Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

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Abstract and Keywords

Attention to the part that human behavior plays in occupational safety has increased in recent years. As a result, safety improvement strategies now commonly target employee safety motivation and behavior. This chapter reviews the current employee safety motivation and behavior literature and outlines ways in which the principles of self-determination theory (SDT) can be applied to advance this body of research. In this chapter we argue that SDT provides a theoretical framework that explains how two competing approaches to safety improvement (i.e., behavior-based safety and safety culture/climate) can both be effective at motivating employees to work safely, something that has been missing from much of the literature up until this point. We also present information on the recently developed self-determined safety motivation scale, including initial results of the scale’s psychometric properties. This information, along with a detailed future research agenda, is presented to encourage more SDT-based occupational safety research.

Keywords: safety motivation, self-determination theory, safety behaviors, behavior-based safety, safety culture/climate
Introduction

According to a recent study, nonfatal workplace injuries cost the United States an average of 1 billion dollars per week in worker compensation costs (Liberty Mutual, 2010). Coupled with the financial cost of workplace injuries, is of course the cost to human life. In just the year 2012 alone, the United States recorded 905,700 nonfatal workplace injuries and illnesses involving missed work days and an additional 4,383 workers lost their lives to injuries stemming from the workplace (Bureau of Labor Statistics, 2012). This issue is not unique to the United States. Within Canada, there were more than 245,000 recorded workplace injuries and 977 deaths in 2012 (Association of Workers’ Compensation Boards of Canada, 2012). Similarly, within the United Kingdom it is estimated in 2012 approximately 5.2 million days of lost work occurred due to workplace injuries and an additional 148 were killed at work (HSE, 2012/13). These workplace injury and fatality statistics highlight the significant consequences of overlooking workplace safety.

The focus over the past 150 years has been on the technical aspects of engineering systems to improve safety. These efforts have been very successful. Large improvements in safety have been achieved through better hardware and design, and through upgraded safety management systems and procedures. This success can be seen in the low accident rates in most safety-critical industries, but it does appear that they have reached a plateau (Lee, 1998). Since the frequency of technological failures in industry has diminished, the role of human behavior has become more apparent. Safety experts estimate that 80–90% of all industrial accidents are attributable to “human factors” (Hoyos, 1995). It seems likely that the most effective way to reduce accident rates even further and improve hazard management is to address the social and organizational factors that impact on safety (Lee, 1995).

Effective hazard management involves designing and implementing control measures that prevent workplace hazards (e.g., noxious fumes) from causing harm. These control measures are often referred to as barriers or defenses. Given the multiple ways that people can be harmed by a hazard, organizations are required to develop complex systems to control hazards. In addition, to reduce the risk of harm to a reasonable level, organizations need to have multiple layers of defenses (e.g., engineering, management systems, behavioral) that protect against the different factors that contribute to workplace injuries and accidents (Reason, 2008). The causes of safety incidents can be categorized as organizational (e.g., management decisions), workgroup (e.g., supervisory practices), and individual failures (e.g., not following safety rules). The behavior of employees at all levels within the organization is crucial for effective management. Many safety programs focus on the behavior of frontline employees, because they are the last line of defense in preventing a safety incident. Properly trained and skilled employees who perform their work according to company policies, rules, and procedures, and who
take an active role in the organizations safety program can act as a barrier, to prevent incidents due to breakdowns at other organizational levels (Reason, 1990, 2008).

In addition to there being a defense mechanism for preventing workplace injuries and accidents, frontline employees can also contribute to the occurrence of workplace accidents by performing unsafe acts. When employees behave unsafely by disregarding safety policies and procedures, or by not being mindful of safety, they can themselves become a contributing factor in a safety incident resulting in injury. Employees performing unsafe acts represent breakdowns in the human line of defense protecting against safety incidents (Reason, 2008). Therefore, employee behavior is a large component of workplace safety.

There is good research evidence that employee self-reported safety behaviors are associated with fewer injuries and accidents (Clarke, 2006; Neal & Griffin, 2006; Probst & Brubaker, 2001; Sinclair, Martin, & Sears, 2010). Furthermore, there is a growing body of literature demonstrating that employee safety behaviors are largely influenced by their motivation to work safely (Christian, Bradley, Wallace, & Burke, 2009; Griffin & Neal, 2000; Neal & Griffin, 2006; Neal, Griffin, & Hart, 2000). Therefore, an important component of addressing the social and organizational factors that influence workplace safety includes understanding why employees are motivated to work safely.

The goal of this chapter is twofold. First, to review the safety motivation research conducted to date, and second to describe how self-determination theory (Deci & Ryan, 1985) can help advance this line of research. Following the general theme of this book, applying self-determination theory to work and management issues, this chapter concentrates on how self-determination theory can be used to enhance the understanding of what influences employees to work safely, and how the principles of this theory can be used to design effective workplace safety strategies. There is currently limited occupational safety research using the framework of self-determination theory. A study conducted by Burstyn, Jonasi, and Wild (2010) is the only published study we were able to identify. Therefore, we will also describe the research we have been conducting in this area and present some of preliminary results. Finally, it is our belief that self-determination theory has tremendous potential to advance many aspects of the occupational safety literature. For instance, Burstyn et al. (2010) provide evidence of the importance of safety inspectors using an autonomy-supportive approach (i.e., a leadership style described in self-determination theory) to motivate companies to comply with safety regulations. Thus, we conclude this chapter by outlining an agenda for future occupational safety research based on the application of self-determination theory in the hope of inspiring more use of this theory to help explain how organizational, situational, and individual factors influence safety outcomes.
Previous Safety Motivation Research

Although the importance of employee safety motivation has been recognized since the beginning of the 20th century (Heinrich, 1931), it has only been recently that researchers have begun to systematically study employee safety motivation. Table 17.1 provides a description of the research studies that have investigated the topic of employee safety motivation. One of the first studies to examine what motivates employees to work safely was conducted in the late 1970s (Andriessen, 1978). Andriessen concluded that employee safety motivation is largely influenced by the extent to which leaders demonstrate the importance of safety through actions, coworkers and group cohesion, and by the number of hindrances experienced while trying to work safely. However, as can be seen in Table 17.1, most safety motivation research has been published after the year 2000. During this time, employee safety motivation has been conceptualized as the level of motivation. In other words, the focus has been on the overall amount of motivation for working safely. For example, Neal and Griffin (2006) define safety motivation as “an individual’s willingness to exert effort to enact safety behaviors and the valence associated with those behaviors” (p. 947). This body of research has concentrated on linking the level of employee safety motivation to their safety behaviors in a variety of different industries, including manufacturing and processing (Griffin & Neal, 2000; Probst & Brubaker, 2001; Vinodkumar & Bhasi, 2010), mining (Griffin & Neal, 2000), health care (Neal et al., 2000; Neal & Griffin, 2006), construction (Larsson, Pousette, & Torner, 2008), and retail (Sinclair et al., 2010).
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Participants</th>
<th>Predictor Constructs</th>
<th>Criterion Constructs</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andriessen (1978)</td>
<td>Cross-sectional</td>
<td>270 Construction employees</td>
<td>SM</td>
<td>Carelessness, self-initiative</td>
<td>Expectations of supervision and accident reduction influenced careful behaviors; expectations of supervision and coworker reactions influenced self-initiative</td>
</tr>
<tr>
<td>Griffin &amp; Neal  (2000)</td>
<td>Multistudy; cross-sectional</td>
<td>N1 = 1,264; N2 = 326 Manufacturing and mining employees</td>
<td>SC, SK, compliance and participation motivation</td>
<td>SCB, SPB</td>
<td>SC influences compliance and participation motivation and SK; both motivations and SK mediate relationship between SC and behavior</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Sample</td>
<td>Variables</td>
<td>Safety Behaviors</td>
<td>Findings</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>----------------------------------------------</td>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Neal, Griffin, &amp; Hart (2000)</td>
<td>Cross-sectional</td>
<td>525 Healthcare employees</td>
<td>Organizational climate, SC, SK, SM</td>
<td>SCB, SPB</td>
<td>SM influences both SCB and SPB; SM-SCB relationship stronger than SM-SPB; SM partially mediates relationship between SC and both safety behaviors</td>
</tr>
<tr>
<td>Probst &amp; Brubaker (2001)</td>
<td>Multistudy; cross-sectional; Longitudinal</td>
<td>N1 = 92; N2 = 76 Food processing plant employees</td>
<td>Job insecurity, job satisfaction, SK, SM</td>
<td>SCB, self-reported injuries and accidents</td>
<td>Job satisfaction influences future SM; SM influences SCB across time</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>N1 = 434; N2 = 490; N3 = 301 Healthcare employees</td>
<td>Variables</td>
<td>Findings</td>
<td></td>
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<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Neal &amp; Griffin (2006)</td>
<td>Longitudinal</td>
<td>SC, SM, negative affectivity</td>
<td>SCB, SPB, injuries</td>
<td>Found lagged effect of SC on SM after controlling for prior levels of SM; high levels of SM in T2 associated with increases in SPB in T3; found reciprocal relationship between SPB and SM</td>
<td></td>
</tr>
</tbody>
</table>
| Newnam, Griffin, & Mason (2008)                                     | Cross-sectional | 385 Government employees, 88 supervisors         | Org. and managerial safety values, rule violation and speeding attitudes, self-efficacy, SM | Self-reported accidents
SM predicts self-reported crashes; SM higher when perceptions of managers and supervisors safety values are high; safety attitudes and self-efficacy related to SM |
## Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Variables</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larsson, Pousette, &amp; Torner (2008)</td>
<td>Cross-sectional</td>
<td>189 Construction employees</td>
<td>SC, SK, SM</td>
<td>Personal, interactive, and structural behaviors SC influences SK and SM; SM influences personal and interactive behaviors; SC influences structural behaviors</td>
</tr>
<tr>
<td>Christian, Bradley, Wallace, &amp; Burke (2009)</td>
<td>Meta-analysis</td>
<td>N/A</td>
<td>SC, leadership, personality, job attitudes, SM, SK</td>
<td>SCB, SPB, injuries and accidents SC moderately related to safety behaviors; found stronger effect of SC and leadership for SPB than SCB; SC more strongly related to SM than SK; Conscientiousness related to SM; SM related to SCB and SPB, SCB and SPB decreases accidents and injuries</td>
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</tbody>
</table>

(p. 279)
Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Design</th>
<th>Sample Size</th>
<th>Sample Description</th>
<th>Predictors/Indicators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinodkumar &amp; Bhasi (2010)</td>
<td>Cross-sectional</td>
<td>1,566</td>
<td>Chemical factory employees</td>
<td>Safety management practices, SK, SM</td>
<td>SCB, SPB</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Safety training influenced SM; SK and SM influenced SCB and SPB; different safety management practices predicted SCB than SPB</td>
<td></td>
</tr>
<tr>
<td>Sinclair, Martin, &amp; Sears (2010)</td>
<td>Cross-sectional</td>
<td>535</td>
<td>Unionized retail employees</td>
<td>Perceived stakeholders safety values, perceived hazards, safety training, SK, SM</td>
<td>SCB, SPB, self-report injuries and near misses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Employees who perceived supervisors and union valued safety reported higher levels of SM; employees with higher levels of SM reported more SCB and SPB; SPB increased reported near misses; SCB but not SPB related to decreased injuries</td>
<td></td>
</tr>
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Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

Note. SC = safety climate; SCB = safety compliance behavior; SK = safety knowledge; SM = safety motivation; SPB = safety participation behaviors.
Much of the current safety motivation research has stemmed from Griffin and Neal’s (2000) model of workplace safety. This model proposes that employee safety motivation is a proximal determinant of two main types of employee safety behaviors (i.e., compliance and participation), and distal factors (e.g., organizational and situational factors) have an indirect effect on employee safety behaviors by influencing employees’ safety motivation (Griffin & Neal, 2000; Neal & Griffin, 2002, 2003). Employee safety behaviors play an important role in maintaining a safe work environment and have been previously shown to be associated with workplace injuries (Clarke, 2006; Christian et al., 2009; Neal & Griffin, 2006).

Safety compliance behaviors are the core of safety activities required by formal work procedures in order to maintain a minimum level of safety (Griffin & Neal, 2000; Neal & Griffin, 2002). Examples of safety compliance behaviors include following safety rules and procedures, and complying with occupational safety regulations. Alternatively, safety participation behaviors are voluntary activities that support a company’s safety program and help develop an environment that supports and encourages a safe working environment (Neal & Griffin, 2002). Safety compliance behaviors include helping coworkers with safety issues, voicing safety concerns, keeping informed about safety issues, and initiating safety-related changes (Hofmann, Morgeson, & Gerras, 2003). Research consistently concludes that employees who report higher levels of safety motivation also report engaging in more safety compliance and participation behaviors (Christian et al., 2009; Neal & Griffin, 2006; Neal et al., 2000; Sinclair et al., 2010; Vinodkumar & Bhasi, 2010).

There are two dominant psychological approaches to safety improvement: behavior-based safety, and the promotion of a safety culture or climate (Dejoy, 2005). These two approaches are different from each other, and in many ways have opposing views about how to motivate employees to work safely. Although these two approaches propose very different strategies for organizations to enhance safety, there is evidence supporting the effectiveness of both behavior-based (McAfee & Winn, 1989) and safety culture (Guldenmund, 2010) interventions.

Behavior-based safety is founded on behavior modification theory (Skinner, 1938), which has extensive evidence of efficacy in a wide range of settings. Behavior-based safety proposes that employee behavior is dependent on contingencies and that behavior can be controlled by altering these contingencies (Dejoy, 2005). Thus, behavior-based safety aims to control employee behavior by introducing specific consequences in order to motivate employees to adopt safe behaviors. Typically behavior-based safety interventions involve the following five stages: (1) identifying critical safety behaviors, (2) observing employee behavior, (3) identifying the consequences that are reinforcing both the safe and unsafe behaviors, (4) altering the consequences to promote safe behaviors, and (5) assessing behavioral change. Typically, safe behaviors are reinforced by introducing
positive feedback to employees (Fleming & Lardner, 2000). This feedback is either provided by peers or by supervisors.

Safety culture improvement interventions target the shared values within the organization in order to enhance the value placed on safety (Dejoy, 2005). Safety culture interventions focus on leader behavior, specifically leader behaviors demonstrating commitment to safety and encouraging subordinates to value safety above other competing goals (e.g., production targets). For example, Mullen and Kelloway (2009) demonstrated that safety leadership training produces changes in subordinate perceptions about the relative priority of safety (i.e., safety culture). Furthermore, Zohar (2002) has also demonstrated that promoting specific supervisory leadership behaviors can reduce injury rates.

Research conducted to date highlights the importance of considering the influence of employee safety motivation on occupational safety outcomes, and demonstrates that organizations can influence employee safety behaviors both directly and indirectly by influencing employees’ motivation to work safely (Christian et al., 2009; Neal & Griffin, 2006). However, one of the shortfalls of this research is that it solely focuses on the level of employees’ safety motivation. Evidence of the effectiveness of both behavior-based and safety culture strategies for motivating employees to work safely supports the argument that there are different types of safety motivation, one driven by external reward (or punishment) and a second based on the relative value employees place on safety. In moving the safety motivation research forward, it is therefore also important to investigate the reasons why people are motivated to work safely so that we can better understand the mechanisms that drive behavior change. Self-determination theory (Deci & Ryan, 1985) is particularly relevant to this new way of thinking about employee safety motivation.

In addition to providing a theoretical structure to base the investigation of different reasons why employees are motivated to work safely, occupational safety research can also benefit from applying self-determination theory to gaining a better understanding of the mechanisms behind many of the established relationships between factors that influence workplace safety outcomes. For example, although there is good evidence demonstrating the relationships between organizational approaches to safety (e.g., safety culture), employee safety motivation, and self-reported safety behaviors, there is considerably less knowledge regarding the mechanisms behind all of these relationships. Self-determination theory can help explain the context in which these relationships exist.

Self-Determination Theory

Self-determination theory asserts that individuals are motivated to perform behaviors for a variety of reasons and classifies different types of motivation according to these reasons. Specifically, self-determination theory distinguishes between amotivation (i.e., a...
lack of motivation) and five categories of motivation (external, introjected, identified, integrated, and intrinsic; Deci & Ryan, 1985). The type of motivation varies in the extent to which it is internalized (Deci & Ryan, 1985, 2000, 2002). Internalized motivation results in self-directed (i.e., autonomous) behavior (Deci & Ryan, 1985, 2000, 2002; Gagné & Deci, 2005). Therefore, self-determination theory views motivation as a multidimensional construct and takes into account both the level and the type of motivation when determining individual behavior (Ryan & Deci, 2002). An extensive review of self-determination theory is beyond the scope of this chapter; however, we systematically address each type of motivation next in describing a more comprehensive framework of employee safety motivation than has been used to date by applying self-determination theory to the construct of safety motivation. Interested readers seeking a more thorough description of self-determination theory should consult the first chapter of this book. Deci and Ryan (2000) and Gagné and Deci (2005) provide excellent overviews of the theory as well.

A Self-Determined Perspective of Employee Safety Motivation

Self-determination theory (Deci & Ryan, 1985) builds upon Porter and Lawler's (1968) work in which they classify the reasons for work behaviors as either extrinsic or intrinsic. Extrinsic reasons for behavior include receiving an outcome that is contingent upon the performance of the behavior. Conversely, intrinsic reasons for behavior include experiencing enjoyment and pleasure from performing the behavior. Within the context of occupational safety, this distinction between extrinsic and intrinsic motivation may not be particularly useful in determining why employees behave safely because most safety activities are not designed to be fun or enjoyable, but rather are designed to keep employees safe.

For example, employees typically do not enjoy wearing their personal protective equipment. In fact, employees often complain that personal protective equipment is uncomfortable and irritating to wear, that it slows them down, and gets in the way of doing their job. Therefore, if we only considered whether employees were extrinsically or intrinsically motivated to work safely we would likely conclude that employees are generally extrinsically motivated to work safely and that they only engage in safety behaviors that are contingent upon receiving a positive or negative consequence. Following this logic, we would also conclude that the most successful way to change employees’ safety behaviors is to reward safe behaviors and to provide negative consequences for risky or unsafe behaviors. We know from behavior-based safety approaches that this method can be successful (Dejoy, 2005; McAfee & Winn, 1989); however, given the equally positive results of alternative approaches to safety (e.g., safety
culture and leadership approaches), there is likely more to being motivated to work safely than just receiving rewards and avoiding negative consequences for unsafe behavior.

Self-determination theory (Deci & Ryan, 1985, 2000; Ryan & Deci, 2002) goes beyond categorizing employee safety motivation as either extrinsic or intrinsic and further argues that employees can experience extrinsic motivation as controlling or autonomous depending on the extent to which employees internalize the extrinsic reason or goal of the safety behavior. Controlled safety motivation results in contingent-based behavior, whereas autonomous safety motivation results in self-directed safety behavior. Therefore, instead of focusing on whether extrinsic or intrinsic reasons motivate employee safety behaviors, self-determination theory argues that the focus should be on distinguishing between controlled and autonomous forms of safety motivation, and on the extent to which employee safety behaviors are self-directed.

Figure 17.1 illustrates employee safety motivation in accordance with self-determination theory (Deci & Ryan, 1985, 2000, 2002). As depicted in Figure 17.1, it is possible for employees to be amotivated to work safely, meaning that employees have no reason for working safely and therefore lack motivation to perform safety behaviors and activities. When employees are motivated to work safely, their safety motivation can vary in the extent to which it is perceived as controlling or autonomous.

**Controlled Safety Motivation**

![Click to view larger](Fig. 17.1. Self-determined safety motivation framework.)

Controlled motivation represents feelings of having to do something (e.g., work safely) or feelings that you should do something (e.g., work safely) (Gagné & Deci, 2005). When employee safety motivation is controlled, safety behaviors and activities are performed because the employee feels pressured to do so. In other words, employees feel coerced or obligated to perform certain safety activities. The pressure to perform safety behaviors can come from another person (e.g., supervisor, coworker), a group (e.g., the organization), society (e.g., the occupational health and safety act), or from the individuals themselves. Therefore, controlled safety motivation can be classified as external pressure (i.e., external safety motivation) or as internal pressure (i.e., introjected safety motivation) to behave safely.
Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

External Safety Motivation
External motivation represents the most controlling form of motivation (Deci & Ryan, 1985, 2000). It is what people most commonly envision when they think about extrinsic motivation. Safety behaviors that are externally motivated require the presence of a stimulus in order for the behaviors to occur. The stimulus is typically in the form of a reward for performing work safely or a negative consequence when work is not performed safely. Examples of external reasons for performing safety behaviors include working safely because a safety bonus is contingent on good safety performance, or because one has witnessed other employees being laid off due to unsafe behavior. In addition, there may be pressure from external agencies, such as regulators or professional associations, to work in a safe manner. For example, some provincial governments in Canada have recently introduced administrative penalty legislation that enables health and safety inspectors to fine employees if they are observed breaking safety regulations.

Introjected Safety Motivation
Classified as slightly less controlling than external motivation, introjected motivation still entails performing activities because there is pressure to do so; however, the pressure comes from within the employee as opposed to from another person or group (Gagné & Deci, 2005). Introjected safety motivation represents internal pressure to behave safely, most likely experienced as the avoidance of guilt or shame for working safely. For example, an employee may be motivated to wear and attach their safety harness when they work at height, not because they will receive a reward or praise for doing so, but because the employee would feel guilty and ashamed if they did not wear the safety harness. In addition, internal pressure that produces introjected motivation can come from employees’ work-related self-esteem or self-worth being contingent on being a good worker (Gagné & Deci, 2005). Employees may be motivated to perform safety activities because their self-worth is contingent on being a safety-conscious worker.

Autonomous Safety Motivation
Autonomous safety motivation can result from both extrinsic and intrinsic reasons for working safely. Employees who are autonomously motivated to work safely take ownership over performing safety activities because they view these activities as being consistent with their own personal values and interests. As a result, autonomously motivated safety behaviors are self-directed and therefore should be performed consistently. As illustrated in Figure 17.1, employees can have different forms of autonomous safety motivation.

Identified Safety Motivation
Identified safety motivation represents employees who are motivated to engage in safety activities because they believe a safe work environment is important and accept that performing safety activities are necessary to achieve that goal. Take for instance a
Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

group of employees who show up to a new worksite and immediately begin conducting a hazard assessment before starting the new job. They do this not because they feel they have too (i.e., controlled motivation), or because this is an interesting and fun work task (i.e., intrinsic motivation), but rather because they believe hazard assessments can provide useful information that can help make the worksite safer, and because the workers value having the information this task provides. Because the safety behavior (i.e., conducting a hazard assessment) is performed to obtain an outcome (i.e., the information it provides), the employees would be classified as being extrinsically motivated; however, because that outcome is valued, the behavior is self-directed.

Integrated Safety Motivation

Integrated motivation is the most autonomous form of extrinsic motivation (Ryan & Deci, 2002). As the name suggests, not only do employees value activities and the outcomes of those activities, but they also assimilate the value into other aspects of their self so that they become part of their self-identity (Gagné & Deci, 2005). Workplace safety rules, policies, procedures, and activities become internal convictions in employees with integrated safety motivation. Because employees have incorporated the value of safety behaviors into their sense of self, they should also perform these safety behaviors in non-work-related contexts (e.g., home maintenance and repair activities). Safety culture approaches to motivating employees to work safely, in which leaders attempt to create a shared value of safety throughout the organization, focus on increasing employee’s autonomous safety motivation (identified and integrated).

Intrinsic Safety Motivation

Intrinsic safety motivation is characterized as performing safety activities (e.g., volunteering for the joint occupational health and safety committee; following rules and procedures) because the employee finds these activities pleasurable, satisfying, or interesting. Intrinsic safety motivation represents the fullest form of autonomous safety motivation, because the reason for engaging in the safety activity is completely volitional. Although self-determination theory (Deci & Ryan, 1985) clearly distinguishes between integrated and intrinsic types of motivation, this distinction has been much harder to demonstrate empirically (Gagné et al., 2010).

This theoretical framework provides a more comprehensive explanation of employee safety motivation than currently exists in the literature. Viewing safety motivation as a multidimensional construct provides a better understanding of the different reasons why employees are motivated to work safely. For example, employees motivated by controlling factors (i.e., external and introjected motivation) will likely comply with the organization’s safety standards, whereas employees who have internalized the value of working safely will likely not only comply with the mandatory safety standards, but also engage in extra-role safety behaviors (i.e., safety participation behaviors), such as promoting best practices for working safely within the organization, voicing safety concerns, and making recommendations for how to do a job in a safer way. A more comprehensive framework of employee safety motivation can also help to explain how organizational practices
influence employee safety motivation. In describing safety motivation both in controlled and autonomous terms, self-determination theory provides a theoretical framework to explain the mechanisms through which two competing views of how best to motivate employees to work safely can both have positive effects. Because behavior-based safety programs aim to change behavior by changing the consequences of behavior, they are likely to increase levels of controlled motivation. Safety culture interventions operate by promoting the importance of safety and therefore are likely to increase levels of autonomous motivation.

**Developing a Self-Determination Theory Safety Motivation Scale**

Employee safety motivation has not previously been viewed from the perspective of self-determination theory. Therefore, no validated scales that measure the different types of safety motivation outlined in the theory exist. As with any new stream of research, the first step should be to develop valid and reliable measures of the construct. Therefore, to promote this stream of research, we have developed a multidimensional measure of safety motivation based on the motivational framework outlined in the previous section. The process we undertook to develop the Self-Determined Safety Motivation (SDSM) scale and the results from our initial evaluation of this measure are presented next.

**SDSM Scale Development Process**

We developed a scale to assess all six types of safety motivation as shown in Figure 17.1. In creating items for the SDSM scale, we followed similar practices to others who have developed motivation scales using the framework of self-determination theory (e.g., Gagné et al., 2010). Specifically, based on the idea that motivation is a reflection of reasons for behaving (Ryan & Connell, 1989; Gagné et al., 2010), we developed items that reflect the possible reasons why an employee would work safely. We used the stem “Why do you work safely?” as the basis for all items. To develop items, we consulted the definitions of each of the six different types of motivation proposed by self-determination theory (Deci & Ryan, 1985; Gagné & Deci, 2005). In addition, when possible, we adapted items from previously developed scales from other domains (e.g., education, Ryan & Connell, 1989; health care, Ryan, Plant, & O’Malley, 1995).

From the initial item writing stage, we developed a total of 44 items. Next, four individuals with expertise in scale development and who were familiar with self-determination theory were given the six definitions of motivation, the list of 44 initial items, and were asked to sort these 44 items into the six types of motivation. The four individuals initially completed the item-sorting task independently, then discussed their responses and came to an agreement when there were differences in responses. Items
that were interpreted as belonging to multiple types of motivation or that were identified as being poorly worded were deleted. Based on the results of the item-sorting task, 10 items were deleted to create the final version of the scale.

**Preliminary Testing of the SDSM Scale**

We administered the SDSM scale to a sample of young workers. Mullen, Kelloway, and Teed (2011) directly compared safety experiences of young workers with those of an adult full-time employed sample. They found that the same processes (i.e., predictors of safety experiences) emerged in both samples. They concluded that the use of a sample of young workers does not impugn the generalizability of the findings to the traditional workforce. We also collected responses to several outcomes that have previously been studied in the safety motivation literature to establish the predictive validity of the SDSM scale (i.e., safety compliance and participation behaviors). We hypothesized that all types of safety motivation, except amotivation, should be positively related to employee safety compliance behaviors. Because complying with safety rules and procedures is mandatory, employees may feel pressure to perform these behaviors and therefore we expected controlled forms of safety motivation (i.e., external and introjected motivation) to be predictive of employee compliance behaviors. In addition, employees who value safety and believe that safety is an important issue (i.e., identified, integrated motivation), or who have an interest in workplace safety (i.e., intrinsic motivation), should also perform safety compliance behaviors. Therefore, we also expected autonomous forms of safety motivation to be predictive of employee compliance behaviors.

In addition, we hypothesized a priori that only autonomous forms of safety motivation (i.e., identified, integrated, and intrinsic) would be positively related to, and predictive of, safety participation behaviors. Given that safety participation behaviors are voluntary, it is not expected that controlled forms of safety motivation would be predictive of these types of safety behaviors. Finally, we expected that amotivation would be negatively associated with both safety compliance and safety participation behaviors because amotivation represents employees who are not motivated to work safely.

**Participants**

Data were collected from a sample of 312 employed students (220 females, 89 males, and 3 individuals did not report their gender). Participants were recruited from the Saint Mary’s University psychology department’s research participation bonus system. Participants received one point toward their final grade in a psychology class for their decision to participate in this research. Participants worked in a variety of occupational settings, including retail and customer service (36.5%), food and beverage establishments (16.7%), office settings (9.6%), manual labor (5.6%), and homecare (3.5%). Participants worked an average of 19.4 hours per week (SD = 10.0) and were employed at their current job for an average of 1.8 years (SD = 18.9).
Measures

SDSM was measured using the final 34-item SDSM scale described previously. Participants used a 7-point scale (1 = not at all true; 7 = very true) to indicate whether each of the 34 items were a reason why they work safely. Safety behaviors were assessed using a scale developed by Neal et al. (2000). Respondents used a 5-point scale (1 = strongly disagree; 5 = strongly agree) to indicate if they engaged in safety compliance behaviors and safety participation behaviors. Three items assessed participant’s safety compliance behaviors (e.g., “I use the correct safety procedures for carrying out my job”) and three items assessed safety participation behaviors (e.g., “I promote the safety program within the organization”).

Statistical Analysis Approach

Our goal with the initial testing of the SDSM scale was to reduce the total number of items and to find a core subgroup of items that measured each type of safety motivation. Following data collection, we conducted a series of item analyses, deleting items that did not contribute to the reliability of the subscales, were redundant with other items, or displayed other unacceptable psychometric properties. The goal of the item analyses was to develop short subscales of each of the types of motivation. The final scale comprised 18 items, with 3 items per subscale.

To examine the extent to which each item represented the type of motivation it was intended to represent we conducted an exploratory structural equation modeling analysis (Asparouhov & Muthén, 2009; Marsh et al., 2010; Marsh et al., 2009) using maximum likelihood estimation in MPLUS 6.11 (Muthén & Muthén, 1998-2011-2011). Exploratory structural equation modeling combines features of both confirmatory and exploratory factor analysis. In essence, the researcher can specify the number of factors but does not constrain the items to load on only one factor, as is the case for the typical application of confirmatory factor analysis. Our choice to conduct this analysis was based on the recognition that we had a well-developed theory supporting the number and nature of subscales, but we were unwilling to impose unrealistic constraints (e.g., no cross-loadings) at the initial phase of scale development.

We followed the recommendation of Meyers, Gamst, and Guarino (2006) to use the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) to assess model fit. CFI values of .95 and above indicate acceptable model fit (Meyers et al., 2006). Conversely, lower values on the RMSEA represent better fit, with values of less than .08 indicating good fit and close fit is indicated by an RMSEA that does not significantly differ from .05 (Meyers et al., 2006). We also examined the Tucker Lewis Index (TLI) and the p of Close Fit (PCLOSE) values when assessing the model fit. The validity of the SDSM scale was examined by inspecting the correlations between the motivational subscales. In addition, we evaluated the extent to which the SDSM scale predicted employee safety behaviors (i.e., compliance and participation) by conducting...
multiple regression analyses in which we first controlled for job characteristics and demographics before assessing the combined and unique effect of each type of safety motivation.

**Results**

**Factor Structure**

We began by estimating a six-factor structure based on the six types of motivation described in self-determination theory. Consistent with an exploratory structural equation modeling approach, each item was allowed to load on each of the six factors. Each loading or parameter estimate was assessed for statistical significance. The six-factor structure provided a good fit to the data ($\chi^2 [60] = 106.22, p < .001; \text{CFI} = .98; \text{TLI} = .96; \text{RMSEA} = .05 \text{[confidence interval} = .03–.07, \text{PCLOSE} = .49])$. We also tested several plausible alternative models to determine if the theoretical six-factor model was the best-fitting safety motivation model. Specifically, we tested a five-factor model based on previous literature that reports integrated motivation often does not hold as an independent factor (Gagné et al., 2010), a four-factor model in which all types of partially or fully internalized safety motivation form one factor (i.e., introjected, identified, and integrated), and a three-factor model in which safety motivation is broken down into amotivation, controlled (i.e., external and introjected), and autonomous (i.e., identified, integrated, and intrinsic). Results of each model fit are presented in Table 17.2. Although models 1 and 2 both demonstrated acceptable fit, the $\chi^2$ difference test and AIC values support the theorized six-factor model.

Standardized parameter estimates for the six-factor model are presented in Table 17.3. As shown, although there were some significant cross-loadings, each item significantly loaded on its intended factor.
Subscale Reliabilities and Correlations

Correlations between the subscales and subscale reliabilities are presented in Table 17.4. Each subscale achieved a Cronbach’s alpha of at least .70 and there was no indication of scale redundancy based on the corrected correlations. Self-determination theory proposes that the six different types of motivation fall along a continuum representing the extent to which the motivation has been internalized (Deci & Ryan, 2000; Ryan & Deci, 2002). Therefore, subscales representing the different types of safety motivation should form a simplex pattern whereby subscales of types of safety motivation that are theoretically similar and adjacent to one another along the continuum should have stronger correlations than to nonadjacent subscales (Gagné et al., 2010). Furthermore, because amotivation presents a lack of motivation, it should be negatively related to the remaining subscales, which all represent a form of safety motivation. As shown in Table 17.2, there is general support for the simplex-like pattern with a few exceptions. First, external safety motivation is not significantly related to any other motivational subscale (amotivation, r = .14, ns; introjected, r = .09, ns; identified, r = .11, ns; integrated, r = .14, ns; intrinsic, r = .18, ns). Furthermore, introjected safety motivation is more strongly related to integrated (r = .61; p < .01) and intrinsic (r = .46; p < .01) safety motivation than would be expected (because the correlation between introjected and identified safety motivation is only r = .23; p < .01).
### Table 17.2 Fit statistics for six-factor SDSM scale.

<table>
<thead>
<tr>
<th>Model and description</th>
<th>$\chi^2$</th>
<th>df</th>
<th>Sig.</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>RMSEA 90% CI</th>
<th>SRMR</th>
<th>AIC</th>
<th>$\chi^2$ diff test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: six factors (amotivation, external, introjected, identified, integrated, intrinsic)</td>
<td>106.22</td>
<td>60</td>
<td>.000</td>
<td>.98</td>
<td>.96</td>
<td>.05</td>
<td>.03–.07</td>
<td>.02</td>
<td>18719.76</td>
<td></td>
</tr>
</tbody>
</table>

---

Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective
Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

| Model 2: five factors (amotivation, external, introjected, identified, intrinsic) | 183.17 | 73 | .000 | .96 | .92 | .07 | .06-.08 | .02 | 18770.71 | M1 vs. M2 $\chi^2$ (13) = 76.95 |
| Model 3: four factors (amotivation, external, internalized, intrinsic) | 297.73 | 87 | .000 | .93 | .88 | .09 | .08-.10 | .03 | 18857.27 | M1 vs. M3 $\chi^2$ (27) = 191.51 |
### Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

<table>
<thead>
<tr>
<th>Model 4: three factors (amotivation, controlled, autonomous)</th>
<th>444.26</th>
<th>102</th>
<th>.000</th>
<th>.89</th>
<th>.83</th>
<th>.10</th>
<th>.09-.11</th>
<th>.05</th>
<th>18973.80</th>
</tr>
</thead>
</table>

Note. AIC = Akaike information criterion; CFI = comparative fit index; CI = confidence interval; RMSEA = root mean square error of approximation; SRMR = Standardized Root Mean Square Residual; TLI = Tucker Lewis Index.

(*) $p < .001$. 

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Subscriber: University of Edinburgh; date: 03 June 2017
Predicting Safety Behaviors

Results from the regression analyses in which the six types of safety motivation were regressed on both safety compliance behaviors and safety participation behaviors after controlling for job characteristics and demographics (i.e., occupational setting, tenure, hours worked per week, and gender) are presented in Table 17.5. Employee safety motivation predicted both safety compliance ($R^2 = .43; p < .001$) and safety participation behaviors ($R^2 = .31; p < .05$). Several types of safety motivation were unique predictors of employee safety compliance behaviors. Specifically, intrinsic ($\beta = .15; p < .05$), identified ($\beta = .39; p < .001$), and introjected ($\beta = .13; p < .05$) safety motivation were all unique significant predictors of safety compliance behaviors, whereas only intrinsic safety motivation was a unique significant predictor of employee participation behaviors ($\beta = .38; p < .001$).

Discussion

The results from the initial test of the SDSM scale provide evidence that items from the SDSM scale generally reflect the six types of safety motivation that they were intended to measure. Seven of the items did cross-load on another factor. However, all of the items did load on their intended factor and most of the cross-loaded items loaded on the next closest factor. The two exceptions to this pattern were one introjected and one identified item, both of which negatively loaded onto amotivation. Furthermore, of the seven cross-loaded items, only two items loaded more highly on the opposing factor than the intended factor. Specifically, the item “It makes me feel good” had a stronger loading on the integrated factor than on the intrinsic factor, and the item “Working safely corresponds to my true nature” loaded more strongly on the identified factor than on the integrated factor.
### Table 17.3 Results from the exploratory structural equation model.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amotivation</th>
<th>External</th>
<th>Introjected</th>
<th>Identified</th>
<th>Integrated</th>
<th>Intrinsic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why do you work safely?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It makes me feel good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.48</td>
<td>.32</td>
</tr>
<tr>
<td>It makes me happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.96</td>
</tr>
<tr>
<td>For the enjoyment it brings to the work day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.85</td>
</tr>
<tr>
<td>In order to fulfill my personal goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.84</td>
</tr>
<tr>
<td>Striving to work safely is part of who I am</td>
<td></td>
<td></td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working safely corresponds to my true nature</td>
<td></td>
<td>.48</td>
<td>.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I personally value safety</td>
<td></td>
<td>.55</td>
<td>.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I value a safe working environment</td>
<td>−.19</td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety is important to me</td>
<td></td>
<td></td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel a moral obligation to work safely</td>
<td></td>
<td>.54</td>
<td>.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------</td>
<td>-------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would be ashamed if I didn't work safely</td>
<td>−0.11</td>
<td>0.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would feel bad if I didn't work safely</td>
<td></td>
<td>0.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In order to get a pay raise</td>
<td></td>
<td>0.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In order to get a promotion</td>
<td></td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because I want my coworkers to admire me</td>
<td></td>
<td>0.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Although it doesn't make a difference whether I work safely or not</td>
<td></td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I work safely even though I think it’s pointless  | .63  
|---|---|---|---|---|---|
I work safely even though I don’t have a good reason to  | .60  

**Note.** All parameters $p < .01$; nonsignificant parameters are not shown. Loadings corresponding to hypothesis are in bold.
As expected, both controlled and autonomous forms of employee safety motivation were predictive of employee safety compliance behaviors. Specifically, three forms of safety motivation influenced compliance behavior. Identified safety motivation was the strongest predictor of safety compliance behavior, suggesting that employees are more likely to comply with safety rules and procedures when they understand and identify with the importance of these rules or procedures. In addition, employees are also more likely to comply with safety rules and procedures when they put internal pressure on themselves (i.e., introjected safety motivation). Interestingly, external motivation was not a significant predictor of safety compliance behaviors. It may be that external motivation only influences employee safety compliance behaviors when there is consistent monitoring of behaviors. The results from this initial study do contradict our original statement regarding employees viewing safety behaviors and activities as uninteresting or not enjoyable, as intrinsic safety motivation was a significant predictor of both safety compliance behaviors and safety participation behaviors. In fact, intrinsic safety motivation was the only unique significant predictor of safety participation behaviors. Thus, the results partially support our hypothesis that safety participation behaviors are extra-role behaviors and were therefore only influenced by autonomous forms of safety motivation.
### Table 17.4 Factor intercorrelations and scale reliabilities.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Amotivation</td>
<td>(.70)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. External</td>
<td>.14</td>
<td>(.73)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Introjected</td>
<td>−.17</td>
<td>.09</td>
<td>(.85)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Identified</td>
<td>−.26</td>
<td>.11</td>
<td>.23</td>
<td>(.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Integrated</td>
<td>−.17</td>
<td>.14</td>
<td>.61</td>
<td>.48</td>
<td>(.76)</td>
<td></td>
</tr>
<tr>
<td>6. Intrinsic</td>
<td>−.11</td>
<td>.18</td>
<td>.46</td>
<td>.39</td>
<td>.75</td>
<td>(.89)</td>
</tr>
</tbody>
</table>

*Note.* Cronbach’s alpha for each scale presented in parenthesis along the diagonal.
Understanding Why Employees Behave Safely from a Self-Determination Theory Perspective

(*) $p < .01$. 
A few things should be noted about this study and the results. First, this study should be considered as just the first step in the scale development process. Although, the results of this study are promising, more scale development and refinement is needed. Further scale refinement may benefit from drawing more closely on recent successful measure development in the broader work motivation literature (e.g., Gagné et al., 2010). These refinements should also be tested and confirmed using much larger and more diverse samples before firm conclusions can be drawn about the reliability and validity of the scale. That being said, the 18-item SDSM scale as shown here provides a solid basis for future scale development.
### Table 17.5 Relationship between types of safety motivation and safety behaviors.

<table>
<thead>
<tr>
<th></th>
<th>Compliance Behaviors</th>
<th>Participation Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>( \Delta R^2 )</td>
</tr>
<tr>
<td><strong>Step 1: Controls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational setting</td>
<td>(-.05)</td>
<td>(.04)</td>
</tr>
<tr>
<td>Tenure</td>
<td>(.06)</td>
<td></td>
</tr>
<tr>
<td>Hrs worked/week</td>
<td>(-.05)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>(.18^*)</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2: Safety Motivation Types</strong></td>
<td></td>
<td>(.38^{**})</td>
</tr>
<tr>
<td>Intrinsic safety motivation</td>
<td>(.15)</td>
<td></td>
</tr>
<tr>
<td>Integrated safety motivation</td>
<td>(.03)</td>
<td></td>
</tr>
<tr>
<td>Safety Motivation Type</td>
<td>Correlation Coefficient</td>
<td>Total $R^2$</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Identified safety motivation</td>
<td>.39**</td>
<td></td>
</tr>
<tr>
<td>Introjected safety motivation</td>
<td>.13</td>
<td>.11</td>
</tr>
<tr>
<td>External safety motivation</td>
<td>.08</td>
<td>−.05</td>
</tr>
<tr>
<td>Amotivation</td>
<td>−.07</td>
<td>−.02</td>
</tr>
<tr>
<td><strong>Total $R^2$</strong></td>
<td><strong>.42</strong>*</td>
<td><strong>.31</strong>*</td>
</tr>
</tbody>
</table>

(*) $p < .05$.  
(**) $p < .01$.  
(***) $p < .001$.  


One of our main goals in writing this chapter was to illustrate how self-determination theory can be used to bring together competing perspectives in the occupational safety literature on how to motivate employees to work safely under one theoretical framework. Self-determination theory guided the SDSM scale development process and results from the initial evaluation of this scale support our proposition that employees are motivate to work safely for a variety of reasons, and that there are different types of safety motivation that influence employees’ safety behaviors. More generally, the results presented above also demonstrate that the field of occupational safety can benefit from viewing employee safety motivation and behavior from a self-determination theory perspective. Thus, much more research involving the application of self-determination theory to understand and solve occupational safety issues is warranted. What has been described thus far is just one of the many potential ways in which self-determination theory can contribute to the field of occupational safety. In the remainder of this chapter, we build on this work by discussing the implications of these results for safety practitioners and by identifying a number of potential future research avenues that can be undertaken to further explore the contributions that self-determination theory can make to occupational safety research.
Practical Implications

These results provide evidence that viewing safety motivation from a self-determination theory perspective is valuable. Specifically, safety practitioners need to consider the type, not just the level, of employee safety motivation. Many practices used by organizations to increase employee safety motivation involve the provision of rewards for working safely (e.g., safety bonuses) or participating in safety activities (e.g., prizes for those who identify and fix hazards). These practices are likely to promote controlled rather than autonomous motivation, and based on our findings, they are likely to be of limited value. Organizations should focus on promoting autonomous motivation, by enhancing employees’ sense of competence, autonomy, and relatedness around safety. Safety training programs should recognize the safety expertise of employees rather than focus on their lack of knowledge. Employees should be given the opportunity to become experts in some aspect of safety (e.g., chemical hazards) that they are interested in, rather than just focusing on knowledge of rules and procedures designed by others. By increasing employee competence, employees can understand the purpose of the rules based on a deeper understanding rather than just blind compliance. With this additional competence, employees may have a greater sense of autonomy, because they will know when and why it is important to comply with specific rules.

These results support the argument that practitioners should design interventions to encourage employees to value and enjoy safety. Most organizations and safety professionals give the impressions that safety management is a necessary evil, which is uninteresting and unpleasant. Given the importance of intrinsic motivation in predicting participation in safety, this may be counterproductive. Organizations should focus on the intellectual challenge involved in managing occupational hazards, and the value of this activity. Organizations should focus on promoting the shared value of the importance of safety to enhance autonomous motivation. Safety culture interventions are likely to be effective in promoting autonomous motivation. For example, transformational safety leadership interventions may be effective in promoting autonomous motivation.
Future Directions

Despite the popularity of self-determination theory in many different domains including health care (Williams, McGregor, King, Nelson, & Glasgow, 2005), education (Deci, Vallerand, Pelletier, & Ryan, 1991), sports and exercise (Wilson, & Rodgers, 2002), and most recently the workplace (Gagne & Deci, 2005; Parker, Jimmieson, & Amiot, 2010; Ryan, Bernstein, & Brown, 2010), it has seldom been used in occupational safety research. The results presented above demonstrate the usefulness of self-determination theory as a framework for understanding what motivates different types of employee safety behaviors. This research is one of the first to apply self-determination theory to the area of occupational safety. Therefore, our predominant suggestion is for more research using self-determination theory to explain why employees work safely (or unsafely), and how organizational factors influence different types of employee safety motivation. Next, we specify a series of future research directions that demonstrate a wide array of applications of self-determination theory to occupational safety.

Research Question 1: Do Controlled and Autonomous Forms of Safety Motivation Influence Safety Compliance and Safety Participation Behaviors to the Same Degree?

Self-determination theory posits that autonomous forms of motivation produce more consistent and higher-quality behavior than controlled forms of motivation (Ryan & Deci, 2002). Although this proposition has been confirmed in several different settings (e.g., education, Black & Deci, 2000; exercise, Duncan, Hall, Wilson, & Jenny, 2010), it has yet to be tested within an occupational safety context. Workplace safety provides a unique context to test this particular proposition stemming from self-determination theory because unlike many of the behaviors examined thus far with self-determination theory (e.g., health and exercise, academic, and so forth), workplace safety behaviors are more strongly regulated through occupational health and safety legislation. The controlling nature of occupational health and safety regulation may or may not have an effect on the type of safety motivation. Moreover, researchers can have the greatest impact on industry and organizational safety practices by providing clear evidence that autonomous safety motivation is not only associated with improved employee safety behaviors, but is also associated with reductions in time-loss injuries, workplace accidents, and workers’ compensation premiums. This evidence is only possible through longitudinal data. This is another worthwhile objective of future research.
Research Question 2: What Motivates Employees to Work Unsaferly?

Throughout this chapter, we have focused on using self-determination theory to understand what motivates employees to work safely. Understanding the different reasons why employees are motivated to engage in safety compliance and safety participation behaviors can help develop safety initiatives targeted toward these specific forms of motivation. However, it is equally important to understand what motivates employees to work unsafely, to deliberately break safety rules and procedures, and engage in generally risky behaviors. It is certainly plausible to think about situations where employees feel external pressure to work unsafely. Production pressure, in which employees are under high demands to work faster and cut corners, is a component of an unsafe work environment (Flin, Mearns, O’Connor, & Bryden, 2000), and is often cited as a contributing factor to many occupational accidents (Fleming & Scott, 2012a). The existence of social pressure from coworkers is often present in workplaces. For example, Mullen (2004) found that being teased and harassed by coworkers (and to a lesser extent by supervisors) was a major factor motivating employees to behave unsafely. Although occurrences of controlled forms of motivation to work unsafely can be found in the occupational literature, to date there has been limited focus on employee motivation to work unsafely. Building on these examples of controlled motivation to work unsafely, a particularly interesting area for future research to explore would be if employees are ever autonomously motivated to engage in unsafe behaviors.

Research Question 3: Do Employee’s Perceptions of Autonomy, Competence, and Relatedness Influence Their Safety Motivation?

Self-determination theory posits that safety motivation will be influenced by three individual factors: (1) perceived autonomy, (2) competence, and (3) how connected individuals feel to others in the workplace (Deci & Ryan, 1985, 2000). Specifically, self-determination theory hypothesizes that in order for employees to be motivated at all to work safely, they need to feel capable to perform the intended safety activities, and that perceptions of autonomy and being related to other individuals will help facilitate autonomous safety motivation (Ryan & Deci, 2002). Within the occupational safety literature, the effect of social relationships within the work environment (e.g., supervisors, coworkers) has received the most attention out of these three factors (Burt, Sepie, & McFadden, 2008; Mullen, 2004). Moreover, in investigating the relationship between various work characteristics (i.e., job autonomy, role stressors, supervision, training, job security, and communication) and self-reported safe working behaviors, Parker, Axtell, and Turner (2001) concluded that having autonomy over one’s job was associated with an increase in self-reported safe working over a year later. However, to date no study has examined the combined effect of autonomy, competence, and relatedness on employee safety motivation, or the combined effect these three factors have on safety outcomes (e.g., injuries, accidents). Given the evidence for the relationship
between these three factors (i.e., autonomy, competence, and relatedness) and individual motivation in the self-determination theory literature, this is a worthy area for future occupational safety research.

**Research Question 4: Does Supervisor’s Safety Motivation Influence Employee’s Safety Motivation?**

It is currently unknown whether supervisor’s safety motivation has any effect on their subordinate’s safety motivation. Within an educational setting, Wild, Enzle, Nix, and Deci (1997) found that individuals learning a skill from a teacher who had a controlled form of teaching motivation reported less interest in learning the skill than individuals who learned the skill from an autonomously motivated teacher. The results from this study support the argument that autonomously motivated leaders (e.g., teachers, supervisors) encourage subordinates to be more intrinsically motivated (i.e., interest) than leaders with controlled motivation. Therefore, investigating if and how supervisor’s safety motivation influences employee safety motivation and subsequent safety behaviors is another valuable stream of research.

To date, the relationship between employee safety motivation and safety behaviors has only been examined using frontline employees. Supervisors are also expected to engage in similar safety behaviors, in addition to engaging in safety leadership behaviors. The extent to which supervisors are motivated to engage in safety leadership behaviors, and what motivates supervisors to be good safety leaders, has received little attention in the occupational safety literature. Self-determination theory provides a theoretical framework to explore these questions in future research. This research would be practically significant because the results could be used to design supervisor safety training programs that promote autonomously motivated supervisors, and could be used to guide selection decisions for supervisory positions.

**Research Question 5: Do Safety Management Practices have an Effect on the Type of Employee Safety Motivation?**

Safety management practices not only influence safety outcomes (e.g., injuries and accidents) by controlling hazards and improving the physical working conditions, but they can also influence employees’ attitudes and perceptions about safety (Vinodkumar & Bhasi, 2010). Although there is no agreed on list of practices that encompass a safety management system, several common themes have emerged across different literatures. The literatures on high-reliability organizations (Weick & Sutcliffe, 2001), low-accident organizations, (Cleveland, Cohen, Smith, & Cohen, 1979), and high-performance work systems (Zacharatos, Barling, & Iverson, 2005) all identify similar components of effective safety management practices. Examples of commonly identified safety management practices include effective safety training, two-way communication,
workforce involvement, and safety performance evaluation and feedback (Fleming & Scott, 2012b; Vindkumar & Bhasi, 2010).

These safety management practices may promote autonomous forms of employee safety motivation as opposed to controlled forms of safety motivation. Furthermore, safety management practices may indirectly influence employee’s safety motivation by increasing employee autonomy, competence, and the extent that they are viewed as an important part of the work group. For example, receiving effective safety training likely increases employees’ level of competence for dealing with workplace hazards, and practices designed to involve employees in safety decisions should increase employee autonomy and their sense of being an important part of the organization.

**Research Question 6: Does a Positive Safety Climate Increase Employees’ Autonomous Safety Motivation?**

There is good evidence indicating that a positive safety climate increases the amount of employees’ safety motivation (Neal & Griffin, 2006); however, there is less evidence about what type of safety motivation is associated with a positive safety climate. Safety climate is defined as employees’ shared perceptions of enacted safety policies and procedures (Zohar, 2003). In other words, safety climate is a reflection of supervisors’ demonstrated safety values and behaviors. Maierhofer, Griffin, and Sheehan (2000) investigated the relationships between managers’ safety values and behaviors and their subordinates’ safety values and behaviors. The authors concluded that managers’ safety behaviors directly influenced their subordinates’ safety behaviors through a behavioral modeling process. Subordinates modeled the managers’ safety behaviors to impress the manager, or to receive some type of reward. However, Maierhofer et al. found that managers’ safety values also influenced subordinates’ safety behaviors. Specifically, employees internalized the managers’ safety values, which were reflected in subordinates’ safety behaviors.

Both processes found by Maierhofer et al. (2000) are possible explanations for how safety climate influences employee behavior, and would suggest that safety climate may promote both controlled safety motivation (through a behavior modeling process) and autonomous safety motivation (through a value internalization process). There is a need for more research like the study by Maierhofer et al., which explains the processes through which organizational factors influence employee safety motivation and behavior.

**Conclusion**

Despite the fact that self-determination theory is a popular theory of work motivation and employee well-being, there has been relatively few applications in occupational safety research. Self-determination theory can advance our understanding of the relationship
between employee safety motivation and safety behaviors by specifying different types of safety motivation. In addition, self-determination theory can be a particularly useful theoretical framework for explaining how organizational factors influence employee safety motivation and subsequent safety outcomes (e.g., behavior, injuries). Because occupational safety research is often criticized for lacking a theoretical basis, more occupational safety research applying the principles of self-determination theory is strongly encouraged.

References


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Notes:

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