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Safety and Insecurity: Exploring the Moderating Effect of Organizational Safety Climate

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This research reconciled disparate findings regarding the relationship between job insecurity and safety by examining organizational safety climate as a potential moderator. It was predicted that a strong organizational safety climate would attenuate the negative effects of job insecurity on self-reported safety outcomes such as safety knowledge, safety compliance, accidents, and injuries. Data collected from 136 manufacturing employees were consistent with these predictions. Results are discussed in light of escalating interest in how organizational factors can affect employee safety.

According to the Society for Human Resource Management (2001), 43% of U.S. organizations conducted employee layoffs in 2000 and 2001, with corporate reductions averaging 10%–13% of the workforce. The resultant pervasive climate of job insecurity has been shown to have multiple negative effects on affected employees. Employees with insecure jobs report lower job satisfaction (Davy, Kinicki, & Scheck, 1991), a greater incidence of physical health conditions (Roskies & Louis-Guerin, 1990), and higher levels of psychological distress (Dekker & Schaufeli, 1995) when compared with employees with secure jobs. In addition, the more dissatisfied employees are with their perceived job security, the less committed they are to the organization (Ashford, Lee, & Bobko, 1989), the more frequently they engage in work withdrawal behaviors such as absenteeism, tardiness, and work task avoidance (Probst, 2002a), and the more likely they are to quit their job (Ashford et al., 1989; Davy et al., 1991).

More recently, however, research is beginning to suggest that job insecurity may also have a detrimental effect on employee safety attitudes, behaviors, and outcomes (Grunberg, Moore, & Greenberg, 1996; Probst, 2002b; Probst & Brubaker, 2001). In the United States alone, over 5,000 employees lost their lives in 2001 due to work-related injuries, and an additional 5.7 million employees suffered nonfatal work-related injuries and illnesses (Bureau of Labor Statistics, 2001). Although there is research to suggest that employee job insecurity may be contributing to these workplace accident and injury numbers, other research suggests instead that job insecurity is related to more positive safety outcomes (Parker, Axtell, & Turner, 2001).

The present study suggests that employee perceptions of the organizational safety climate may clarify these seemingly disparate findings regarding the relationship between job insecurity and employee safety. Specifically, it is hypothesized that job insecurity's toll on employee safety outcomes will be attenuated to the extent that an organization's safety climate is perceived to be strong by employees.

Conflicting Findings on Job Insecurity and Safety

The first study to specifically examine the relationship between job insecurity and safety was conducted by Probst and Brubaker (2001). In this study, the researchers found that when job insecurity increased, employee safety knowledge and motivation to comply with safety policies and procedures decreased. As a result, reported safety compliance was adversely affected. Not surprisingly, employees with insecure jobs suffered more accidents and injuries compared with employees with relatively more secure jobs.

Although Probst and Brubaker's (2001) findings were replicated in two cross-sectional analyses and one longitudinal analysis, questions remained regarding the direction of causality. Did job insecurity cause poor safety outcomes, or did a poor safety record cause an employee to have less job security? To address this issue, Probst (2002b) conducted a laboratory experiment to manipulate organizational layoffs and observed their effects on employee safety behaviors. The results indicated that individuals

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threatened with layoffs violated more safety policies and produced lower quality output than their secure counterparts. Although these results in conjunction with the earlier field study research clearly suggest that job insecurity causes more negative safety outcomes, other empirical research suggests just the opposite—that job insecurity is related to more positive safety outcomes at work.

Parker et al. (2001) conducted a longitudinal study of 161 employees in a glass manufacturing setting to investigate the antecedents of safe working. Job insecurity was hypothesized—consistent with Probst and Brubaker's (2001) findings—to be a predictor of safe working, such that more insecurity would be related to less safe work behaviors. However, their results suggested, contrary to their hypothesis, that job insecurity was related to *more positive* safety behaviors among these employees.

Proposing a Moderating Mechanism

Although the contradictory results obtained by Probst and Brubaker (2001) and Parker et al. (2001) may appear puzzling, they suggest the presence of a third variable that may influence the extent to which and how job insecurity affects employee safety behaviors. A careful perusal of the descriptions of the organizations described in these two studies provides a clue to the nature of this variable. The organization described in Parker et al.'s study was clearly trying to improve the safety climate for its workers. As described in the study, there were organizational safety campaigns initiated, new safety training programs introduced, and other safety initiatives that would have clearly indicated to employees that their organization takes safety seriously and that safety outcomes may be considered when making downsizing decisions. This is in contrast to the organization described in Probst and Brubaker's study, in which the organization's employees were expected to retain high production numbers in the wake of organizational job cuts and safety did not play a clear role in the layoff decision-making process.

Therefore, one explanation for the contrasting results may be that the effects of job insecurity on safety are moderated by the extent to which the organization is seen as valuing and emphasizing safety. In other words, the organizational emphasis on safety may play a key role in determining the extent to which employee job insecurity negatively affects safety outcomes. In organizations in which safety is strongly emphasized and jobs are insecure, this insecurity may motivate employees to pay more attention to safety to decrease their chances of being laid off. Conversely, when organizations do not place a strong emphasis on safety, insecure employees—presumably in the effort to retain their jobs—may focus less on safety and more on other job-related activities such as production, as was found in Probst's (2002b) study. Thus, employees may look to the organizational climate for clues as to which behaviors are more likely to decrease their chances of being laid off.

Organizational Safety Climate

Organizational climate can be viewed as a set of underlying values, beliefs, and principles that employees perceive are held within their organization. These perceptions serve as a frame of reference for employees to guide normative and adaptive work behavior by providing cues regarding expected behavior–outcome contingencies (Schneider, 1975). The concept of organizational safety climate was first introduced into the literature by Zohar in 1980. Zohar defined safety climate as "a unified set of cognitions [held by workers] regarding the safety aspects of their organization" (p. 101). Further, these cognitions are related to perceptions of management attitudes regarding safety and its relevance to production within the organization.

Research has shown that there are a number of dimensions that are important to consider when conceptualizing and measuring organizational safety climate (Neal, Griffin, & Hart, 2000). These include *management values* (i.e., the extent to which management places a high priority on safety), *safety communication* (i.e., the extent to which there is an open exchange of information regarding safety), *safety training* (i.e., the extent to which training is accessible, relevant, and comprehensive), and *safety systems* (i.e., the extent to which safety procedures are perceived to be effective in preventing accidents). A significant body of research has shown that these factors are predictive of safety-related outcomes at work such as accidents and injuries, safety compliance, safety motivation, and safety knowledge (Brown & Holmes, 1986; Dedobbeleer & Beland, 1991; Hofmann & Stetzer, 1996; Neal et al., 2000).

Therefore, on the basis of research examining the consequences of organizational safety climate, the following was predicted:

> *Hypothesis 1:* Employees who perceive their organization to have a strong safety climate exhibit more safety knowledge, have better safety compliance, and experience fewer accidents and

injuries than employees who perceive their organization to have a weak safety climate.

Moderating Effect of Safety Climate on the Outcomes of Job Insecurity

As noted earlier, although there is clear evidence to expect main effects of safety climate on employee safety outcomes, there is scant empirical evidence demonstrating how safety climate may moderate the effects of job insecurity on safety outcomes. Borrowing from the climate literature discussed earlier, it seems likely, however, that safety climate will play a key role in determining whether and to what extent job insecurity has a detrimental impact on employee safety outcomes.

An organization's climate provides employees with cues regarding what behaviors and outcomes will be reinforced, or alternatively punished, within the organization. When employees are concerned about their job security, they will look to the organizational climate for clues as to the optimal means of retaining their job. It is predicted that organizations that display clear signals demonstrating the importance of safety will send the message to employees that they should focus on safety compliance if they wish to retain their employment. Alternatively, organizations that are seen as deemphasizing safety may be relaying the message that enhanced employee attention to safety may not be critical to retaining a job.

Empirical evidence from studies looking at the job insecurity–safety link suggests this may be the case. As described earlier, the company described in Parker et al.'s (2001) study—in which job insecurity led to *improved* safety compliance—was clearly trying to improve the safety climate for its workers through its safety campaigns, safety training programs, and other safety-related initiatives. These organizational programs would have clearly indicated to employees the importance of safety within the organization and the relevance of their safety behavior to future layoff decisions.

In contrast, employees in the food-processing plants described in Probst and Brubaker's (2001) study—in which job insecurity led to *worsened* safety outcomes—were operating under different circumstances. As they described,

> Based on interviews with employees, the general plant manager, and the human resources manager, production was expected to remain at former levels during these organizational transitions. Thus, even though there would be fewer employees, overall plant production levels were expected to remain constant. (Probst & Brubaker, 2001, p. 144)

Research has shown that the more an organization places an emphasis on production, the more employees perceive that safety is subordinated to the demands of production (Janssens, Brett, & Smith, 1995). Thus, the message received by employees would have indicated that safety played no prominent role in the layoff decision-making process. On the basis of these divergent organizational climates and the resultant findings, the following was predicted:

> *Hypothesis 2:* A strong organizational safety climate attenuates the negative effects of job insecurity on safety knowledge, compliance, accidents, and injuries.

Method

Participants and Procedure

Surveys were administered to 136 production employees of a manufacturing organization located in the Pacific Northwest of the United States. Seventy-eight percent of the respondents were male, which corresponded to the gender composition of the organization. On average, employees had worked for the company for 4.44 years (SD = 4.38 years). The majority of employees (69%) had a high school education or less, with 27% reporting some college education. Of the 136 employees, 128 fell into 14 distinct workgroups within the organization, with the workgroups defined by departmental affiliation and shift schedule. Employees were given time off during working hours to complete the survey, which was labeled a Workplace Environment Survey and contained the following measures.

Measures

Job insecurity. The 20-item Job Security Satisfaction scale (Probst, 1998, 2002a, in press) was used to measure employee responses to their job insecurity. Employees were asked to indicate the extent to which each phrase applied to their current employment on a scale from 0 to 3. Responses were scored such that higher numbers indicated more job insecurity. Sample items include "never been more secure," "cause for concern," "excellent amount of security," "inadequate," and "unacceptably low," where positively phrased items were reverse-scored.

Organizational safety climate. Sixteen items developed by Neal et al. (2000) assessed perceptions of organizational safety climate on the following four dimensions: management values, safety communication, safety training, and safety systems. Employees responded on a 7-point scale, with higher numbers reflecting a stronger safety climate. Principal-components factor analysis extracted one primary factor accounting for 55% of the variance with loadings ranging from .63 to .81.

Safety compliance. Safety compliance was measured using Neal et al.'s (2000) four-item safety compliance scale. Using a 7-point scale, respondents indicated the extent to

which they followed proper safety procedures at work; responses were scored such that higher numbers reflect more compliance.

Safety knowledge. Neal et al.'s (2000) four-item safety knowledge scale was used to assess knowledge about safety practices and procedures. Responses were scored such that higher numbers reflect more knowledge on the 7-point scale.

Accidents. Two items assessed workplace accidents. Using a measure developed by Smecko and Hayes (1999), employees were asked to report how many safety accidents they reported to their supervisor over the past 12 months and how many "near-miss" accidents they were involved in (i.e., something that could have caused an injury but did not).

Injuries. Two items assessed workplace injuries. The first item asked employees to indicate if they had suffered *any* workplace injuries during the past year on the job. The second item specifically asked employees if they had experienced *repetitive motion injuries* (a commonly reported injury in that worksite) as a result of their job duties.

Other measures. Three additional questions were asked to assess employees' perceptions regarding the value their organization placed on safety versus production. Using a 5-point Likert scale ranging from 1 = *not important at all* to 5 = *extremely important,* employees rated how important they felt "employee safety and health," "employee adherence to safety rules and procedures," and "meeting production schedules" were to the organization.

Results

Table 1 presents descriptive statistics and scale reliabilities; Table 2 presents zero-order product–moment correlations among the study variables. As predicted by Hypothesis 1, organizational safety climate was positively related to safety compliance and safety knowledge and negatively related to accidents, near-miss incidents, and workplace injuries. Consistent with earlier studies on the effects of job insecurity, job insecurity was related to lower levels of safety knowledge, less safety compliance, and more near-miss incidents and workplace injuries.

Employee Perceptions of the Importance of Safety Versus Production

In the present sample, employees perceived production to be significantly more important to their company ($M = 4.33$, $SD = 0.77$) than safety and health ($M = 3.66$, $SD = 1.05$) or adhering to safety rules ($M = 3.57$, $SD = 1.06$), $F(2, 130) = 31.55$, $p < .001$. This suggests that employees perceived safety to be "moderately important" to the organization, whereas maintaining production levels was seen as "very important."

Workgroup Analyses

Because this study addresses perceptions of organizational safety climate, it is important to first assess whether these perceptions actually varied across different segments within the organization. Thus, a multivariate analysis of variance (MANOVA) was conducted using the 14 different workgroups as the independent variable and employee perceptions of organizational safety climate as the dependent variable. Results indicated that there were significant differences across workgroups in employee perceptions of the organizational safety climate, $F(13, 107) = 2.51$, $p < .005$. Given these significant differences, it was deemed appropriate to continue with the primary analyses of interest.

Because there were several continuous independent and dependent variables, a multivariate multiple regression analysis (Johnson & Wichern, 1992) was performed to examine the main and interactive effects of job insecurity and safety climate on the various employee safety outcomes. The multivariate multiple regression analysis was controlled at an overall alpha of .001 to reduce the chance of Type I error. If the multivariate analysis was significant at

Table 1
Descriptive Statistics and Scale Reliabilities

Variable	Item	Range	*M*	*SD*	α
Job insecurity	9	0–3	1.30	0.85	.83
Organizational safety climate	16	1–7	4.98	1.05	.94
Safety compliance	4	1–7	5.75	0.87	.95
Safety knowledge	4	1–7	5.98	0.97	.89
No. of accidents	1	0–15	0.84	2.12	NA
No. of "near misses"	1	0–25	1.35	3.03	NA
Any workplace injury	1	0–1	0.13	.34	NA
Repetitive motion injury	1	0–1	0.23	.42	NA

Note. The injury items were dichotomous items as a *yes* = 1 or *no* = 0. NA = not applicable.

Table 2
Interscale Correlations of Study Variables

Variable	1	2	3	4	5	6	7	8
1. Job insecurity	—	−.46**	−.18*	−.24**	.15	.32**	.20**	.18*
2. Organizational safety climate		—	.42**	.51**	−.12	−.30**	−.31**	−.15
3. Safety knowledge			—	.58**	.06	−.10	−.13	−.23**
4. Safety compliance				—	−.22*	−.37**	−.24**	−.21*
5. No. of accidents					—	.16	.21*	.11
6. No. of near misses						—	.37**	.31**
7. Workplace injury							—	.27**
8. Repetitive motion injury								—

* $p < .05$. ** $p < .01$.

that level, univariate results were then examined. Table 3 presents a complete description of the MANOVA statistics and effect size estimates for the following analyses.

Outcomes of Job Insecurity

When entered into the multivariate multiple regression analysis with the other independent variables, job insecurity was not shown to be significantly related to the majority of safety outcomes examined in this study, $F(6, 106) = 1.26$, *ns*. Although the expected pattern of relationships was shown in the zero-order correlation matrix, these regression results indicate that there may be a moderating variable at work. Given that the purpose of the present study was to examine the role of an organization's safety climate in attenuating the relationship between job insecurity and safety outcomes, any main effects would be rendered uninterpretable in light of a demonstrated moderator effect.

Role of Organizational Safety Climate

As can be seen in Table 3, there were several significant main effects of organizational safety climate, $F(6, 106) = 6.66$, $p < .001$. As predicted in Hypothesis 1, a strong organizational safety climate was positively related to increased safety knowledge and safety compliance and negatively related to near-

Table 3
Multivariate Analysis of Variance (MANOVA) Results and Effect Size Estimates

MANOVA model	*F*	*df*	*p*	*B*	Partial η^2
Job insecurity	1.26	6, 106	*ns*		.07
Safety knowledge	0.05	1, 111	*ns*	−.02	.00
Safety compliance	0.89	1, 111	*ns*	−.07	.01
No. of accidents	0.87	1, 111	*ns*	.21	.01
No. of near misses	4.48	1, 111	.04	.61	.04
Workplace injury	0.18	1, 111	*ns*	.02	.00
Repetitive motion injury	3.42	1, 111	.07	.08	.03
Safety climate	6.66	6, 106	.001		.27
Safety knowledge	17.08	1, 111	.001	.33	.13
Safety compliance	27.01	1, 111	.001	.37	.19
No. of accidents	0.27	1, 111	*ns*	−.12	.00
No. of near misses	3.72	1, 111	.05	−.57	.03
Workplace injury	9.16	1, 111	.003	−.11	.08
Repetitive motion injury	0.11	1, 111	*ns*	−.01	.00
Job Insecurity × Safety Climate	5.32	6, 106	.001		.23
Safety knowledge	9.02	1, 111	.003	.20	.08
Safety compliance	8.53	1, 111	.004	.17	.07
No. of accidents	3.90	1, 111	.05	−.38	.04
No. of near misses	12.11	1, 111	.001	−.86	.10
Workplace injury	4.00	1, 111	.05	−.06	.04
Repetitive motion injury	5.79	1, 111	.02	−.09	.05

miss accidents and workplace injury. More importantly, as predicted by Hypothesis 2, the organizational safety climate significantly interacted with job insecurity, $F(6, 106) = 5.32$, $p < .001$, resulting in an attenuation of the negative effects of job insecurity on safety outcomes. Specifically, when employees perceived that the organizational safety climate was weak, job insecurity was related to lower levels of safety knowledge, $F(1, 111) = 9.02$, $p < .003$; less employee safety compliance, $F(1, 111) = 8.53$, $p < .004$; a greater number of employee accidents, $F(1, 111) = 3.90$, $p < .05$; more near-miss incidents, $F(1, 111) = 12.11$, $p < .001$; a greater likelihood of workplace injury, $F(1, 111) = 4.00$, $p < .05$; and a greater incidence of repetitive motion injuries, $F(1, 111) = 5.79$, $p < .02$. However, when employees perceived that the organizational safety climate was strong, the slope of the relationships between job insecurity and these safety outcomes was consistently attenuated. The procedure for plotting significant interactions suggested by Aiken and West (1991) was used to visually depict these findings (see Figure 1).

Discussion

The present research proposed that seemingly disparate findings regarding the relationship between job insecurity and safety outcomes (cf. Parker et al., 2001; Probst & Brubaker, 2001) can be explained by looking at the moderating role played by the organizational safety climate. Specifically, it was predicted that a strong organizational safety climate would attenuate the negative effects of job insecurity on employee safety outcomes.

Although the present research findings were consistent with earlier research documenting the main effects of job insecurity and an organization's safety climate on employee safety outcomes, this study suggests that it may not be as meaningful to interpret these main effects in light of the consistent significant interactions among these independent variables. The results of this study suggest that an organization's safety climate has a key moderating effect on the negative consequences of job insecurity. Specifically, a strong safety climate reduces or eliminates the adverse effect of job insecurity on safety knowledge, safety compliance, employee accidents, near-miss incidents, and workplace injuries.

Practical Implications

An organization's climate provides employees with cues regarding what behaviors and outcomes will be reinforced, or alternatively punished, within the organization. In today's climate of job insecurity, it is imperative that organizations consider the messages being conveyed to workers who may be seeking such cues as to the optimal means of retaining their job. The results of this study suggest that organizations that display clear signals demonstrating the importance of safety will send the message to employees that they should focus on safety compliance if they wish to retain their employment. Alternatively, organizations that emphasize production (perhaps at the expense of safety) relay the message to employees that a focus on production might be the best route to keeping their job. In the present study, job insecurity did not automatically result in negative safety outcomes. Rather, the extent to which safety was adversely affected was directly related to the extent to which employees perceived safety was rewarded and emphasized within the organization.

These results should be encouraging to employers who wish to minimize the costly effects of employee safety violations. Worker's compensation claims cost organizations upward of $45 billion each year. Research has shown that job insecurity may contribute to these negative safety outcomes. However, it appears that these unwanted outcomes of job insecurity may be minimized to the extent that an organization builds a strong safety culture among its employees.

Limitations and Future Research Directions

The present findings clearly show that individual differences in perceptions regarding an organization's safety climate moderate the relationship between job insecurity and safety outcomes. However, these findings are based on a single sample from one company (i.e., based on within-organization differences). While variability in employee and workgroup perceptions was shown to exist—which makes sense given that the primary conduit for information regarding the organizational safety climate may be an employee's direct supervisor—a more rigorous demonstration of the effect might be accomplished by collecting multiorganizational data.

A second aspect of the present study that must be addressed is its reliance on self-report safety data. Although the workplace accidents and injuries variables are self-report in nature, previous studies do indicate that self-report measures of accidents and unsafe behaviors are related to independent observations of these variables (Lusk, Ronis, & Baer, 1995). In addition, social desirability responding would, if anything, act to suppress the variance on these measures as people would probably tend to underreport these variables (Hofmann & Stetzer, 1996). There-

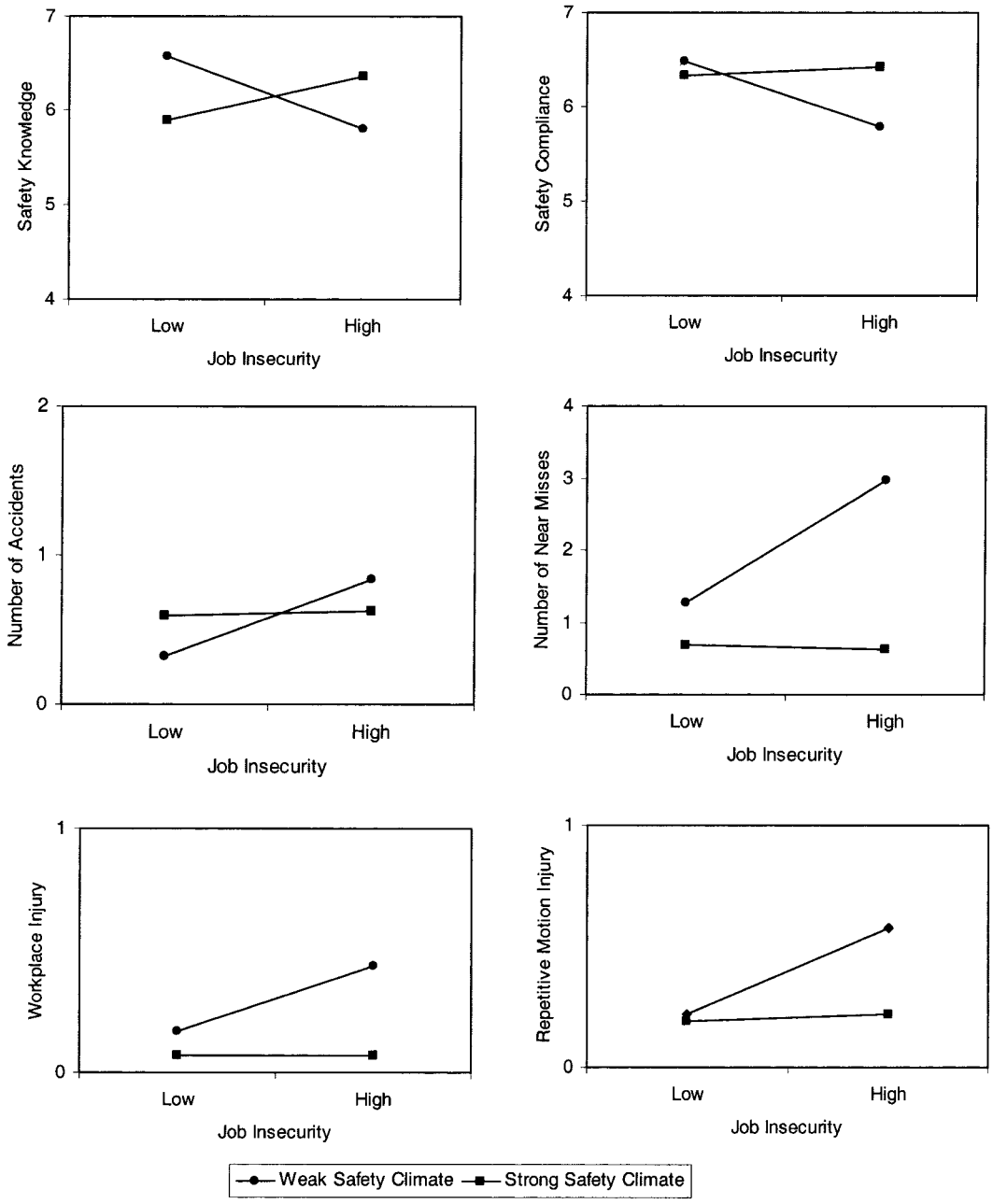

Figure 1. Interactions depicting the attenuating effect of organizational safety climate on the negative outcomes of job insecurity.

fore, reliance on these self-report measures would, at worst, attenuate the relationship between these variables and their posited predictors. Nevertheless, using archival data on accidents, injuries, and safety violations in conjunction with self-report measures may be preferable, as research suggests that the accurate recall of workplace accidents may only extend back 4 weeks (Landen & Hendricks, 1995).

Finally, the use of single-source self-report data may be subject to common method variance issues. Future research could remedy this shortcoming by using supervisor reports of employee safety behaviors. Another possibility would be to conduct longitudinal research controlling for Time 1 levels on the safety-related dependent variable of interest (see Probst & Brubaker, 2001, for an example).

Conclusion

This study indicates that the relationship between job insecurity and employee safety outcomes is moderated by the organizational safety climate. To the extent that an organization has a strong safety climate, job insecurity was shown to have less of a negative impact on employee safety outcomes. However, when the organizational safety climate was weak, job insecurity among employees was related to more accidents and other negative safety outcomes. In today's weakened economy with its record layoffs, it appears imperative that organizations pay close attention to the safety and production messages being conveyed to employees, lest these messages lead to a deterioration of employee safety outcomes.

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