

SUPERVISOR'S ROLE IN MANAGING EMPLOYEE STRESS AND SAFETY
COMPLIANCE

A Dissertation
Presented to
The Faculty of the Department
of Psychology
University of Houston

In Partial Fulfillment
Of the Requirements of the Degree of
Doctor of Philosophy

By
Ian Wilson
May 2014

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ABSTRACT

The current study proposes a moderated mediation model to explain how stressors may affect safety compliance both directly and indirectly through emotional exhaustion while examining the moderating role of supervisor support. Specifically, the model suggests that constraints (a form of hindrance stressor) are negatively related to safety compliance, and that emotional exhaustion mediates this relationship. The model also proposes that supervisor support moderates the mediated relationship such that individuals receiving high supervisor support experience less emotional exhaustion and consequently are more likely to comply with safety procedures compared to those who receive low levels of supervisor support. The model was tested using a sample of employees doing construction type work in a public sector organization. Results supported Hypotheses 1 and 2, indicating that constraints were negatively related to safety compliance, and that emotional exhaustion partially mediates the relationship between constraints and safety compliance. Results did not support hypotheses 3, 4a, and 4b, failing to show a significant relationship between supervisor support and safety compliance, and failing to show that supervisor support moderated the indirect or direct effects between constraints and safety compliance.

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Supervisor's Role in Managing Employee Stress and Safety Compliance

According to the Bureau of Labor Statistics (U.S. Department of Labor, 2012), there were 4,690 work-related deaths in the US in 2010. If the tragic loss of life is not enough to emphasize the importance of workplace safety, we can also examine the financial costs incurred by organizations. In the US in 2009, work-related injuries and illnesses cost organizations over \$50 billion in workers' compensation alone (Liberty Mutual Workplace Safety Index, 2011).

Employee compliance with safety procedures is an important factor with both moral and financial consequences. As such, a considerable amount of research has been done around safety in the workplace. Some of this research has attempted to identify predictors of unsafe behavior and accidents. One of the relationships supported by this research is the link between stress and safety compliance. Namely, when people experience higher levels of stress they are more likely to engage in risky behavior or experience an accident in the workplace. Stressors may lead to unsafe behavior indirectly through an increase in emotional exhaustion and other burnout symptoms or more directly by presenting obstacles that employees may get around by breaking safety regulations (Clarke 2012; Goldenhar, Williams, & Swanson, 2003; Torp & Groggaard 2009).

Studies have also shown that leaders play an important role in employee safety behavior. Research shows that consistent, effective leadership (e.g., transformational leadership) can lead to higher levels of safety compliance (Innes, Turner, Barling, & Stride, 2010; Mullen, Kelloway, & Teed, 2011). Despite the research surrounding these two important predictors of safety compliance, no studies to date have examined how stressors and leadership may jointly predict safety compliance. This is an important interaction to

examine because our relationships with other individuals can have a profound effect on our response to stressful work conditions. In the workplace, an employee's supervisor has a profound influence on the pressures he/she experiences. Supervisors can augment the pressure an employee experiences by being highly demanding and indifferent or decrease pressure by being supportive and understanding. By examining this relationship in greater detail, I aim to shed light on the complex relationships and processes that affect employees' safety behavior and identify effective practices for supervisors to reduce unsafe employee behavior.

The current study will expand upon these avenues of research by diving deeper into the stress – safety relationship and exploring the mechanisms through which it occurs, as well as examining the effects that supervisors can have on this process. While research has examined some of these relationships (i.e., effect of stress and leader behavior on safety performance), these antecedents have been researched separately. The goal of my study is to provide a more thorough understanding of how these variables affect safety performance by examining the interaction between stressors and supervisor behavior. Specifically, I will examine a moderated mediation model proposing that stressors affect safety compliance both directly as well as indirectly through emotional exhaustion, and supervisors can moderate this relationship by decreasing the positive relationship between stressors and emotional exhaustion.

The findings from this study could have important implication for both research and practice. By confirming an interaction, this study would highlight a new area for research to examine and continue to learn how supervisors can best assist their employees to deal with the negative effects of stressors and maintain high safety compliance. As I have previously

mentioned, safety is an important consideration for organizations as it can have strong moral and financial consequences. Some jobs may carry with them a certain amount of risk; however organizations have a moral obligation to minimize the danger their employees face. With that in mind, these findings could have practical implications by suggesting best practices for supervisors to help maintain high safety compliance even when employees are confronted with stressors.

In the following sections I discuss safety compliance and how it is affected by occupational stress and burnout. I then discuss the effects supervisor leadership may have on this relationship. Using Conservation of Resources theory and social exchange theory, I provide support for a moderated mediation model to explain how both the presence of stressors and actions of supervisors are expected to impact safety performance. Next, I discuss the methods and analyses used as well as provide the results of this study. Lastly, I discuss the findings as well as their implications for practice and research.

Safety Compliance

Griffin and Neal (2000) developed a framework of safety performance based on Borman and Motowidlow's (1993) model of job performance. Borman and Motowidlow (1993) suggest two components of performance: task performance and contextual performance. Task performance refers to an individual's performance on the specific core activities that are required by a job, and contextual performance is defined as behaviors that are not specifically required by a job but help contribute to the well being of the organization (Borman & Motowidlow, 1993).

Similarly, Griffin and Neal (2000) identified two dimensions of safety performance. The first dimension, safety compliance, corresponds to task performance. Safety compliance

consists of following “the core safety activities that need to be carried out by individuals to maintain workplace safety. These behaviors include adhering to tagout and lockout procedures and wearing personal protective equipment” (p. 349). The second dimension, safety participation, is based on contextual performance. Safety participation consists of “behaviors such as participating in voluntary safety activities or attending safety meetings. These behaviors may not directly contribute to workplace safety, but they do help to develop an environment that supports safety” (p. 349). The key difference between the two dimensions is that safety compliance is directly enforced and regards an individual’s behavior specifically relating to safety regulations, whereas safety participation is a voluntary behavior that may not directly affect individual safety but contributes to creating a supportive safety environment (Neal & Griffin, 2006).

Griffin and Neal (2000) also showed that employee perceptions about safety and motivation to perform safely influenced safety performance and also mediated the link between safety climate and safety performance. This framework has received support in various studies examining workplace safety (Inness et al., 2010; Mullen et al., 2011; Neal & Griffin, 2006). Safety participation is important and may contribute to improved safety compliance, however safety compliance has a more immediate and direct impact on workplace safety because it pertains to employee behavior around following (or not following) safety protocols. Thus, the current study will focus on safety compliance as these behaviors are more directly related to individual performance.

The literature proposes several antecedents to safety performance in general and to safety compliance in particular. One of the more comprehensive antecedents is safety climate. Safety climate is described as a perception (can be individual or shared by a group)

of the “policies, procedures, and practices relating to safety in the workplace” (Neal & Griffin, 2006, p. 946-947). Neal and Griffin (2006) use social exchange theory to argue that when employees believe the organization cares about their well-being, they will develop a sense of obligation to respond by exhibiting behavior that will benefit the organization. Because organizations with a strong safety climate have invested time, energy, and resources into keeping employees safe, employees are likely to believe that the organization cares about their well-being. As a result, employees reciprocate the concern by following established safety protocols.

Whereas safety climate represents a broad antecedent, other research has identified more specific factors that also influence safety compliance. Probst and Brubaker (2001) mention a few in ergonomic conditions, employee personal characteristics, and job insecurity. Some of these factors (job insecurity and poor ergonomic conditions) can be considered stressors. In fact, research has identified stress as an antecedent of safety compliance. Torp and Groggaard (2009) found a negative relationship between psychological demands and compliance with health and safety routines. That is, employees who experience high levels of job stress are less likely to follow procedures to protect health and safety. Similarly, Goldenhar et al. (2003) established a relationship between various stressors (including job demands, job control, job certainty, training, etc) and injuries and near misses. A meta-analysis by Clarke (2012) provides evidence that is both compelling and highly relevant to the current study. Clarke (2012) found that occupational stressors (specifically hindrance stressors) were negatively related to safety compliance as well as other safety performance and safety outcome criteria (e.g., occupational injuries and near-misses). These studies provide evidence that stress, and specifically hindrance stressors, have a detrimental

impact on safety performance. In the following sections, I further discuss the occupational stress literature and how the current study advances research in these areas to better address safety concerns.

Occupational Stress

The most widely accepted approach to studying occupational stress involves examining the relationship between two classes of variables: stressors (negative aspects of a job) and strains (adaptive responses resulting from exposure to stressors; Spector & Jex, 1998). Spector acknowledges that the definition of a stressor is broad and includes many sorts of pressure-laden conditions that act on an individual and elicit “a negative emotional response, such as anger/frustration or anxiety/tension” (Spector, 1998, p. 154). Commonly assessed job stressors include workload, job constraints, and role ambiguity. There is some variability in what any one individual may consider “stressful,” and not all stressors elicit the same response from all people (Parasuraman & Alutto, 1984). However, researchers have identified several factors that act as stressors across many people and situations. These factors include work characteristics such as low control, job demands, and job constraints (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; LePine, LePine, & Jackson, 2004; Nauta, Liu, & Li, 2010; Thomas & Ganster, 1995), as well as inter-unit conflict, technical problems, inadequate supervisory instruction, favoritism, staff shortages, too many meetings (Parasuraman & Alutto, 1984), and interpersonal conflict (Spector & Jex, 1998).

The second class of variable is the job strain, which is the reaction to the stressor. Strains can be classified as behavioral, physical, or psychological (Jex & Beehr, 1991). A psychological strain is an emotional reaction to the stressor that can happen immediately following the appearance of a stressor and persist over time. Examples of psychological

strains that have been studied in the literature include anxiety, depression, frustration, and discouragement (Nauta et al., 2010; Sanz-Vergel, Demerouti, Mayo, & Jiménez, 2011; Thomas & Ganster, 1995). Physical strain is classified by a physiological reaction. The reaction can be long-term (i.e., heart disease) or short-term (i.e., increased blood pressure; O’Leary, 1990; Spector & Jex, 1998; Thomas & Ganster, 1995). Other examples of physical strains include headaches, stomachaches, back problems, dizziness, eyestrain, nausea, and fatigue (Grant & Langan-Fox, 2007; Lang, Thomas, Bliese, & Adler, 2007; Liu, Spector, & Jex, 2005; Nauta et al., 2010). A behavioral strain is any action that occurs in response to a stressor. The behavior can be immediate and impulsive, such as hitting the individual responsible for the stressor, or it can be a long-term strategy, such as searching for a new job (Spector, 1998). Other behavioral strains include changes in performance, absenteeism, and turnover (Liu et al., 2005; Thomas & Ganster, 1995). Safety compliance, or more specifically an employee’s failure to comply with safety protocols, can also be considered a behavioral strain elicited by a stressor.

One theory that describes the stressor – strain process is Conservation of Resources (COR) Theory. Many theories in psychology have focused on the idea that individuals attempt to create a world around them that is pleasant and fills their needs. However, until COR this viewpoint had struggled to make its way into stress theory. Maslow (1968) discussed how individuals pursue a hierarchy of needs beginning with physical resources, then social resources, and finally psychological resources. Also, social learning theory argues that people attempt to obtain positive reinforcement by actively engaging in their environment (Bandura, 1977). According to Hobfoll (1989), the best approach individuals can take to achieve these goals is by seeking to “create and maintain personal characteristics

(e.g., mastery or self-esteem) and social circumstances (e.g., tenure or intimacy) that will increase the likelihood of receipt of reinforcement and to avoid the loss of such characteristics and circumstances” (p. 516). COR theory is based on this approach.

Under COR, stress is defined as “a reaction to the environment in which there is (a) the threat of a net loss of resources, (b) the net loss of resources, or (c) a lack of resources gain following the investment of resources. Both perceived and actual loss or lack of gain are envisaged as sufficient for producing stress” (Hobfoll, 1989, p. 516). According to COR, resources are the single unit necessary for understanding stress. Hobfoll (1989) describes resources as “those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies” (p. 516). According to COR, individuals experience strain when their resources are threatened or lost (Hobfoll, 1989; Halbesleben & Buckley, 2004). For example, when individuals lose their jobs, their monetary income (physical object) is threatened as well as their status as employed individuals (condition). This loss of resources is what leads individuals to experience anxiety or depression. Put another way, the loss of employment acts as stressor, which elicits the strain response (anxiety/depression).

Another characteristic of COR theory is that it provides explanations for what individuals will do when confronted with stressors and when not confronted with stressors. Hobfoll (1989) argues that when individuals are not currently facing stressors, they strive to build resource surpluses to offset potential future losses. One way people build resources is by investing their current resources, such as time and energy at work, to gain additional resources (e.g., recognition, access to information, efficient processes, and social support). On the other hand, when individuals are faced with stressors and feel ill-equipped to gain

resources, they are likely to employ self-protective tactics to prevent loss of their current resources (i.e., give less time and/or energy at work; Hobfoll, 1989).

Based on the stressor – strain framework, safety non-compliance (lack of safety compliance) may function as a behavioral strain that employees manifest as a result of experiencing stressors. COR theory explains that when individuals experience stressors, they feel their resources are threatened. This threat can result in a behavioral strain outcome such as decreased safety performance. As COR theory explains, failing to expend the time, energy, and effort needed to follow safety procedures could be a self-protective tactic to conserve and avoid further loss of resources by not investing them.

The connection between stressors and safety performance has been demonstrated in a number of studies. Goldenhar et al. (2003) examined how stressors are related to self-reported injuries and near misses. Their results indicated that many stressors (including: job demands, job control, harassment, social support etc.) were related both directly and indirectly (through physical and psychological strain) to injury or near misses in the workplace. Also, Torp and Groggaard (2009) found that stressors such as psychological demands, decision authority, social/management support (or lack of) were significantly related to compliance with health and safety routines.

In recent years, organizational scientists have presented evidence that not all stressors are created equal. The challenge stressor – hindrance stressor framework proposes that challenge stressors and hindrance stressors will have different effects on burnout and performance (LePine et al., 2004). According to Cavanaugh et al. (2000) and LePine et al. (2004), people appraise stressors as either a challenge or a hindrance, and this appraisal of the stressor affects the way people respond to it. Cavanaugh et al. (2000) described challenge

stressors as job demands that are pressure-laden but still considered a rewarding experience. They include things such as job overload, time pressures, and high levels of responsibility. LePine et al. (2004) showed that challenge stressors, like most stressors, resulted in increased emotional exhaustion, but unlike most stressors, challenge stressors also resulted in increased performance. They suggest that the reason for this increase in performance was that challenge stressors led to an increase in motivation. This increase in motivation led to an increase in performance that was strong enough to overcome the negative effect of emotional exhaustion. Other researchers have found similar evidence that challenge stressors are generally associated with positive outcomes (Cavanaugh et al., 2000; LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007; Webster, Beehr, & Christiansen, 2010).

Cavanaugh et al. (2000, p. 67) described hindrance stressors as “job demands or work circumstances that involve excessive or undesirable constraints that interfere with or hinder an individual’s ability to achieve valued goals.” They include things such as organizational politics, red tape, and concerns about job security. LePine et al. (2004) showed that hindrance stressors are associated with increased emotional exhaustion and decreased motivation. By decreasing motivation and increasing exhaustion, hindrance stressors have a negative effect on performance. In line with the findings from LePine et al. (2004) most research associates hindrance stressors with negative outcomes such as decreased job satisfaction, commitment, self-efficacy, job motivation and performance, and increased emotional exhaustion, job search, withdrawal, and turnover (Cavanaugh et al., 2000; LePine et al., 2005; Podsakoff et al., 2007; Webster et al., 2010).

In her meta-analysis, Clarke (2012) examined the effects of stressors on safety compliance and found that challenge and hindrance stressors have different effects. On one

hand, Clarke (2012) found a negative relationship between hindrance stressors and both safety compliance and safety participation. Hindrance stressors also predicted higher levels of injuries and near-misses. Challenge stressors, on the other hand, had near-zero correlations with compliance and injuries. These findings are important because they point out that not all stressors are equal when it comes to safety. Because challenge stressors are typically associated with positive outcomes and because Clarke (2012) found no significant correlation between challenge stressors and safety criteria, the current study focuses exclusively on the negative effects of hindrance stressors. In the current study, I expand on previous findings by further exploring the stressor-safety performance relationship by examining a specific form of hindrance stressor, namely organizational constraints.

Peters and O'Connor (1980) describe organizational constraints as factors that hinder an individual's utilization of his/her ability toward completing job tasks, thereby reducing performance. Although global measures of hindrance stressors (e.g., Cavanaugh et al., 2000) include a broader list of circumstances that interfere with individuals' ability to achieve their goals (e.g., job security, lack of career advancement), constraints are more narrowly defined as obstacles that interfere with individual job performance; this includes faulty equipment, interruptions, inadequate training, or incomplete information (Spector & Jex, 1998). Because constraints may interfere with employees' ability to follow required procedures, they represent a particularly salient threat to safety compliance.

Research has found constraints to be positively related to strain outcomes such as negative emotions and negatively related to both task and safety performance (Clarke, 2012; Liu, Nauta, Li, & Fan, 2010; O'Connor, Peters, Pooyan, Weekley, Frank, & Erenkrantz, 1984; Stewart & Nandkeolyar, 2007). Based on the research and theory I have previously

discussed, I assert that decreased safety compliance is a behavioral strain that is associated with employees' experience of work constraints. Thus, I suggest the following replication hypothesis.

H1: Organizational constraints will be negatively related to safety compliance.

Burnout

The stressor – strain literature also provides insight into the process by which constraints influence safety compliance, namely by increasing employee burnout, one of the most widely studied strain outcomes in the literature. Burnout has been described as “a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of emotional exhaustion, cynicism, and inefficacy” (Maslach, Schaufeli, & Leiter, 2001, p. 397). Emotional exhaustion is the central dimension of burnout and refers to feelings of overexertion. Most people who report experiencing burnout refer to this feeling of exhaustion. Cynicism is an attempt to withdraw oneself from the job or environment, and inefficacy refers to a lack of belief in one's ability to perform one's job well. Burnout has been linked to lower productivity and effectiveness as well as negative mental and physiological health outcomes, including anxiety and depression (Maslach et al., 2001). Because of its role as the defining characteristic of burnout, the current study will focus exclusively on the emotional exhaustion dimension of burnout.

Emotional exhaustion is a form of psychological strain that can be elicited by stressors. Indeed, Maslach et al. (2001) argues that emotional exhaustion can be a result of high job demands or low job resources. For instance, a constant heavy workload is a situation (stressor) that could cause one to become emotionally exhausted (strain). Indeed, both empirical studies and meta-analyses have found positive relationships between stressors such

as workload or constraints and emotional exhaustion (LePine et al., 2004; LePine et al., 2005). For example, Singh, Goolsby, and Rhoads (1994) showed that role conflict, role ambiguity, and role overload were all positively related to emotional exhaustion.

Maslach et al. (2001) showed that there are many consequences to emotional exhaustion including negative performance and health outcomes. Wright and Bonett (1997) discussed how emotional exhaustion reflects the depletion of an individual's energy. This depletion of energy is associated with negative outcomes such as decreased performance, job satisfaction, and organizational commitment, and increased intent to leave and turnover (Geurts, Shaufeli, & Jonge, 1998; Singh et al., 1994; Wright & Bonett, 1997; Wright & Cropanzano, 1998).

Similarly, other researchers have associated emotional exhaustion with negative safety outcomes. A recent study by Li, Jiang, Yao, and Li (2013) indicated that job demands and resources could affect emotional exhaustion and safety compliance. Specifically, they found that emotional exhaustion mediated the relationships between both demands and resources and safety compliance. Additionally, a meta-analysis by Nahrgang et al. (2011) confirmed previous research by finding that job demands were positively related to burnout, whereas resources were negatively related to burnout, and burnout was negatively related to safety outcomes (accidents, injuries, and unsafe behavior).

In line with this previous research, COR theory offers a framework by which to understand the relationship between constraints, emotional exhaustion, and safety compliance. When employees experience constraints, they perceive this as a threat to their resources (or opportunity to obtain further resources). This threat can lead to employees experiencing emotional exhaustion. COR theory also argues that when employees experience

strains and feel their resources are threatened, they may employ self-protective tactics by not investing further resources (i.e., decreasing efforts). In this way the psychological strain of emotional exhaustion could lead to the behavior strain of reduced safety performance.

Based on the research and theory discussed above, I suggest that emotional exhaustion will partially mediate the relationship between constraints and safety compliance. I suggest partial mediation and not full mediation for two reasons. First, while the literature clearly supports the notion that organizational constraints are related to increased emotional exhaustion, which in turn is related to decreased safety compliance, it seems likely that organizational constraints may also have a direct effect on safety compliance. Constraints are by definition factors that interfere with individuals' ability to complete their job tasks. As such, they may decrease safety compliance directly by making employees feel like they must go around protocol and engage in risky behavior to get the job done. For example, if employees are supposed to set up reflective cones to mark off a work zone at specific distances, but they do not have adequate cones (inadequate equipment to properly do the job); they may choose to proceed with the job regardless of the lack of equipment. In doing so, they fail to comply with proper safety procedures. Additionally, an individual's coworkers could act as constraints if they are not paying attention or distracting the individual. For those working in construction for example, employees rely on coworkers for help, such as handling heavy equipment or flagging traffic. If coworkers are not paying attention, they can act as a constraint that interferes with the employee's job performance. This could also affect safety performance by creating a situation where safety procedures for handling heavy equipment or flagging traffic are not followed. Therefore, as there are easily identifiable examples of how constraints could affect safety compliance without concerning

emotional exhaustion, it is doubtful that emotional exhaustion will fully mediate the relationship.

Second, emotional exhaustion does not fully capture all possible variables that may mediate this relationship. According to Maslach et al. (2001) there are three components of burnout: emotional exhaustion, cynicism, and inefficacy. Whereas emotional exhaustion is the most prominent component, it is possible that one or both of the other two components could also affect the constraints – safety compliance relationship. For example, cynicism could lead to lower safety compliance because as employees attempt to withdraw from their job and environment, they may become more distracted and careless. Thus, because emotional exhaustion does not encompass all possible variables through which the constraints – safety compliance relationship may operate, it seems likely that emotional exhaustion will partially, rather than fully, mediate the relationship.

H2: Emotional exhaustion will partially mediate the relationship between organizational constraints and safety compliance.

Supervisor Support

Whereas stress is a known predictor of safety performance, research shows that the behavior of leaders can also play an important role in influencing safety performance. In dangerous jobs (i.e., blue collar work, such as road construction, that can involve use of heavy machinery and work conditions surrounded by heavy traffic), supervisor support is likely to be especially important. According to Rhoades and Eisenberger (2002), supervisor support is the degree to which employees perceive their supervisors to value their work and care about their well-being.

Social exchange theory suggests that when an individual acts in a way that benefits another, an implicit obligation is created for future reciprocity (Blau, 1964). In the long run, this implicit obligation can lead to behaviors that benefit the initiating party. When supervisors display supportive behavior that aids an employee and indicates concern for his/her well-being, this can then lead to a sense of obligation by employees to manifest behaviors that benefit their supervisor and the organization. In other words, if supervisors show that they are invested in their employees and that they care about them, employees are likely to feel obligated to reciprocate by doing what is expected of them and performing well. This should also extend to contextual and safety performance. Hofmann and Morgeson (1999) provide evidence of how this theory can have safety related implications by showing that perceived organizational support and leader-member exchange were related to safety communication, safety commitment and reduced accidents.

Additionally, when viewed from a COR perspective, supervisor support can be considered a critical resource for employees working in dangerous conditions. COR theory describes resources as any object, trait, or situation that has value to the individual or that helps the individual to attain other resources of value (Hobfoll, 1989). These can be anything from physical objects (money) to personal characteristics (personality) or work circumstances (good supervisor). As such, a supportive supervisor can be a resource that helps individuals avoid burnout by being understanding and flexible with employees when problems arise. Additionally, a supportive supervisor may be more attentive to the needs of his/her employees and may actually help the employee to reduce or manage constraints as they occur. Supervisors may do this by offering emotional support or by providing more tangible resources such as better equipment or training. Indeed, a number of researchers

have established the use of supervisor support as a resource (Hobfoll, 1989; House, 1996; Li et al., 2013; Nahrgang et al., 2011; Rhoades & Eisenberger, 2002). Li et al. (2013) and Nahrgang et al. (2011) frame supervisor support as a resource while demonstrating a negative relationship between resources and emotional exhaustion. Rhoades and Eisenberger (2002) provide a more comprehensive review of the literature on perceived organizational support (POS) and perceived supervisor support (PSS) and discuss their roles as resources.

Several studies have provided support for the importance of supervisor support when dealing with safety. Nahrgang et al. (2011) found that a supportive environment was the most consistent predictor of safety outcomes such as unsafe behavior, and accidents and injuries (negative relationship), and Li et al. (2013) found that supervisor and coworker support could affect safety compliance (positive relationship). Additionally, Torp and Groggaard (2009) conducted a multilevel study showing that at the worker level, health, and safety compliance correlated with social support and management support. At the group level, management support correlated significantly with high worker compliance with health and safety routines. These studies provide evidence that having a supportive supervisor can be beneficial for an employee's safety performance. Based on this research I suggest the following replication hypothesis.

H3: Perceived supervisor support will be positively related to safety compliance.

Theory and Moderated Model

Based on the literature (e.g., COR theory, social exchange theory) and findings discussed thus far, stress has a negative effect on safety compliance, and supervisor support appears to be an important resource for employees who work dangerous conditions. Moreover, supervisor support has a positive effect on safety performance. What the literature

has not yet addressed is how supportive leadership might affect the job stress-safety compliance relationship by reducing emotional exhaustion. Integrating COR theory and social exchange theory, I propose a moderated mediation model that examines the joint effect of constraints and supervisor support on emotional exhaustion and, by extension, safety compliance (see Figure 1). In doing so, I hope to reach a more thorough understanding of how supervisors may help employees manage stress and improve safety compliance.

Several studies provide evidence for the link between supportive leadership and emotional exhaustion, showing that perceived supervisor support is associated with decreased burnout (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002; Li et al., 2013; Nahrgang et al., 2011; Rhoades & Eisenberger, 2002). As I argued earlier, supportive supervisor behavior is particularly important when employees regularly face dangerous situations because dangerous jobs are particularly stressful. COR theory argues that stress occurs when individuals' resources are threatened. When individuals feel that they are at risk of losing resources or that the resources they invest are not resulting in any gain, they will experience strain. Resources such as employees' health and comfort are constantly threatened in dangerous jobs. For example, when employees are repaving a road with hot asphalt, they are frequently working in extreme heat and around heavy vehicular traffic. These situations threaten employees' health and well-being through the risk of dehydration or being hit by a motorist (high risk of resource loss). Additionally, these employees are required to invest a great deal of attention to constantly monitor their surroundings (high resource demand).

The presence of organizational constraints can make dangerous jobs even harder as they present additional threats or resource demands for employees. In these situations,

supportive leadership acts as an additional resource that can help alleviate some of the threats presented by the constraints. For employees, simply feeling that their supervisor cares about them and their well-being can serve as a type of coping mechanism that would help reduce emotional exhaustion. Additionally, a supportive supervisor may reduce threats associated with constraints by being flexible with employees needs or actually helping employees to eliminate the constraints.

For example, one constraint employees may face is inadequate training. The knowledge and skill deficit that results from inadequate training can leave employees feeling overwhelmed as they must expend more resources (e.g., time, attention) to figure out how to complete their daily tasks. This lack of knowledge on how to complete their work and the sensation of an overwhelming workload can lead employees to become emotionally exhausted as well as threaten their safety if they put themselves in danger by doing the job incorrectly. Consider a scenario where an employee feels he/she has not been properly trained to do a certain task (i.e., constraint). A supportive supervisor is likely to help such an employee by reassigning him/her to a different task until he/she has been properly trained or assigning him/her to a workgroup with other knowledgeable employees who can provide guidance about how to perform job tasks properly and safely. As a result, the knowledge and/or skill deficit is reduced which should in turn reduce emotional exhaustion and improve safety compliance. Alternatively, an unsupportive supervisor may simply expect the employee to figure it out and get the job done. As a result, the threats associated with the knowledge deficit remain or may even be augmented, leading to increased emotional exhaustion and reduced safety compliance.

In summation, I propose that a supportive supervisor acts as a resource that can alleviate some of the threats presented by organizational constraints, thus reducing emotional exhaustion and increasing safety compliance. Based on previous findings and the arguments presented above, I suggest the following moderated mediation hypothesis.

H4a: Supervisor support will moderate the mediated relationship between constraints – emotional exhaustion – and safety compliance, such that the positive relationship between constraints and emotional exhaustion will be weaker for employees with supportive supervisors.

In addition to moderating the mediated relationship between constraints and safety compliance, supervisor support may also moderate the direct effect of constraints on safety compliance (see Figure 1). For example, constraints such as inadequate equipment may directly impact safety compliance. If employees are supposed to set up cones to mark a work zone but do not have an adequate supply of cones, they may proceed without cones in order to get the job done. In this situation, a supportive supervisor may be able to prevent this unsafe behavior by being more attentive to the needs of his/her employees and may be able and/or willing to eliminate the constraint (e.g., get cones so employees can safely mark their work zone and/or reassign employees until an adequate supply of cones become available) so that employees are not tempted to break safety protocol to work around the constraint and complete the task. Alternatively, an unsupportive supervisor may be more rigid in his/her demands (e.g., demanding employees get the job done regardless of circumstances) and indifferent to the needs of his/her employees (e.g., not particularly concerned with getting them the cones they need), thus forcing employees to potentially ignore safety regulations and engage in dangerous behavior to complete their task.

H4b: Supervisor support will moderate the direct relationship between constraints and safety compliance, such that the negative relationship between constraints and safety compliance will be weaker for employees with supportive supervisors.

Methods

Participants and Procedure

Data were collected from 311 civilian employees doing construction type work in a public sector organization. Typical job duties include repaving roads, digging ditches, and clearing out storm drains. These duties frequently involve the use of heavy machinery and take place around vehicular traffic, so safety is a salient concern. Demographic information was not collected in an effort to engender trust with participants and reduce suspicion that individual replies could be tracked. Data were collected via paper-and-pencil surveys, which were distributed on-site and voluntarily completed by employees during work hours. Surveys were administered in both English and Spanish; however the number of each was not tracked. Participants with office workstations were allowed to complete an online version of the survey. Supervisors were not allowed in the area during data collection. Participants were given a survey with their supervisor's name on it in order to link subordinate ratings to specific supervisors. No individually identifying information was collected from participants. Results were only presented to supervisors as an average of all their subordinates and only when they had at least 3 subordinates who completed the survey.

Measures

Constraints. I used nine items (e.g., "I have found it difficult to do my job because of a lack of working equipment or supplies") of the Spector and Jex (1998) constraints scale to measure constraints. The original 11-item scale was formatted for participants to indicate

how often they find it difficult to do their job because of the listed constraints (e.g., how often do you find it difficult or impossible to do your job because of: Poor equipment or supplies, inadequate training, etc.). For the current study, the response method was modified so that participants responded to the items using a 5-point response scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”; e.g., I have found it difficult to do my job because of poor equipment or supplies, I have found it difficult to do my job because of inadequate training, etc.). High scores reflect high levels of constraints.

Emotional Exhaustion. I used the 5-item (e.g., “I feel emotionally drained from my work”) Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981) to measure emotional exhaustion. Participants responded to the items using a 5-point response scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”). High scores reflect high levels of exhaustion.

Safety Compliance. Safety compliance was assessed using 5 items derived from Neal and Griffin (2006). The items were converted to measure non-compliant behavior (e.g., “I take chances to get the job done”) rather than compliant behavior. Participants responded to the items using a 5-point response scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”). High scores reflect high levels of safety non-compliance. For the purposes of this study, item scores were reversed to assess safety compliance as a positive outcome.

Supervisor Support. I used the perceived supervisor support (PSS) scale adapted from Eisenberger, Stinglhamber, Vandenberghe, Sucharski, and Rhoades’s (1986) eight item perceived organizational support (POS) scale. The PSS scale is adapted by changing the words “the organization” to “my supervisor” (i.e., my supervisor really cares about my well-being). Participants responded to the items using a 5-point response scale (1 = “Strongly Disagree” to 5 = “Strongly Agree”). High scores reflect high levels of PSS.

Results

Preliminary Analyses

Given the fact that the variables in this study were all collected via self-report, common method variance (CMV) could be a concern. Podsakoff, MacKenzie, Lee, and Podsakoff (2003) describe CMV as “variance [in the criterion] that is attributable to the measurement method rather than to the constructs the measures represent” (p. 879). This could lead to inflated relationships between variables that share a common method (most frequently self-report). However, there is debate in the literature as to the extent to which CMV really affects research. Some researchers, such as Podsakoff et al. (2003), believe CMV is often a problem and that researchers should put forth effort to control for it. Podsakoff et al. (2003) state that method biases are one of the primary sources of measure error, which “threatens the validity of the conclusion about the relationship between measures” (p. 879).

Conversely, other researchers such as Spector (2006) argue that the problem is overstated. Spector (2006) points out that if CMV has the large impact on self-report data that many believe it to have, it should be easy to find a baseline correlation among all self-report variables. Unless the effects of CMV are so small as to be negligible, this baseline correlation should prove to be significant; however, we frequently see instances of theoretically expected correlations not being found significant in published studies using self-report measures. This is despite the fact that the peer review process is less likely to publish null results (Spector, 2006).

Given the lack of consensus on the degree to which researchers should be concerned with CMV, I have conducted some preliminary analyses to test for the effects of CMV. First,

I conducted Harman's single-factor test in order to test for CMV. This test uses factor analysis to examine how much of the variance in the criterion can be explained by a single factor and is one of the most common methods of checking for CMV (Andersson & Bateman, 1997; Aulakh & Gencturk, 2000; Podsakoff & Organ, 1986). If CMV were a serious problem in the current study, one would expect the factor analysis to identify a single factor or for one general factor to account for most of the variance between the independent and criterion variables. I loaded all items into the factor analysis, which extracted six factors with Eigen values greater than one. Additionally, no general factor accounted for a majority of the variance with Factor 1 accounting for 32%. While these findings do suggest that CMV is not the main factor driving the data, Harman's single-factor test does not allow us to identify what the specific factors are or to determine how much of the variance may be due to CMV. Factor 1, which accounted for 32% of the variance, could be any combination of the variables the study measured and/or the effects of a common method.

To further assess the potential effects of CMV in this study, I conducted a second test. Following the guidelines set forth by Podsakoff et al., (2003) I conducted confirmatory factor analyses to determine model fit and assess the amount of variance a common method may have accounted for. Specifically, I allowed every item to load onto its respective construct as well as an uncorrelated latent variable method factor. The chi-square test of model fit was significant (Chi-square = 611.39, $df = 296$, $p < .01$); however, the method factor only accounted for 5% of the variance, which is well below the 25% standard set forth by Williams, Cote, and Buckley (1989). Additionally, the chi-square tests indicated better fit for the model without the method factor (Chi-square = 706.93, $df = 322$, $p < .01$). Taking the difference between the two chi-square statistics and degrees of freedom shows us that the

model without a method factor is a statistically significant better fit over the model with the method factor (Chi-square = 95.54, $df = 26$, $p < .01$). These findings help reduce concern about the effects of CMV on the current study.

Hypothesis Tests

Listwise deletion was used to handle missing data; thus, records that included any missing values were excluded entirely from the respective analyses. The valid sample sizes for each of the variables and analyzes, after accounting for missing data, are included in the corresponding tables.

Table 1 presents descriptive statistics, reliability estimates, and the intercorrelation matrix. As shown in Table 1, organizational constraints were negatively related to safety compliance ($r = -.57$, $p < .01$) providing support for Hypothesis 1. However, perceived supervisor support was not significantly related to safety compliance ($r = .10$, $p = .12$) failing to support Hypothesis 3.

I used a conditional process model to combine mediation and moderation analyses, which allows the direct and/or indirect effects of an independent variable (X) on a dependent variable (Y) through a mediator (M) to be conditional on a moderator (W). To test the mediation (Hypothesis 2) and the moderated mediation hypotheses (Hypotheses 4a and 4b), I used procedures outlined by Preacher, Rucker, and Hayes (2007). I centered the predictors and used the “PROCESS” SAS macro developed by Hayes (2012). This tool creates interaction terms and runs two separate regression models to calculate the information for the full path model. In the current study I used a model equivalent to Hayes’ (2012) model 8 presented in Figure 1. The results for this model are shown in tables 2-5.

Hypothesis 2 predicted that emotional exhaustion would partially mediate the relationship between organizational constraints and safety compliance. Preacher et al.'s (2007) mediation analyses allow researchers to examine the means through which X acts on Y. Baron and Kenny (1986) laid out the *causal steps approach*, which is commonly used to test mediation models. This approach is comprised of three requirements for a mediation effect: (a) X must be significantly related to the mediator, (b) the mediator must be significantly related significantly related to Y, and (c) there must be a previously significant relationship between X and Y that is either reduced to zero (full mediation) or becomes partially attenuated (partial mediation) when the mediator is added to the model. Using model 8 of the PROCESS macro, I ran two separate regression models. First, I ran a model that had emotional exhaustion as the criterion variable. These results are present in table 2. Second, I ran a model with safety compliance as the criterion variable. These results are present in table 3. The results from tables 2 and 3 indicate that the three requirements for partial mediation are met: (a) organizational constraints are significantly related to emotional exhaustion ($b = .77, p < .01$), (b) emotional exhaustion is significantly related to safety compliance ($b = -.21, p < .01$), and (c) the previously significant relationship between organizational constraints and safety compliance ($r = -.57, p < .01$) is attenuated ($b = -.44, p < .01$) when emotional exhaustion is entered into the model. Because the relationship is attenuated but not reduced to non-significant, the findings suggest that emotional exhaustion partially mediates the relationship between organizational constraints and safety compliance.

While the logical argument set forth by Baron and Kenny's (1986) causal steps approach is largely used to show mediation, it does not provide an adequate statistical test. Hayes (2012) PROCESS macro uses bootstrapping to provide a test for the indirect effects

between constraints and safety compliance. The bootstrap procedure generated 5,000 bootstrap sample means and estimated the conditional indirect effect while estimating the upper and lower limits of a 95% confidence interval. Table 4 and 5 shows the results for the direct effect and the bootstrapped estimates of the indirect effect of constraints on safety compliance. Because the PROCESS macro estimates the full moderated mediation model, the results are provided at low (-1 standard deviation), average, and high (+1 standard deviation), values of the moderator (supervisor support). Since none of the confidence intervals for the indirect effects include zero (see Tables 4 and 5), the results show significant support for the partial mediation thus providing support for hypothesis 2.

Hypotheses 4a and 4b predicted that perceived supervisor support moderates the indirect and direct effect of organizational constraints on safety compliance, respectively. For these interaction hypotheses, I examined: (a) the coefficient for the constraints X supervisor support interaction term in the mediator model (Table 2), (b) the coefficient for the constraints X supervisor support interaction term in the dependent variable model (Table 3), and (c) the bootstrap results of the conditional indirect effect of constraints on safety compliance (Table 5). Preacher et al. (2007) state that moderated mediation is present if one or both of the interaction terms from the mediation model and the dependent variable model are significant, and the 95% confidence intervals associated with the indirect effect do not contain zero. While the confidence intervals did not contain zero, neither of the interaction terms in the mediation model ($b = .08, p < .15$; Table 2) or the dependent variable ($b = -.05, p < .42$; Table 3) were significant. Thus, the results do not support Hypotheses 4a or 4b.

Discussion

The purpose of this study was to examine the effects of stress and supervisor support on safety compliance. Specifically, I proposed that organizational constraints act as a hindrance stressor that leads to reduced safety compliance. I suggested that constraints act on safety compliance both directly by interfering with employees' ability to follow safety protocol (e.g., having insufficient reflective cones necessary to mark a work zone), and indirectly by acting as a threat on employees' resources thus leading to emotional exhaustion and decreased safety performance. I also proposed that perceived supervisor support would be positively related to safety compliance and would act as a resource to help individuals deal with constraints while mitigating their negative effects on safety compliance.

Using data collected from civilian employees doing construction type work in a public sector organization, results were partly supportive of my hypotheses. The results supported the proposed negative relationship between organizational constraints and safety compliance and also supported this relationship being partially mediated by emotional exhaustion. Conversely, the results did not support the proposed positive relationship between perceived supervisor support and safety compliance, nor did they support the interaction hypotheses that supervisor support would moderate both the indirect and the direct effects of constraints on safety compliance. In the following sections, I will discuss the hypotheses as well as potential explanations for the non-significant findings. I will also review the limitations of this study and conclude by discussing the implications of this study and directions for future research.

Hypothesis 1 predicted that organizational constraints would be negatively related to safety compliance. This is in line with previous research showing that stressors, particularly hindrance stressors, are negatively related to safety performance. Organizational constraints

act as a hindrance stressor that interferes with individuals' ability to perform their jobs. As such, they can elicit strain outcomes, which may be manifest as behavioral strain in the form of reduced safety performance. The results supported hypothesis 1 as individuals who reported experiencing greater organizational constraints also reported lower safety compliance.

Building on this relationship, Hypothesis 2 predicted and found that emotional exhaustion partially mediated the negative relationship between organizational constraints and safety compliance. Partial mediation shows us that organizational constraints can affect safety compliance in two different ways. First, when individuals experience high levels of organizational constraints they feel their resources are threatened, which leads to experiencing emotional exhaustion. This in turn leads individuals to employ self-protective tactics, such as reduced effort or focus at work, to reduce the risk of further loss of resources. When individuals fail to invest as much effort and focus they may resort to shortcuts that include breaking safety compliance. This finding supports the indirect relationship that was proposed between organizational constraints and safety compliance through emotional exhaustion.

Second, organizational constraints also impacted safety compliance directly. Constraints by definition interfere with individuals' ability to do their job. In this way, constraints directly prevent an employee from being able to do their job and follow safety compliance at the same time. For example, if employees do not have the adequate safety equipment (a form of organizational constraint), such as traffic cones or hard hats, they are forced to choose between doing their job or following safety protocol. This illustrates the

direct relationship between organizational constraints and safety compliance, which was supported by the results of this study.

These findings bring further attention to the negative effects of organizational constraints. Constraints have robust negative consequences for organizations including lowered safety performance by directly influencing safety compliance and by affecting safety compliance indirectly through increased emotional exhaustion, which can have many negative consequences of its own. The results from the partial mediation model showed that constraints affected safety compliance both directly and indirectly through emotional exhaustion. While previous research has examined the more general mediated relationship between demands/stressors, emotional exhaustion, and safety, the current study is to my knowledge the first to provide evidence for the effect of organizational constraints on safety compliance as mediated by emotional exhaustion. This more specific model gives us further insight into how constraints can affect individuals. Constraints were highly correlated with both emotional exhaustion ($r = .74$) and safety compliance ($r = -.57$; Table 1). While the correlation between constraints and emotional exhaustion is particularly high in this study (which I will address in a couple of paragraphs below), theory and research do support a strong relationship between constraints, a hindrance stressor, and emotional exhaustion, a central component of burnout. The current study also points out the way in which constraints can affect outcomes directly. Analyses showed that even after introducing emotional exhaustion as a mediator the direct effect of constraints on safety compliance remained strong ($b = -.45$; $p < .01$; Table 4).

Additionally, the current study helps illustrate some key drivers of safety compliance. Specifically, results showed that together emotional exhaustion and constraints accounted for

one third of the variance in safety compliance ($R^2 = .33$; Table 3). This is a large portion of the variance in an important criterion. These results allow us to better understand some of the driving forces behind safety compliance. Furthermore, these findings strengthen the argument that organizations should examine and attempt to reduce the constraints that affect their employees. I will further discuss the practical implications of these findings in a later section.

As I mentioned earlier, the correlation between constraints and emotional exhaustion, while consistent with previous research, is especially high. To examine this relationship further, I performed a couple of analyses. First, I conducted two exploratory factor analyses and examined the Varimax rotated solutions. I initially allowed the analysis to identify any factors with Eigen values over 1. This identified six factors, with the fifth and sixth being barely over the 1.0 cutoff (1.021 and 1.003 respectively). In this analysis, the items measuring constraints and emotional exhaustion seemed to cross load across various factors without showing a consistent pattern. In an attempt to paint a clearer picture, I ran another exploratory factor analysis limiting the model to four factors, which was the expected number of constructs being measured. This second analysis revealed a clearer pattern. The items from the constraints measure loaded primarily on the first factor with a few items cross-loading onto the fourth factor. The items from the emotional exhaustion measure showed a high level of cross loading between the first and fourth factor. This revealed a potential problem in that there may be considerable overlap between the constructs that were assessed by the constraints and emotional exhaustion measures.

To further assess the overlap between these constructs, I conducted two stepwise regressions of safety compliance on constraints and emotional exhaustion to test for

incremental variance explained by each variable. First, I ran the regression by adding constraints in the first step and emotional exhaustion in the second step (Table 6), and then I ran it by adding emotional exhaustion in the first step and constraints in the second step (Table 7). Both regressions showed significant incremental variance was explained by adding the second variable ($\Delta R^2 = .019, p < .05$ and $\Delta R^2 = .076, p < .01$ respectively). While the incremental variance explained is a relatively small amount, it does provide evidence that while there may be some overlap between the constructs, they are different enough to each explain a unique portion of the variance in safety compliance.

Unfortunately, results did not support the hypotheses involving perceived supervisor support. Hypothesis 3 predicted that perceived supervisor support would be positively related to safety compliance. Hypotheses 4a and 4b proposed that supervisor support would moderate the indirect and the direct relationships between organizational constraints and safety compliance. These hypotheses were based on social exchange theory and COR theory. Social exchange theory suggests that when supervisors display supportive behavior to aid an employee or indicate concern for that employee's well being, a sense of obligation is created for the employee to manifest behavior that will in turn benefit the supervisor. In other words, when a supervisor behaves in a way that displays concern for an employee's safety and well being, that employee is likely to reciprocate by behaving in a way that will reflect well on the supervisor, which can include good performance including safety performance. Hofmann and Morgeson (1999) supported this argument finding that perceived organizational support and leader-member exchange were related to safety communication, safety commitment and decreased accidents.

Under COR theory supervisor support can be considered a resource. A supportive supervisor could act as a resource that helps individuals avoid burnout by being understanding and flexible with employees when problems, such as organizational constraints, hinder employees' performance. Additionally I proposed that supportive supervisors would serve as a resource because they may be more attentive to their employees' needs and may help employees to manage constraints as they occur. Previous research by Li et al. (2013) and Nahrgang et al. (2011) supported the notion of supervisor support acting as a resource and found negative relationships between resources and emotional exhaustion.

Contrary to my arguments, the results of this study did not find a significant relationship between supervisor support and safety compliance, failing to support Hypothesis 3. The results also did not show supervisor support to moderate the indirect or the direct relationships between organizational constraints and safety compliance, failing to support Hypotheses 4a and 4b respectively. A possible reason that these hypotheses were not supported could be the strength of the relationship between organizational constraints, emotional exhaustion, and safety compliance. Given the nature of the work for this sample and the participants' work environment, constraints and emotional exhaustion may be significantly more salient variables to the point where the effects of supervisor support are suppressed. For example, participants in this study frequently conduct work in extreme temperatures (upwards of 150 degrees Fahrenheit when working with hot asphalt during the summer) and around heavy traffic. In these situations, any constraint that makes the individual's job even harder may be very salient, while the amount of support they receive

(or don't receive from their supervisor) may seem of little relevance with regards to safety compliance.

Another possibility is that employees' safety related behaviors might be more closely linked to organizational level factors rather than supervisor specific factors. Despite not being significantly related to safety compliance, supervisor support did appear to be an important factor as it was related to both constraints (-.38) and emotional exhaustion (-.34; Table 1). These results indicate that employees who perceive lower levels of support are more likely to encounter (or perceive) higher levels of constraints and experience higher emotional exhaustion. This is consistent with my argument that supervisor support is an important resource for employees to perform their jobs well and to resist burnout. Perhaps my argument does not extend to safety compliance, because employees might consider safety compliance more of a universal, organization level issue. In other words, supervisors might play a direct role in the level of constraints an employee may face and how emotionally exhausted they become, but safety compliance initiatives are driven at an organizational level and largely outside the supervisors control. For example, supervisors may be able to help reduce the constraints an employee faces (e.g., helping provide appropriate equipment and clear instruction) and can help alleviate emotional exhaustion (e.g., being understanding and flexible), but they have little to no power to change safety regulations or allow employees flexibility in following them.

Limitations

The current study is not without limitations. First, the data were cross-sectional; thus I cannot provide causal evidence for the relationships between constraints, emotional exhaustion, and safety compliance. However, strong theoretical evidence provides some

argument to the direction of these relationships. Second, because the data were collected via self-report survey, one should be cautious of common method variance (CMV). I have taken steps to test for CMV and found that its effects on this study appear to be negligible. CFA revealed that a method factor only accounted for about 5% of the variance, and Chi-square tests of model fit showed that a model excluding the method factor was a significantly better fit. These analyses provide strong evidence that CMV was not a major issue in this study.

Third, the measure used for supervisor support (PSS Scale; Eisenberger et al., 1986) focuses somewhat narrowly on emotional support and feeling an employee's contribution is valued. This measure is certainly of significance in examining the role supervisors play in their employees' behaviors. However, a measure that also examines more instrumental support (i.e., behaviors a supervisor may perform to help employees) could have provided a broader scope and additional information when trying to determine how supervisor support affected the mediated relationship between constraints, emotional exhaustion, and safety compliance. If I were to do this study again, I would consider using a different measure of support or adding items to assess more instrumental components of supervisor support.

Another potential limitation could be generalizability. The sample utilized in this study consisted mainly of blue-collar workers doing physically demanding work. This is a good sample of a population where safety compliance would be a primary concern, but there are also other categories of jobs that could be less physically demanding but more mentally strenuous, while having strong safety implications (e.g., power plant engineer, airplane pilot etc.). The theory and rationale behind the relationships found in this study would still apply to these situations, however the job demands and potential constraints could vary considerably

for these jobs. Future research should seek to replicate these findings in different job types to strengthen generalizability.

Implications and Future Research

Despite the lack of support for my full moderated mediation model, this study provides pertinent results and implications. The results provide support and replication for a key relationship predicting safety compliance. Specifically, they showed that constraints have a strong negative relationship with safety compliance. This finding replicates what has been shown in previous research and provides evidence that constraints can have important negative consequences for an organization. Additionally, the partial mediation model showed that constraints have an effect on safety compliance both directly and indirectly through emotional exhaustion. This strengthens the evidence against organizational constraints as a damaging factor in the workplace. By reducing constraints organizations stand to potentially improve safety compliance, but also reduce emotional exhaustion, which ample research has highlighted has many negative consequences of its own including reduced performance and increased mental and physiological health concerns (Maslach et al., 2001). Considering the strong relationships organizational constraints showed with emotional exhaustion and safety compliance, organizations would do well to monitor and attempt to reduce the constraints faced by their employees.

Thought the current study failed to find a significant relationship for the role of supervisor support in improving safety compliance and reducing the negative effects of constraints, future research should continue to examine this mediation and explore potential ways the effects of constraints may be mitigated. Future researchers may also want to examine the potential role of personality in this relationship. Previous research has shown

how personality traits can predict performance, potentially including safety performance.

Research has also shown that personality traits such as conscientiousness, emotional stability, and extraversion are related to emotional exhaustion (Swider & Zimmerman, 2010). Future research should explore whether certain personality traits may help reduce the negative effects of constraints through emotional exhaustion on safety compliance, as well as searching for other potential moderators that may mitigate these negative effects.

The relationships examined in this study help provide a better understanding of the negative effects of organizational constraints on safety compliance. These findings should provide evidence to organizations that reducing the constraints employees face is in their best interest. Moreover, such knowledge will hopefully help future researchers to continue to explore this relationship and identify other variables that may be able to help reduce negative influences and improve safety compliance.

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Table 1. *Descriptive Statistics, Intercorrelation Matrix, and Reliability Estimates.*

Variable	N	Mean	SD	1	2	3	4
1. Constraints	262	2.44	.83	(.87)			
2. Emotional Exhaustion	280	2.39	.93	.74**	(.78)		
3. Perceived Supervisor Support	276	3.72	.84	-.38**	-.34**	(.85)	
4. Safety Compliance	272	3.74	.90	-.57**	-.50**	.10	(.78)

Note: *p < .05, **p < .01. Reliability estimates (α) are presented in the diagonal.

Table 2. *Mediator Variable Model: Emotional Exhaustion Regressed on the Predictors.*

Predictor	b	SE	t
Constant	.02	.04	.45
Constraints	.77**	.05	14.32
Perceived Supervisor Support	-.13*	.05	-2.39
Constraints X Perceived Supervisor Support	.08	.06	1.44

Note: N = 233; $R^2 = .56$; *p < .05; **p < .01

Table 3. *Dependent Variable Model: Safety Compliance Regressed on the Predictors.*

Predictor	b	SE	t
Constant	3.76**	.05	75.24
Emotional Exhaustion	-.21**	.08	-2.70
Constraints	-.44**	.09	-5.12
Perceived Supervisor Support	-.10	.06	-1.65
Constraints X Perceived Supervisor Support	-.05	.07	-.81

Note: N = 233; $R^2 = .33$; *p < .05; **p < .01

Table 4.

Conditional Direct Effects of Constraints on Safety Compliance at Low, Average, and High Levels of Supervisor Support.

Supervisor Support	Effect	SE	t	LLCI	ULCI
Low	-.40**	.11	-3.79	-.61	-.19
Average	-.45**	.09	-5.14	-.62	-.27
High	-.49**	.10	-4.88	-.69	-.29

Note: N = 233; *p < .05; **p < .01; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; Confidence limits that include 0 indicate non-significant effects.

Table 5.
Conditional Indirect Effects of Constraints on Safety Compliance at Low, Average, and High Levels of Supervisor Support.

Supervisor Support	Effect	Boot SE	Boot LLCI	Boot ULCI
Low	-.15	.07	-.28	-.02
Average	-.16	.07	-.30	-.02
High	-.18	.08	-.34	-.02

Note: N = 233; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; Confidence limits that include 0 indicate non-significant effects.

Table 6.
Stepwise Multiple Regression of Safety Compliance on Constraints then Emotional Exhaustion.

Predictors	Step 1	Step 2
Constraints	-.563**	-.412**
Emotional Exhaustion		-.203*
R ²	.317**	.336**
ΔR ²		.019*

Entries are standardized regression coefficients.
 N = 238; * p < .05 ** p < .01

Table 7.

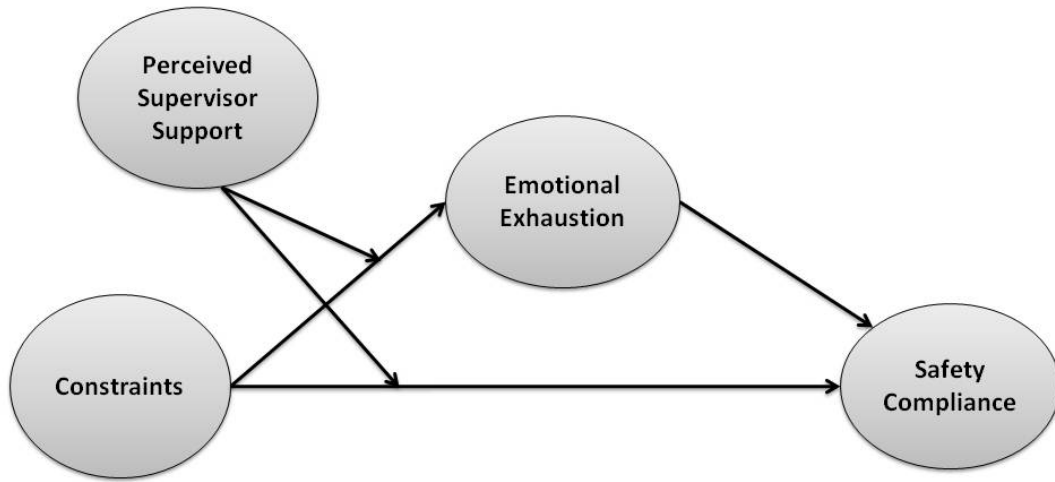
Stepwise Multiple Regression of Safety Compliance on Emotional Exhaustion then Constraints.

Predictors	Step 1	Step 2
Emotional Exhaustion	-.510**	-.203*
Constraints		-.412**
R ²	.260**	.336**
ΔR ²		.076**

Entries are standardized regression coefficients.

N = 238; * p < .05 ** p < .01

Figure 1. *Moderated Mediation Model.*



Appendix A

Organizational Constraints Scale (OCS; Spector & Jex, 1998)

1. I have found it difficult to do my job because of poor equipment or supplies.
2. I have found it difficult to do my job because of organizational rules and procedures.
3. I have found it difficult to do my job because of other employees.
4. I have found it difficult to do my job because of my supervisor.
5. I have found it difficult to do my job because of a lack of equipment or supplies.
6. I have found it difficult to do my job because of inadequate training.
7. I have found it difficult to do my job because of interruptions by other people.
8. I have found it difficult to do my job because of a lack of necessary information about what to do or how to do it.
9. I have found it difficult to do my job because of conflicting job demands.
10. I have found it difficult to do my job because of inadequate help from others.
11. I have found it difficult to do my job because of incorrect instructions.

Appendix B

Emotional Exhaustion Scale Items (MBI; Maslach and Jackson, 1981)

1. I feel emotionally drained from my work.
2. I feel used up at the end of the workday.
3. I feel fatigued when I get up in the morning and have to face another day on the job.
4. I feel burned out from my work.
5. I feel I'm working too hard on my job.
6. I feel like I'm at the end of my rope.

Appendix C

Safety Non-compliance (derived from Neal & Griffin, 2006)

1. I take chances to get the job done.
2. I ignore safety regulations to get the job done.
3. I take shortcuts which involve little or no risk.
4. I bend the rules to achieve a target.
5. I get the job done better by ignoring some of the rules.

Appendix D

Perceived Supervisor Support Scale (Eisenberger et al., 1986)

1. My supervisor values my contribution to the organization's well-being.
2. My supervisor fails to appreciate any extra effort from me. (R)
3. My supervisor would ignore any complaint from me. (R)
4. My supervisor really cares about my well-being.
5. Even if I did the best job possible, my supervisor would fail to notice. (R)
6. My supervisor cares about my general satisfaction at work.
7. My supervisor shows very little concern for me. (R)
8. My supervisor takes pride in my accomplishments at work.