



Management commitment to safety as organizational support: Relationships with non-safety outcomes in wood manufacturing employees

Judd H. Michael^{a,*}, Demetrice D. Evans^b, Karen J. Jansen^c, Joel M. Haight^d

^aWood Industries Management, 301 Forest Resources Lab., The Pennsylvania State University, University Park, Pa 16802, United States

^bThe Pennsylvania State University, United States

^cDepartment of Management and Organization, The Pennsylvania State University, United States

^dIndustrial Health and Safety, Department of Energy and Geo-Environmental Engineering, The Pennsylvania State University, United States

Received 14 May 2004; received in revised form 8 February 2005; accepted 1 March 2005

Abstract

Introduction: Employee perceptions of management commitment to safety are known to influence important safety-related outcomes. However, little work has been conducted to explore nonsafety-related outcomes resulting from a commitment to safety. **Method:** Employee-level outcomes critical to the effective functioning of an organization, including attitudes such as job satisfaction and commitment to the organization, were included on surveys given to 641 hourly production employees at three wood products manufacturing facilities. Participants were asked about perceptions of management commitment to safety and job-related variables such as perceived dangerousness of their position, organizational commitment, and withdrawal behaviors. Supervisors also rated the performance of each of their hourly subordinates. **Results:** Results suggest that employee outcomes differ based on perceptions of management's commitment to safety. Specifically, management commitment to safety was positively related to job satisfaction, organizational commitment, and job-related performance. We also found a negative relationship between commitment to safety and employee withdrawal behaviors. **Conclusions:** Our results suggest that increasing employee perceptions of management's personal concern for employee well-being through a dedication to safety will result in positive outcomes beyond improved safety performance. These results also imply that there is a type of social exchange between employees and management that may affect employees similarly to perceived organizational support. **Impact on Industry:** Results further reinforce the value of a commitment to safety by a firm's management. Organizations with a strong commitment to safety may enjoy not only a reduction in safety-related events but also increases in desirable employee attitudes and behaviors.

© 2005 National Safety Council and Elsevier Ltd. All rights reserved.

Keywords: Management; Commitment; Support; Hourly; Attitudes

1. Introduction

Managers in organizations are faced with competing priorities and may therefore make trade-offs by increasing their commitment to certain aspects of the business while neglecting others. Three of the most common areas that manufacturing management can show commitment to are production, quality, and safety. The commitment exhibited by

management can impact a variety of areas, including employee attitudes. For example, an indirect relationship between management commitment to service quality and employees' job satisfaction has been shown (Hartline & Ferrell, 1996). Others have suggested that demonstrating management commitment through its actions, such as sharing an organizational vision, will lead to increased employee commitment and job satisfaction (Babakus, Cravens, Johnston, & Moncrief, 1999; Niehoff, Enz, & Grover, 1990).

Management commitment has also been shown to affect employee behaviors, with notable examples coming from

* Corresponding author. Tel.: +1 814 863 2976; fax: +1 814 863 7193.
E-mail address: jh-michael@psu.edu (J.H. Michael).

the safety profession. For example, management commitment to safety is one of the drivers of employee safety performance (Stewart, 2001; Bailey, 1997; Cantarella, 1998) and injuries (O'Toole, 2002) in a variety of industries (e.g., Reisinger, Sluss, & Shaffer, 1994). Because management commitment to safety is such an important cornerstone of safety programs (Zohar, 1980), it would seem that safety professionals would seek out all of the benefits to be gained from high levels of commitment in order to promote these to management. However, an area that has received little attention is the relationship between perceptions of management commitment to safety and employee outcomes not related to safety.

Non-safety employee outcomes include work-related attitudes such as commitment and behaviors such as withdrawal (e.g., absenteeism, daydreaming) and on-the-job performance. One of the reasons that employees will exhibit such outcomes is to reciprocate favorable treatment by their employer (e.g., Gouldner, 1960; Rhoades, Eisenberger, & Armeli, 2001), with the theoretical explanation for this reciprocity found in social exchange (Blau, 1964, 1977) and organizational support theories (Eisenberger, Huntington, Hutchinson, & Sowa, 1986). Employee perceptions of this "favorable treatment" are formed from "general beliefs concerning how much the organization values their contributions and cares about their well-being" (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001, p. 42). Therefore, organizations whose representatives exhibit a strong degree of caring for employees should have those actions reciprocated by employees in the form of desired work-related attitudes and behaviors.

Social exchange and organizational support have recently been applied to safety topics with considerable success. For example, Hofmann and Morgeson (1999) suggested that the nature of these exchanges can help to explain incidents and safety-related behaviors. Another form of social exchange (i.e., leader-member exchange) has been used to examine relationships between leadership, safety climate, and subordinates' safety performance (Hofmann, Morgeson, & Gerras, 2003). These findings, combined with results from past works on the effects of management commitment, encouraged us to question whether management commitment to safety is perceived by employees as a form of "caring" by the employer such that it would engender an obligation for reciprocation by the employees.

The purpose of this paper is therefore to extend previous research by investigating whether differences exist in employee-level outcomes (e.g., attitudes and behaviors) based on their perceptions of management commitment to safety. We propose that management commitment to safety will elicit a response similar to what has been shown with a form of social exchange known as perceived organizational support. This paper also provides value to safety professionals by extending our knowledge of the value of management commitment to safety to non-safety outcomes.

We begin by discussing relevant employee-level outcomes and their importance to an organization. Our literature review continues with a discussion of how management commitment to safety relates to organizational support theory and why this may predict commitment's influence on employee outcomes. Finally, we review accident rates in the wood products industry to set the stage for the industrial context in which our data were collected.

1.1. Importance of employee-level outcomes

This study will focus on the employee-level outcomes of job satisfaction, affective commitment, and withdrawal behavior. These three were chosen in part because of their relevance to safety professionals and also for their value to organizations. For example, these outcomes have been useful for predicting employee turnover (Babakus et al., 1999) and organizational effectiveness (Koys, 2001). We also investigate employees' job-related performance as an outcome variable.

Job satisfaction has been defined in a variety of ways, including as a "harmonious relationship" and a positive and reactive interaction between an individual and his/her environment (O'Reilly, Chatman, & Caldwell, 1991). Pool (1997) speaks of job satisfaction as the developed "attitudes" employees have toward their jobs. High levels of job satisfaction across a workforce are valuable for an organization in part due to its influence on overall company performance (Ostroff, 1992). This relationship may occur with production employees, for example, because less satisfied workers are more likely to be absent, pay less attention to product quality, and so forth (e.g., Duffy, Ganster, & Shaw, 1998), all of which can increase costs for the employer. Low levels of job satisfaction are relevant for safety professionals due in part to its relationship with key outcomes such as increased workers' compensation claims (Anonymous, 1996).

Organizational commitment is a broader concept than job satisfaction since it captures attitudes toward the organization rather than the person's job. Three types of commitment have been defined: (a) affective commitment, (b) continuance commitment, and (c) normative commitment (Meyer, Allen, & Gellatly, 1990; Dunham, Grube, & Castaneda, 1994). Normative commitment refers to the employee's feelings of obligation to remain with the organization, while continuance commitment refers to a person's belief that there is some cost associated with leaving the organization (Allen & Meyer, 1990) or that there are few alternatives to their current job (O'Reilly et al., 1991). This paper focuses on affective commitment, which reflects a person's desire to remain with their employer (Meyer & Allen, 1997). This is desirable for the organization because high levels of affective commitment have been correlated with higher relative individual productivity (Cohen, 1993; Becker, Billings, Eveleth, & Gilbert, 1996). This attitude is thought to result from shared values (O'Reilly & Chatman, 1986) or

identification (Shamir, 1991) with the organization, or from higher levels of involvement (Meyer & Allen, 1991).

Withdrawal behaviors include daydreaming on the job, watching the clock, voluntary absenteeism (Hom, Griffith, & Sello, 1984; Blau, 1998) and tardiness (Adler & Golan, 1981; Gupta & Jenkins, 1983), and, as such, are considered undesirable for an organization. Relationships have been shown between some types of withdrawal behaviors and organizational support (Cropanzano, Howes, Grandey, & Toth, 1997).

Finally, employees' job-related performance was chosen as a variable due to its importance to overall firm performance. Employees make significant contributions to firm performance, and are thought to be sources of competitive advantage for firms in which they are properly leveraged (Barney, 1991; Wright, Gardner, & Moynihan, 2003). In extreme cases the survival of the company may depend on the commitment and contributions of employees (DeLong & Vijayaraghavan, 2003).

1.2. Perceived organizational support and employee outcomes

To better understand how management commitment to safety affects employee outcomes, we utilize Eisenberger and colleagues' (1986) organizational support theory. Organizational support theory is a contemporary social exchange theory assuming that employees will exhibit positive work-related outcomes in reciprocation for valued resources (e.g., pay, training, socioemotional support) received from the employer (Aselage & Eisenberger, 2003). The theory further assumes that employees form beliefs regarding how much the employer values them and their personal well-being. The combination of these intangible benefits forms an attitude in the minds of employees that is known as perceived organizational support (POS).

Following the norm of reciprocity, increases in POS motivate employees to work harder and exhibit attitudes that are congruent with the organization's goals and objectives (Eisenberger et al., 2001; Aselage & Eisenberger, 2003). We extend this literature into the safety realm by asserting that a production employee would consider safety as a key component in his/her own personal well-being, such that perceived management commitment to safety will be positively related to desirable organizational outcomes. In fact, a recent meta-analysis of the POS literature highlighted the consequences of perceived organizational support, and found strong support for the effects of POS on a variety of employee outcomes (Rhoades & Eisenberger, 2002). For example, perceived organizational support has been positively associated with outcomes such as affective commitment, job satisfaction, making suggestions, and organizational citizenship behaviors, and negatively associated with turnover intentions and withdrawal behaviors (e.g., Eisenberger, Fasolo, & Davis-LaMastro,

1990; Eisenberger et al., 2001; Wayne, Shore, & Liden, 1997). Research has examined perceived organizational support in the context of safety-related behavior, but only as it relates to safety communication, safety commitment, and accidents (Hofmann & Morgeson, 1999).

Perceived organizational support also has a positive relationship with employee performance. Relationships have been shown with POS and various performance measures among manufacturing employees (Witt, 1991), police officers (Armeli, Eisenberger, Fasolo, & Lynch, 1998), and steel workers (Eisenberger et al., 1990). It is noteworthy that POS can be enhanced both by supervisors as well as upper management (Rhoades & Eisenberger, 2002).

Perceived organizational support is particularly enhanced when employees believe that their employer has engaged in discretionary actions favorable to the employee (Eisenberger, Cummings, Armeli & Lynch, 1997; Rhoades et al., 2001). In the eyes of hourly employees both upper management and supervisory personnel would embody the "employer." From a safety perspective, a company that shows its commitment to safety by voluntarily enacting suggestions to improve plant floor safety should therefore enjoy higher levels of desired employee attitudes. This would not necessarily be the case if, for example, it installed new machine guards in response to an OSHA audit. Similarly, literature on the effects of transformational leadership has suggested that safety climate will be improved if employees perceive that management acts based on a commitment to their safety as opposed to reacting to regulatory demands (Barling, Loughlin, & Kelloway, 2002).

1.3. Safety in wood products industries

OSHA recently reported that the wood products manufacturing industry includes some of the most dangerous occupations within its manufacturing division (www.osha.gov). Lumber and wood products manufacturers' average fatalities were higher than the average number of fatalities reported for coal mining operations (SIC 12), oil and gas extraction operations (SIC 13), agricultural services (SIC 7), and food and kindred production operations (SIC 20). In addition, wood products manufacturing industry employees have higher injury incidence rates than those of other manufacturing industries. The Bureau of Labor Statistics (BLS) reported that injury rates at sawmills and planing mills (8.9 per 100 full-time workers) and furniture and fixtures (8.7 per 100 full-time workers) were higher than the average national injury rate (5.7 per 100 full-time workers) for 2001.

These statistics highlight the prevalence of incidents in wood-based industries and imply that all managers in these industries are not fully committed to safety. We can further infer that many wood industry managers do not fully realize the benefits that can accrue from a commitment to safety.

We chose to study this industry in part because of its poor safety record and the need to educate its leaders about the value of a commitment to safety.

2. Research methodology

Data were collected from hourly production employees at three unionized plants owned by a large, value-added wood products manufacturer. Surveys were administered in a neutral setting (e.g., cafeteria or breakroom) without any management present. Further, the investigators went to great lengths to assure employees that their responses were completely confidential, that no one from the organization would see their responses, and that their completed surveys would be removed from the premises immediately following each session.

Respondents were asked to provide their employee number on the survey; this allowed us to compare their responses with supervisor ratings. A total of 662 employees from the three plants received surveys, with 641 usable surveys being returned. Only 21 persons (3% of total) either did not know their number or did not feel comfortable writing it, thus providing an indication that most people trusted the investigators with their data. One-way ANOVA analyses comparing self-rated withdrawal behavior, job satisfaction, and commitment were conducted and indicated no significant differences in responses for those who provided their employee number versus those who did not. These data, along with employees' willingness to provide their employee number, suggest that social desirability responding did not significantly impact our results.

2.1. Measures

2.1.1. Management commitment to safety

Management commitment to safety was measured using four items adapted from Zohar's (1980) safety climate scale. Employees were asked to rate their agreement with these statements on a 5-point Likert scale (1=strongly disagree, 3=neutral, 5=strongly agree). Items include "Safety is an important concern of <company> upper management" and "My supervisor often encourages us to work safely."

2.1.2. Employee-level outcomes

Four employee-level outcomes were utilized as variables in this project. Employees' *job satisfaction* was measured using two items from Brayfield and Rothe (1951) using a 5-point scale (e.g., "I find real enjoyment in this work environment") and one item from Kunin's (1955) 11-point faces scale. Standardized z-scores were created for these three items, with the combined construct having a Cronbach's alpha of .79. Eight items developed by Mowday, Porter, and Steers (1982) were used to assess employee *affectionate commitment* to the organization. A sample item used in the survey is "I am willing to put in a great deal of effort

beyond that normally expected in order to help this organization be successful." Respondents completed these eight items using a 5-point Likert scale ranging from strongly disagree to strongly agree.

Self-reported *withdrawal behaviors* were measured using nine items from scales developed by Hom et al. (1984) on a 5-point agreement scale. Examples include "In the last 6 months, I have worked a lot slower than I usually do" and "In the last 6 months I have failed to report trouble or problems after I noticed them."

Supervisors were also asked to rate each of their subordinates on a number of performance measures. These items were combined to create a construct with an alpha value of .80. The three statements were as follows: (a) "This employee completes all assigned duties;" (b) "This employee meets the formal performance requirements of the job;" and (c) "This employee takes action to support the lean manufacturing effort." The three behaviors were rated on a 5-point Likert scale (1=never, 3=occasionally, 5=always). The company at which the data were collected was undergoing a transformation to lean manufacturing at the time of data collection. Lean manufacturing as a strategy attempts to reduce waste in its processes (Allen, Robinson, & Stewart, 2001), and includes components addressing ergonomics and worker safety (Smith, 2002).

2.1.3. Control variables

Perceived dangerousness was measured using one item from Morrow and Crum's (1998) scale. Employees were asked to rate how dangerous they feel their particular job is using a 5-point Likert scale with anchors ranging from not at all dangerous to extremely dangerous. Employee gender was obtained from the organization's employee database and coded one for males and two for females. Past research, while not conclusive, suggests that gender bias can have an impact on performance ratings (Decker, 1987; Dubno, 1985; Robbins & DeNisi, 1993). Therefore, supervisor gender was also included as a control when testing for the effects of management commitment to safety on supervisor ratings of performance. Finally, OSHA 300 logs and employer records were used to determine whether employees had experienced an injury (OSHA recordable and first aid treatment cases) in the 12 months preceding the survey administration. This variable was coded as either a one or a zero to indicate whether the employee had suffered an injury.

3. Results

A total of 641 usable employee surveys were completed and analyzed. Approximately 60% of the employees were male. The median age was 40 years, and median tenure with the company was 6 years. The means, standard deviations, correlations, and Cronbach's alpha reliability estimates are presented in Table 1. All Cronbach's alpha scores for the

Table 1

Means, standard deviations, scaled variable reliabilities, and intercorrelations among study variables

	Mean	Stand. Dev.	1	2	3	4	5	6	7	8	9
1. Management commitment to safety	3.77	.75	(.86)								
2. Supervisor gender	1.16	.37	-.021	N/A							
3. Employee gender	1.43	.50	.007	.116*	N/A						
4. Supervisor-rated performance	3.74	.67	.074	.352**	.080	(.80)					
5. Injured	.10	.30	-.046	.055	.100*	-.048	N/A				
6. Perceived dangerousness	2.40	1.13	-.114**	-.140**	-.283**	-.100*	.021	N/A			
7. Job satisfaction	3.26	.82	.083*	-.026	-.014	-.013	.074	.015	(.79)		
8. Withdrawal behavior	2.10	.61	-.240**	-.066	-.182**	-.185**	.002	.166**	.005	(.79)	
9. Affective commitment	3.32	.66	.483**	-.021	.070	.096*	-.087*	-.158**	-.014	-.334**	(.88)

Values in parentheses are Cronbach's alphas.

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

constructs were near or above 0.80 as recommended by Nunnally and Bernstein (1994).

Correlational results indicate that male respondents perceived their jobs as significantly more dangerous than females. Females, however, were more likely to be injured than the men. Another interesting finding is that there was no significant relationship between having been injured and the perceived dangerousness of one's job. Further, we see a significant negative correlation between perceived dangerousness and management commitment to safety.

We next conducted separate regression analyses to better understand the relationships between management commitment to safety and the three employee outcomes. Table 2 provides the standardized regression coefficients from the hierarchical regression with affective commitment, job satisfaction, and withdrawal behavior as the regressand variables. Model 1 included the three control variables (employee gender, employee injury, and perceived dangerousness). In model 2 we added management commitment to safety into the equation. The model 2 results and the change in R-square indicate the effect of the regressor variable on each outcome when controlling for gender, injury, and dangerousness.

The three control variables explained significant variance in withdrawal behavior ($R^2 = .054$, $p < .01$), with gender negatively related to withdrawal behavior and perceived dangerousness positively related. Adding management commitment to safety explained significant incremental variance ($\Delta R^2 = .05$, $p < .01$). Model one results with affective commitment were somewhat similar in that perceived dangerousness again had a significant relationship with the regressand variable. However, employee gender was insignificant and injury status was significant ($P < .05$). Once again, management commitment to safety significantly increased the R-square ($\Delta R^2 = .21$, $P < .01$).

Our models did not achieve the same levels of significance with job satisfaction as the regressand variable. Model 1 was insignificant with an R^2 of less than .01; none of the control variables were significantly related to job satisfaction. Considering management commitment to safety in addition to the controls resulted in significance for Model 2 at the .05 level ($\Delta R^2 = .01$).

A fourth regression analysis was conducted with supervisor-rated performance as the regressand variable (Table 3). Model 1 indicates that the gender of the supervisor was significantly correlated with performance ratings (i.e., female supervisors gave higher ratings than did the males).

Table 2

Standardized regression coefficients for analysis of employee outcomes

	Regressand Variables					
	Withdrawal Behavior		Affective Commitment		Job Satisfaction	
	Model		Model		Model	
	1	2	1	2	1	2
<i>Control variables</i>						
Employee gender	-.145**	-.149**	.029	.040	.013	.010
Injured (dichotomized)	.027	.017	-.096*	-.074*	.075	.080
Perceived Dangerousness	.145**	.119**	-.158**	-.103**	.003	.014
<i>Independent Variable</i>						
Management Commitment to Safety		-.219**		.457**		.095*
Model F	11.30**	16.64**	7.88**	47.80**	1.13	2.19*
R ²	.054	.101	.038	.243	.006	.015
R ² change		.047**		.205**		.009*

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

Table 3

Standardized regression coefficients for analysis predicting supervisor-rated performance

	Regressand Variable	
	Supervisor-rated performance	
	Model	
	1	2
Control variables		
Injured (dichotomized)	-.042	-.039
Perceived Dangerousness	-.062	-.052
Supervisor gender	.357**	.360**
Independent Variable		
Management Commitment to Safety		.081*
Model F	22.05**	30.80*
R ²	.138	.144
R ² change		.006

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

Neither of the other controls reached significance. Adding the regressor variable into the model resulted in a significant increase in the Model F with an R^2 of .144 ($\Delta R^2 = .01$, $P < .05$), thus indicating that perceptions of management commitment to safety are related to our measure of performance.

4. Discussion

The goal of this paper was to gain a better understanding of the consequences of management commitment to safety within the context of the hourly workforce in a manufacturing operation. This study makes several contributions to our understanding of the importance of a strong commitment to safety. Our results suggest that non-safety outcomes, in the form of attitudes and behaviors, may indeed be related to perceived management commitment to safety. The three key positive relationships were between employees' perception of management commitment to safety and job satisfaction, affective commitment, and performance. We also found an inverse relationship between perceived commitment to safety and employee withdrawal behaviors.

Of the self-reported variables, our models showed the most parsimony with affective commitment. This finding reflects past research showing affective commitment as the consequence most strongly linked to POS (Rhoades & Eisenberger, 2002). While perceptions of commitment to safety have a positive relationship with affective commitment to the organization, perceived dangerousness and having suffered an injury were both negatively correlated with affective commitment. This provides additional evidence of the negative outcomes resulting from an injury. It should be remembered that commitment is a very beneficial attitude, with low commitment being a common predictor of such undesirable behaviors as turnover and absenteeism (e.g., Cohen, 1993). With the relevance of high turnover to safety, affective commitment should be one of the attitudes

that safety professionals and upper managers strive to increase. For example, Rinefort and Van Fleet (1998) found wood products manufacturers that had a low turnover rate also experienced fewer work injuries and vice versa. They concluded that higher employee turnover leads to the addition of a greater number of new employees who may be unaware of the hazards in their new place of employment.

Our results also imply that very little of an employee's job satisfaction is related to perceptions of commitment to safety. Given the meta-analysis findings by Rhoades and Eisenberger (2002) that POS leads to increased job satisfaction, this implies that perceived management commitment to safety does not influence job satisfaction as strongly as POS. This is not necessarily surprising since job satisfaction can be composed of multiple attitudes and is affected by many different factors (Hanisch, 1992). It is also interesting to note that satisfaction was not significantly related to the dangerousness of one's job or whether the employee had a recent injury.

Our findings also indicate that a strong commitment to safety may result in better performance by individual employees. This relationship was significant even when controlling for the effects of prior injury and dangerousness. This implies that some percentage of the effort an employee puts into their job will be affected by the degree to which the organization is committed to their safety.

In summary, the findings from our analyses are consistent with organizational support theory, suggesting that hourly employees view management commitment to safety as a type of perceived organizational support, with outcomes similar to what has been shown with POS (e.g., Eisenberger et al., 2001). Unfortunately, an angle that this research could not clarify is the differential effects of upper managers versus the production supervisors on employee outcomes. Past research has suggested that upper management influences safety via its influence on the politics of communication, whereas the supervisory level affects safety by influencing perceptions of fairness by employees (Thompson, Hilton, & Witt, 1998).

4.1. Implications

The apparent link between employee-level outcomes and perceived management commitment to safety suggests that the effects of such commitment may be broader than earlier thought. Recognition of this link should refocus upper management on actions designed to improve the employees' perception of their commitment to safety. This may be accomplished by proactively and visibly demonstrating consistent leadership, with respect to safety, on a regular basis (e.g., Bailey, 1997; Stewart, 2001). This might also be achieved by management support for human resources (HR) policies that indicate a voluntary investment in employees' safety (e.g., safety training, reimbursement for personal protection equipment). Recent research has shown that desired employee behaviors are likely to

result from such HR policies (Tsui, Pearce, Porter, & Tripoli, 1997).

That we found our results in a union environment may have particular implications for managing employees under the restrictions of a union contract. If an organization's contract is somewhat restrictive in terms of how much it allows management to provide "valued resources" to hourly employees, then it may prove difficult for management to engender high levels of perceived organizational support via the use of discretionary actions. Without high levels of POS the organization's employees will be less likely to exhibit the behaviors (both in-role and extra-role), attitudes (Rhoades & Eisenberger, 2002), and overall involvement necessary for meeting a manufacturing organization's goals (Pun, Chin, & Gill, 2001). However, our results suggest that illustrating a strong commitment to safety can act as a surrogate for POS, and hence provide a means by which management can enjoy the beneficial outcomes associated with high POS while also keeping union leadership happy.

Whether employees' perceptions of management commitment to safety actually predicts our self-rated outcomes is unknown; however, there are interesting relationships that provide management with an impetus to improve how their commitment to safety is perceived by the workforce. Both safety directors and upper managers should especially take note of the possibility that perceptions of commitment to safety can predict employee performance. This type of desirable outcome may be easier for safety directors to "sell" to upper management as a reason to increase safety commitment than an intangible attitude such as job satisfaction.

An overall implication of this research is that management commitment to safety seems to be valued by hourly employees, and that this value is manifested in a wide variety of ways. In this sense our research is somewhat exploratory; future research should investigate more deeply the longitudinal outcomes that are associated with perceptions of commitment to safety.

Of added interest to safety professionals may be the correlations between injury, gender, and perceived dangerousness. It may be some cause for concern that having suffered an injury was not significantly related to perceived dangerousness of the job. This implies that at least some of the employees who were injured did not become more aware of the danger in their position, and thus may be more likely to suffer additional injuries. We also found it interesting that females perceived less danger in their jobs, and yet were more likely to have been injured.

4.2. Limitations and future research

As with any study, there are limitations from our methods that should be recognized. First, the results from the survey are employees' perceptions, and are hence subject to possible biases. For example, individual perceptions of

reality regarding safety commitment by supervisors or upper management may not match reality. Second, common method variance may have inflated the observed relationships seen with self-reported items. We attempted to mitigate this effect by utilizing archival and supervisor-rated data where possible. Also, data were collected from a limited number of manufacturing facilities in one industry; this limits our external validity and care should therefore be taken when extrapolating these results to other environments. Finally, due to the fact that cross-sectional data (e.g., collected at one moment in time) were primarily used for this research project, we were unable to determine causality with commitment to safety and the employee-level outcomes. Future research would benefit by exploring the interactions between management commitment to safety, job-related attitudes, and actual injuries.

Employees' perception of management commitment to safety is only one factor that makes up an organization's safety climate. It might be valuable to know how the two other factors that Brown and Holmes (1986) defined (e.g., supervisors' and co-workers' commitment to safety) affect employee-level outcomes such as job satisfaction and withdrawal behaviors. Further, it would be interesting to determine how perceptions of management commitment to safety, supervisor support for safety, and co-worker commitment to safety affect group-level outcomes not related to safety.

4.3. Conclusions

Our results suggest that increasing employee perceptions of management's personal concern for employee well-being through a dedication to safety will result in positive outcomes beyond improved safety performance. One method for demonstrating an increased commitment in a manufacturing organization may be for management to know and understand the manufacturing processes of the organization. Knowing the manufacturing process should help management to identify unsafe working conditions, unsafe equipment/machinery, and unsafe acts/behaviors in order to take corrective actions for the issue at hand. Such actions by management reflect personal commitment and involvement, which in turn appears to influence employee-level outcomes.

This research may have broader value to the safety profession as it extends the literature on commitment to safety into an area that has seen few past works. Showing the effects of commitment to safety on employee-level outcomes may further highlight the value of managers exhibiting strong commitment to safety. Commitment to safety, however, is not solely the responsibility of upper management. Production and shop-floor supervisors also have a critical role to play via their significant effect on workers' safety behavior and safety climate scores (e.g., Zohar & Luria, 2003). Conflicts can, however, exist between production and safety and it is for this reason that

production managers and supervisors should not send mixed messages by allowing employees to compromise their safety in order to meet other goals such as daily or weekly productivity quota.

Findings from this research help confirm the relevance of management commitment to safety in the wood products manufacturing industry. These results provide empirical evidence that benefits can accrue to organizations when management is involved in and committed to maintaining a safe work environment for their employees. This can be accomplished in a variety of ways, including showing personal concern for the health and safety of employees, implementing job-training programs, participating in the management of safety committees, considering safety in job design, and reviewing the pace of work.

Acknowledgement

This project was funded in part by a grant from the USDA National Research Initiative Competitive Grants Program, and a Cooperative Research Agreement with the U.S. Forest Service (#11242343-066), Northeastern Research Station, Princeton, WV.

References

- Adler, S., & Golan, J. (1981). Lateness as withdrawal behavior. *Journal of Applied Psychology*, 66, 544–555.
- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance, and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1–18.
- Allen, J., Robinson, C., & Stewart, D. (2001). *Lean manufacturing: A plant floor guide*. Dearborn, MI: Society of Manufacturing Engineers.
- Anonymous. (1996). Increase job satisfaction to reduce workers' compensation claims, expert urges. *Professional Safety-The Journal of the American Society of Safety Engineers*, 41, 3.
- Armeli, S., Eisenberger, R., Fasolo, P., & Lynch, P. (1998). Perceived organizational support and police performance: The moderating influence of socioemotional needs. *Journal of Applied Psychology*, 83, 288–297.
- Aselage, J., & Eisenberger, R. (2003). Perceived organizational support and psychological contracts: A theoretical integration. *Journal of Organizational Behavior*, 24, 491–509.
- Babakus, E., Cravens, D., Johnstons, M., & Moncrief, W. (1999). The role of emotional exhaustion in sales force attitude and behavior relationships. *Journal of the Academy of Marketing Science*, 27, 58–70.
- Bailey, C. (1997). Managerial factors related to safety program effectiveness. An update on the Minnesota perception survey. *Professional Safety-The Journal of the American Society of Safety Engineers*, 42, 33–35.
- Barling, J., Loughlin, C., & Kelloway, E. K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology*, 87(3), 488–496.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99–120.
- Becker, T. E., Billings, R. S., Eveleth, D. M., & Gilbert, N. L. (1996). Foci and bases of employee commitment: Implications for job performance. *Academy of Management Journal*, 39, 464–482.
- Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure*. New York: Free Press.
- Blau, G. (1998). On the aggregation of individual withdrawal behaviors into larger multi-item constructs. *Journal of Organizational Behavior*, 19(5), 98–114.
- Brayfield, A. H., & Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35, 307–311.
- Brown, R. L., & Holmes, H. (1986). The use of a factor-analytic procedure for assessing the validity of an employee safety climate model. *Accident Analysis and Prevention*, 18, 445–512.
- Cantarella, A. (1998). Effectively measuring safety performance. *Professional Safety-The Journal of the American Society of Safety Engineers*, 43, 1–3.
- Cohen, A. (1993). Organizational commitment and turnover: A meta-analysis. *Academy of Management Journal*, 39, 1140–1157.
- Cropanzano, R., Howes, J. C., Grandey, A. A., & Toth, P. (1997). The relationship of organizational politics and support to work behaviors, attitudes, and stress. *Journal of Organizational Behavior*, 18, 159–180.
- Decker, W. H. (1987). Attributions based on managers' self-presentation, sex, and weight. *Psychological Reports*, 61, 175–181.
- DeLong, T. J., & Vijayaraghavan, V. (2003). Let's hear it for B players. *Harvard Business Review*, 81, 96.
- Dubno, P. (1985). Attitudes toward women executives: A longitudinal approach. *Academy of Management Journal*, 1, 235–239.
- Duffy, M. K., Ganster, D. C., & Shaw, J. D. (1998). Positive affectivity and negative outcomes: The role of tenure and job satisfaction. *Journal of Applied Psychology*, 83, 950–959.
- Dunham, R. B., Grube, J. A., & Castaneda, M. B. (1994). Organizational Commitment: The utility of an integrative definition. *Journal of Applied Psychology*, 79(3), 370–380.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71, 500–507.
- Eisenberger, R., Cummings, J., Armeli, S., & Lynch, P. (1997). Perceived organizational support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology*, 82, 812–820.
- Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology*, 86(1), 42–51.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75, 51–59.
- Gouldner, A. W. (1960). The norm of reciprocity. *American Sociological Review*, 25, 165–167.
- Gupta, N., & Jenkins Jr, G. D. (1983). Tardiness as manifestation of employee withdrawal. *Journal of Business Research*, 11, 61–76.
- Hanisch, K. A. (1992). The job description index revised. *Journal of Applied Psychology*, 77, 377–382.
- Hartline, M., & Ferrell, O. C. (1996). The management of customer-contact service employees: An empirical investigation. *Journal of Marketing*, 60, 52–71.
- Hofmann, D. A., & Morgeson, F. P. (1999). Safety-related behavior as a social exchange: The role of perceived organizational support and leader-member exchange. *Journal of Applied Psychology*, 84, 286–296.
- Hofmann, D. A., Morgeson, F. P., & Gerras, S. J. (2003). Climate as a moderator of the relationship between leader-member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology*, 88, 170–178.
- Hom, P. W., Griffeth, R. W., & Sello, C. L. (1984). The validity of Mobley's (1977) model of employee turnover. *Organizational Behavior and Human Performance*, 34, 157–170.
- Koys, D. (2001). The Effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. *Personnel Psychology*, 54, 101–114.
- Kunin, T. (1955). The construction of a new type of attitude measure. *Personnel Psychology*, 8, 65–78.

- Meyer, J. P., Allen, N. J., & Gellatly, I. R. (1990). Affective and continuance commitment to the organizations: Evaluation of measures and analysis of current and time-lagged relations. *Journal of Applied Psychology*, 75(6), 710–720.
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61–89.
- Meyer, J. P., & Allen, N. J. (1997). *Commitment in the workplace: Theory, research and applications*. Thousand Oaks, CA: Sage.
- Morrow, P., & Crum, M. R. (1998). The effects of perceived and objective safety risk on employee outcomes. *Journal of Vocational Behavior*, 53, 300–313.
- Mowday, R. T., Porter, L. W., & Steers, R. M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. New York: Academic Press.
- Niehoff, B. P., Enz, C. A., & Grover, R. A. (1990). The impact of top-management actions on employee attitudes and perceptions. *Group and Organization Management*, 15(3), 337–352.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill Publishers.
- Ostroff, C. (1992). The relationship between satisfaction, attitudes, and performance: An organizational level analysis. *Journal of Applied Psychology*, 77, 963–974.
- O'Reilly, C. A., & Chatman, J. (1986). Organizational commitment and psychological attachment: The effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology*, 71, 492–499.
- O'Reilly, C. A., Chatman, C., & Caldwell, D. F. (1991). People and Organizational Culture: A profile comparison approach to assessing person-organizational fit. *Academy of Management Journal*, 34(3), 487–516.
- O'Toole, M. (2002). The relationship between employees' perceptions of safety and organizational behavior. *Journal of Safety Research*, 33, 231–243.
- Pool, S. W. (1997). The relationship of job satisfaction with substitutes of leadership behavior, and work motivation. *The Journal of Psychology*, 131(3), 271–283.
- Pun, K. F., Chin, K. S., & Gill, R. (2001). Determinants of employee involvement practices in manufacturing enterprises. *Total Quality Management*, 12, 95.
- Reisinger, T. W., Sluss, R. G., & Shaffer, R. M. (1994). Managerial and operational characteristics of "safety successful" logging contractors. *Forest Products Journal*, 44(4), 72–79.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87, 698–714.
- Rhoades, L., Eisenberger, R., & Armeli, S. (2001). Affective commitment to the organization: The contribution of perceived organizational support. *Journal of Applied Psychology*, 86(5), 825–836.
- Rinefort, F. C., & Van Fleet, D. D. (1998). Work injuries and employee turnover. *American Business Review*, 16, 9–14.
- Robbins, T. L., & DeNisi, A. S. (1993). Moderators of sex bias in the performance appraisal process: A cognitive analysis. *Journal of Management*, 19, 113–127.
- Shamir, B. (1991). Meaning, self and motivation in organizations. *Organization Studies*, 12, 405–424.
- Smith, S. (2002). Ergonomics and manufacturing excellence. *Occupational Hazards*, 64, 47–49.
- Stewart, J. (2001). The Turnaround in Safety at the Kenora Pulp and Paper Mill. *Professional Safety-The Journal of the American Society of Safety Engineers*, 46, 34–45.
- Thompson, R. C., Hilton, T. F., & Witt, L. A. (1998). Where the safety rubber meets the shop floor: A confirmatory model of management influence on workplace safety. *Journal of Safety Research*, 29(1), 15–24.
- Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee-organization relationship: does investment pay off? *Academy of Management Journal*, 40, 1089–1121.
- Wayne, S. J., Shore, L. M., & Liden, R. C. (1997). Perceived organizational support and leader-member-exchange: A social exchange perspective. *Academy of Management Journal*, 40, 82–111.
- Witt, L. A. (1991). Exchange ideology as a moderator of job attitudes-organizational citizenship behaviors relationships. *Journal of Applied Social Psychology*, 21, 1490–1501.
- Wright, P., Gardner, T., & Moynihan, L. (2003). The impact of HR practices on the performance of business units. *Human Resource Management Journal*, 13, 21–36.
- Zohar, D. (1980). Safety climate in industrial organizations: Theoretical and applied implications. *Journal of Applied Psychology*, 65, 96–102.
- Zohar, D., & Luria, G. (2003). The use of supervisory practices as leverage to improve safety behavior: A cross-level intervention model. *Journal of Safety Research*, 34, 567–577.

Judd Michael is Associate Professor of Wood Industries Management at Penn State University. Research interests are focused on increasing the competitiveness of the U.S. wood-based manufacturing industries, including lean manufacturing, change management and safety performance. He received a PhD from Penn State and an MBA from Texas A & M.

Demetrice Evans is a management trainee at Franklin Corporation. He received his M.S. in Wood Products Business Management from Penn State.

Karen J. Jansen is an Assistant Professor in the Management and Organization Department at Penn State's Smeal College of Business. She received a Ph.D. in management from Texas A & M University. Her research broadly explores the process and impact of change on an organization's employees.

Joel M. Haight is an Assistant Professor in Penn State's Dept. of Energy and Geo-Environmental Engineering. He has a Ph.D. and Master's degree in Industrial Engineering from Auburn University. He is a licensed professional engineer and is certified by the American Board of Industrial Hygiene and the Board of Certified Safety Professionals. His research areas are human error, safety intervention effectiveness and optimization of leading indicators.