Ragins & McFarlin, 1990), help with issues affecting women more than men (e.g., work-family balance), and may act as advisors by making otherwise obscure departmental matters transparent. Women in our sample reported

low levels of mentoring by both female and male mentors. Given the positive outcomes associated with more mentoring, including increased voice and job satisfaction, departments and organizations should devote more attention and resources toward ensuring that women scientists have individuals who can fill this important role.

Although not a focus of the current study, the bivariate correlations also indicated that mentoring by male and female mentors, as well as effective leadership, are related to higher job satisfaction. These results suggest that not only do these key organizational members promote women scientists' voice, but they also promote positive appraisals of the job. The multiple positive benefits that may be provided by these individuals to women scientists underscore the need for universities to put into place mechanisms that facilitate such relationships and resources.

Limitations and Future Directions

As with any research, there were some limitations of this study that warrant mention. First, the sample came from one research university, raising potential questions about generalizability. However, because this university is similar to others in important ways (e.g., size, hiring practices, gender composition), we expect that our results would generalize to other academic settings. Future research should determine the extent that our findings also apply to women scientists in industry and women in other employment sectors. Further, additional studies should focus on similar climate and voice effects for men who are outnumbered and stigmatized (e.g., men of color, gay men), both within and outside of science, and therefore may face heightened difficulties with climate and voice in organizational contexts.

Due to the cross-sectional, correlational nature of the data, causal inferences must remain tentative until confirmed in future research. Although the perceptual nature of our data may appear to be a drawback, our research questions seemed best addressed by each individual's perspective on her own work environment and outcomes. Others have argued for the importance of subjective perceptions of the workplace environment for behavioral and emotional outcomes, regardless of the accuracy of these perceptions (Seibert et al., 2004). Moreover, self-report assessments are commonly found to be related to assessments from other sources, such as peers (e.g., Cole & Zuckerman, 1991). Still, it is worthwhile for future research to address the degree of consistency in climate perceptions across women scientists and to undertake multilevel operationalizations of climate (e.g., adding workgroup and organizational levels) to determine whether voice acts as a buffer of negative climate at all levels.

CONCLUSION

The current research makes contributions to existing organizational and feminist theory in several ways. Women scientists remain understudied in the larger organizational

literature, and yet they represent a group that may have particularly negative work experiences. We have tested and found support for a model in which *voice* buffers women scientists from the harmful effects of working in negative and sexist climates. We also identified relational resources that can enhance women's sense of voice at work. By increasing voice in women, it may be possible for individuals to improve the workplace climate over time, thereby increasing job satisfaction and retention. In this way, the model we propose may be dynamic, with change at the individual level (increased voice) bringing about change at higher organizational levels (through improved climate). This model represents a theoretical and practical advance in our understandings of the vital role that voice can play in the female work experience. Together, these results provide intriguing ideas for helping women survive and thrive in nontraditional domains of work.

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