A GENERAL SENSE OF BELONGING AT WORK AS A JOB RESOURCE RELATES

TO WORKPLACE SAFETY: A TEST AND EXTENSION OF THE JOB DEMANDS-

RESOURCES MODEL RELATED TO WORKPLACE SAFETY

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A Dissertation

Presented to

The Faculty of the Department

of Psychology

University of Houston

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In Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Philosophy

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By

Glenn Malone

December, 2016

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ABSTRACT

Belongingness has a long history in the social literature, yet there is a dearth of research on belongingness in the workplace. This research examined a general sense of belonging at work related to workplace safety. The job demands-resources (JD-R) model related to workplace safety framework was used to develop a conceptual model. Belongingness theory was applied to the JD-R model to examine if a general sense of belonging at work could serve as a job resource to mitigate undesirable workplace safety outcomes and strengthen positive workplace safety outcomes. Self-report measures were electronically administered online and data were collected from 1,017 employees of a pipeline operator company. As predicted, regression results showed that employees who reported higher levels of a general sense of belonging at work reported lower feelings of fatigue and emotional exhaustion, and higher safety motivation. Moreover, a general sense of belonging at work mitigated relationships between feelings of fatigue and accidents and injuries, and strengthened a safety motivation and safe behavior relationship. In addition, two studies consisting of undergraduate student work samples ($n = 542$ and 116) were used along with the field study to develop and validate a general belonging at work (GBW) scale.

Keywords: belonging at work, job demands-resources model, workplace safety

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INTRODUCTION

The costs of safety-related outcomes in the workplace are substantial. It has been estimated that employers pay almost $1 billion per week just for direct workers' compensation costs (United States Department of Labor, 2015). This total is likely to be low as it does not include the social costs associated with pain and suffering or home care provided by family members. In 2014, private industry employers reported nearly 2.8 million nonfatal workplace injuries. This total was a rate of about 3.0 cases per 100 equivalent full-time workers (Survey of Occupational Injuries and Illnesses conducted by the U.S. Bureau of Labor Statistics, 2015).

Though the direct costs of safety-related outcomes alone can be staggering, the total costs related to workplace accidents and injuries for employers, employees, and their respective stakeholders include both direct and indirect costs. For instance, direct costs include workers' compensation payments, medical expenses, and legal services. Examples of indirect costs include training of employee replacements, implementations of accident investigations and corrective measures, repairs of damaged equipment and property, losses in productivity, bandaging of poor customer and community relations, and effects of reduced employee morale and increased absenteeism. Indirect costs of accidents and injuries can be as high as 20 times that of direct costs (Occupational Safety and Health Administration, 2015).

Note that costs and cases related to workplace accidents and injuries generally do not include accidents and injuries that occurred but were not reported. Considering this caveat,

the numbers provided above are likely to be even higher. Given these substantial human and financial costs, it is imperative to gain a better understanding on the factors that exist in the workplace that can influence workplace safety. One explanatory mechanism related to workplace safety that employees are regularly exposed to is job demands. Job demands can vary in their magnitude, frequency, and importance. Types of job demands that can be taxing on workers include job role ambiguity and conflict, work overload, excessive production goals, overly challenging standards of quality, and impractical timelines. These job demands can require sustained psychological and physical effort which can result in significant psychological and physical expenditures (Crawford, LePine, & Rich, 2010; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli, Bakker, & van Rhenen, 2009). Consequently, the presence of job demands has been linked to increased employee burnout and absenteeism, and decreased performance (e.g., Bakker & Demerouti, 2007). Moreover, in high-risk environments such as in energy companies, employees can be exposed to hazardous materials, highly combustible fuels, cognitively challenging jobs, and physically demanding work which, in turn, can lead to an entirely different set of outcomes such as workplace accidents and injuries (Nahrgang, Morgeson, & Hofmann, 2011).

Another explanatory mechanism related to workplace safety that employees are regularly exposed to is job resources. Contrary to job demands, job resources generally serve to benefit workers. Similarly, job resources can also vary in their magnitude, frequency, and importance. Types of job resources that can be beneficial to workers include job knowledge, job autonomy, a positive workplace climate, and coworker support (Christian, Bradley, Wallace, & Burke, 2009; Crawford et al., 2010; Nahrgang et al., 2011). These job resources serve to reduce perceptions of job demands and their associated psychological and physical

costs. In addition, job resources can stimulate personal growth, learning, and development (Demerouti et al., 2001; Schaufeli et al., 2009). Moreover, job resources have shown to increase desirable workplace outcomes such as employee engagement, performance, and commitment (Bakker & Demerouti, 2007; Rich, LePine, & Crawford, 2010).

Accordingly, Nahrgang and colleagues (2011) meta-analytically tested a theoretical framework of workplace safety based on job demands and job resources. In their research they introduced the job demands-resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti et al., 2001) into the workplace safety literature. The JD-R model includes a health impairment process in which job demands can exhaust employees' mental and physical resources and, as a result, lead to employee burnout and reduced employee engagement. Alternatively, job resources produce a motivational process in which the resources influence employees toward lessened health impairment and higher engagement (Bakker & Demerouti, 2007; Demerouti et al., 2001). In their meta-analysis, Nahrgang and colleagues found that job demands such as risks and hazards and job complexity positively related to employee burnout, and negatively related to employee engagement. Likewise, they found that job resources such as job knowledge, job autonomy, and a supportive work environment positively related to employee engagement and safety climate, and negatively related to employee burnout.

Considering that job resources can serve to lessen the negative consequences of job demands and enhance employee engagement in regard to workplace safety, one job resource that could prove valuable related to workplace safety is a general sense of belonging at work. Research has consistently shown that a sense of achieved belonging negatively relates to undesirable outcomes such as depression and positively relates to desirable outcomes such as

self-esteem (e.g., Baumeister & Leary, 1995). According to Baumeister and Leary, the need

to belong is a fundamental human motivation. In other words, from an evolutionary

perspective the motive to belong is central to human existence and culture. The authors

further contend that in efforts to achieve optimal levels of belonging, both regular social

contact and feelings of connectedness with those interacted with are essential components.

That is, if one were to have regular social contact with others who one is not connected with,

or a sense of connectedness with said others but lacking the regular interpersonal contact, the

achievement of optimal levels of belonging would be substantially diminished. However,

Baumeister and Leary agree with Hagerty, Lynch-Sauer, Patusky, Bouwsema, and Collier

(1992) that achieved belongingness may also be influenced by tacit associations that

transcend interpersonal relationships such as with groups, objects, animals, nature,

ideologies, and the spiritual. Though belongingness has extensively been studied in the social

sciences (see review by Baumeister & Leary, 1995), it has vastly been understudied in the

workplace. Baumeister and Leary contend that if psychology has erred with regard to

belonging, it has not been so much to deny its existence, as it has been to underestimate its

importance. Researchers have claimed that the need for belonging is among the most

powerful sources of human motivation and the desire for its fulfillment is perhaps why many

employees often prefer to work in groups rather than alone (Alderfer, 1972), refrain from

engaging in actions that could harm coworkers (Hollinger & Clark, 1982), and are more

inclined to cooperate with others (Kramer, 1993). Though there have been studies on

belonging in the workplace (e.g., Cockshaw, Shochet, & Obst, 2013, 2014; Davila & Garcia,

2012; Den Hartog, De Hoogh, & Keegan, 2007; McClure & Brown, 2008), the totality of the

research has been relatively scant. However, important to note is much of the research is recent and calls for more research are increasing.

Subsequently, the current investigation will contribute to the extant literature primarily in four ways. First, to gain a better understanding on how a general sense of belonging at work relates to workplace safety in regard to employee health impairments that associate with workplace accidents and injuries. Though Cockshaw et al. (2013) provided evidence that workplace belongingness and general belongingness form two distinct factors to predict symptoms of depression, those depressive symptoms related to additional outcomes such as workplace safety remains unexamined. Therefore, a substantial gap in the literature is not only how a general sense of belonging at work relates to workplace health impairments, but how a general sense of belonging at work relates to those health impairments which further relate to workplace safety.

Fifty years of research has consistently linked achieved belongingness with subjective well-being. Anant (1966) claimed that belongingness is the missing link in understanding mental health from an interpersonal perspective. In addition to Cockshaw and colleagues' study on depression, Choenarom, Williams, and Hagerty (2005) showed a direct effect between sense of belonging and depression even after controlling for other factors such as stress, spousal support, and social support. As such, it is reasonable that employees who perceive a higher sense that they belong at work should be less inclined to experience health impairment issues that are associated with depression such as feelings of fatigue and emotional exhaustion (Beck, Steer, & Carbin, 1988; Radloff, 1977). Feelings of fatigue relate to feelings of depleted physical energies, whereas emotional exhaustion relates to depletions in mental and emotional energies. Because feelings of fatigue and emotional exhaustion can

lead to more workplace accidents and injuries (e.g., individuals become physically, mentally, and emotionally weaker and less focused which, in turn leads to more mistakes related to safety), a general sense of belonging at work should further serve as a job resource to buffer the links between feelings of fatigue and emotional exhaustion with workplace safety outcomes such as workplace accidents and injuries.

According to research (e.g., Den Hartog et al., 2007), employees low on belonging at work were influenced by an external factor (i.e., charismatic leadership), whereas high belongingness workers were not. That is, employees who were low on belonging at work performed more helping and compliance behaviors when charismatic leadership was high, whereas high belonging workers were unaffected. Accordingly, it is possible that a general sense of belonging at work may play a role in workplace safety outcomes and be influenced by internal factors (i.e., feelings of fatigue and emotional exhaustion). Therefore, a job resource such as a general sense of belonging at work may not only have direct effects to reduce employee health impairments, but also serve to mitigate links between those health impairments and additional undesirable workplace outcomes. Consequently, a general sense of belonging at work can serve both as an antecedent and a moderator to reduce employees' feelings of fatigue and emotional exhaustion, plus workplace accidents and injuries that are linked to those health impairments.

Second, the current investigation aims to gain a better understanding on how a general sense of belonging at work relates to workplace safety in regard to employee safety motivation and safe behavior. In the current study, safety motivation and safe behavior are associated with contextual performance. Safety motivation is defined as employee feelings and beliefs that it is worthwhile and important to exert extra efforts to improve workplace

safety, to volunteer for tasks and activities to improve workplace safety, to be involved in the

development of safe work procedures, and to encourage others to use safe practices. Safe

behavior is defined as extra-role performance in that employees put in extra effort to improve

the safety of the workplace and voluntarily carry out tasks or activities that help to improve

workplace safety (Griffin & Neal, 2000; Hee & Ping, 2014). Because safety motivation and

safe behaviors are defined in the current study as being more extra-role and voluntary than

just being compliant, it is practical to expect that employees who have a higher general sense

of belonging at work will be more inclined to believe it is worthwhile to perform and engage

in extra efforts to protect and keep those others safe who provide them that sense of

belonging. As such, this study will build on research conducted by Den Hartog and

colleagues (2007) who examined charismatic leadership and belonging at work in regard to

coworker helping behaviors and work compliance. In their research they found a positive

association between belonging at work and coworker extra-role helping behaviors. Further,

the authors showed that charismatic leadership influenced helping and compliance behaviors

when their employees reported low belonging at work. Specifically, employees who had low

belonging at work reported being more helpful to coworkers and more compliant when they

had supervisors who they perceived as being charismatic. Subsequently, this current

investigation will examine a general sense of belonging at work to assess its association with

beliefs and behaviors related to workplace safety that go beyond in-role helping and

compliant behaviors.

Third, the current research will provide a test of the JD-R model presented by

Nahrgang et al. (2011) with an independent study, and extend the research on the JD-R

model related to workplace safety. By examining how perceptions of a general sense of

belonging at work can serve as a job resource and quantitative work overload can serve as a job demand, I provide an independent study to test major components of the JD-R model related to workplace safety, as well as extend the research by including a general sense of belonging as a job resource. Moreover, I extend this research by exploring interactive effects in regard to job demand and job resource outcomes with workplace accidents, injuries, and safe behavior. More specifically, this research will explore how a general sense of belonging at work may influence five relationships related to workplace safety: the feelings of fatigue and workplace accidents/injuries relationships; the emotional exhaustion and workplace accidents/injuries relationships; and the safety motivation and safe behavior relationship. Finally, to further test the JD-R model related to workplace safety, indirect effects of belonging at work and quantitative work overload on workplace accidents, injuries, and safe behavior will be examined with feelings of fatigue, emotional exhaustion, and safety motivation serving as mediators. See Figure 1 for a visual of the conceptual model.

Fourth, because to date I argue there is not a valid measure for a general sense of belonging at work in the literature, the current research aims to develop and validate a scale to assess a general sense of belonging at work. Consistent with the extant literature, Malone, Pillow, and Osman (2012) developed a scale to assess a general sense of belonging across multiple levels of specificity ranging from close friends and family, to societal others, to an overarching sense of belonging that transcends interpersonal relationships. Building on this research, I contend that at work these multiple levels of specificity would equate to a sense of belonging with coworkers, to supervisors, to the organization, to an overarching sense of belonging that transcends those relationships. Though Cockshaw and Shochet (2010) developed a measure to assess a sense of belonging at work in their research, the measure

was adapted from a scale used in the social sciences that was developed to assess a psychological sense of school membership (Goodenow, 1993). The Psychological Sense of Organizational Membership scale developed by Cockshaw and Shochet consists of items such as, *People here know I can do good work* and *People here notice when I'm good at something*, which do not at face value appear to be assessing a sense of belonging as generally depicted in the belongingness literature (e.g., Baumeister & Leary, 1995; Hagerty et al., 1992). These items seem to be more performance oriented than items that would be used to assess a sense of belonging. In addition, methodological shortcomings of the Cockshaw and Shochet research include: the lack of a confirmatory factor analysis; a small sample size of 121 participants for a scale that is made up of 18 items; and the lack of an independent study to test scale generalizability. Finally, other studies that have used measures of belonging at work have not been validated (e.g., Den Hartog et al., 2007). As such, the current investigation will use belongingness theory as a conceptual basis to generate items to assess a general sense of belonging at work. Those items will then be examined using advanced statistical techniques to examine the items' and measure's psychometric properties (e.g., exploratory factor analysis, parallel analysis, and confirmatory factor analysis).

Accordingly, this research will attempt to extend theory on belongingness and the JD-R model along with the practical implications of how a general sense of belonging at work may relate to workplace safety outcomes. Subsequently, in the following I will first provide theory on belongingness and define a general sense of belonging at work. Next, I will provide background on the JD-R model related to safety outcomes. Further, I will provide rationale and hypotheses on how a general sense of belonging at work should relate to

employee health impairments and safety outcomes using the JD-R model related to workplace safety as a theoretical platform. Moreover, I will set forth a basis for testing the remaining components of the JD-R model related to workplace safety including both direct and indirect effects. Finally, I will convey how I plan to develop and validate a scale to assess a general sense of belonging at work.

THEORY AND HYPOTHESES

Belongingness Theory and Sense of Belonging at Work

Derived from belongingness theory, Baumeister and Leary (1995) contend that individuals have a fundamental motivation to develop relationships characterized by both regular interpersonal contact and an ongoing bond with those interacted with. For instance, as argued by Baumeister and Leary, frequent interpersonal contact with others who an individual does not have close bonds with or is indifferent to can only go so far in promoting one's sense of belonging. Moreover, relationships characterized by feelings of acceptance but lacking regular interpersonal contact serve the same detriments in efforts to achieve optimal levels of belonging. Similarly, as suggested by Weiss (1973) and Shaver and Buhrmester (1983), individuals can experience feelings of loneliness by an insufficient amount of social contact (social loneliness) or by a lack of meaningful relatedness (emotional loneliness). Baumeister and Leary further provide theory from an evolutionary perspective in that individuals who have both of these features, regular interpersonal contact with individuals whom they feel connected with, would have greater survival value than would relationships characterized by only one feature. Consequently, the motivation to secure and maintain both relational features in efforts to achieve a sense of belonging is paramount.

Hagerty and colleagues (1992) claim that a sense of belonging is: "The experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of the system or environment. A system could be a relationship or an organization, and environment could be natural or cultural" (p. 173). The authors posit that a sense of belonging can be attributed to not only people, groups, and organizations, but also to objects, animals, environments, and spiritual dimensions. The authors contend that it is the shared or complementary set that provides the individual with a sense of belonging. Echoing this claim, although Kohut (1971, 1984), Baumeister and Leary (1995), and Derrick, Gabriel and Hugenberg (2009) agree that a sense of belonging is influenced by interpersonal relationships, they also posit that belongingness can be achieved via other avenues. For instance, Kohut proposed that objects, such as a child's security blanket, could provide a sense of belonging; Baumeister and Leary maintained that a sense of belonging may be satisfied by being involved in non-intimate relationships such as an ideological political movement; and Derrick and colleagues showed that people can use technology, such as favorite television shows, to provide the experience of belonging.

Accordingly, the current research will define a general sense of belonging at work to include employees' social contact with others at work with whom they feel connected with, plus a sense of belonging that transcends those relationships. Subsequently, a general sense of belonging at work will include perceptions of belonging with coworkers to supervisors to the organization to a general sense of belonging that exists beyond those relationships. In this way, a general sense of belonging at work will include interpersonal relationships (coworkers and supervisors), relationships with an object (the organization), and beyond those relationships (sense of belonging at work). Therefore, optimal levels of a general belonging

at work can be had by employees who perceive they have adequate social contact with others at work and are connected with or accepted by said others, plus perceive that they fit in with the organization and have a general sense of belonging when they are at work. Ways that others in the organization could enhance employees' perceptions of achieved belonging at work would be to develop close bonds with them by giving them support, treating them with sincere concern, and cooperating with them (De Cremer & Van Knippenberg, 2002; Skaalvik & Skaalvik, 2011). In contrast, ways to thwart perceptions of belonging at work would be for others to treat said employees like strangers and not include them in plans, or make them feel as if they are not included. Indeed, research has shown that students who felt excluded based on their background reported lower levels of belonging at school (Ostrove & Long, 2007). From an organizational standpoint, if employees perceive that they fit in the organization, for example in regard to organizational culture or objectives (Skaalvik & Skaalvik, 2011), probabilities of achieved belonging at work can further be increased. In addition, employees may perceive that just being at work provides them a sense of belonging. This may be because of the type of work they do. For example, an employee may value doing meaningful work and they perceive the work they are doing as being meaningful. Research has shown that meaning in life positively associates with a sense of belonging (Beck & Malley, 1998). As such, employees who work in these types of situations may perceive that they "fit" in when they are at work or that they feel a close "bond" with the work they perform.

Achieved belonging and belonging thwarted have consistently been linked to subjective well-being and psychological pathologies (e.g., Baumeister & Leary, 1995; Hagerty et al., 1992; Malone et al., 2012). Moreover, achieved belonging has shown to be

related to positive outcomes such as school motivation, effort, participation, and achievement (Glass & Westmont, 2014; Goodenow, 1993). Goodenow suggested that a sense of belonging increased expectations of school success by bolstering the belief that one has not only the individual skills, but also the social resources to overcome difficulties to succeed. In addition, Glass and Westmont found that a sense of belonging not only increased cross-cultural interactions of international and domestic students, but substantially enhanced international students' grade average. Furthermore, achieved belonging has shown positive associations with psychological well-being including self-esteem, interpersonal relational satisfaction, happiness, and life satisfaction (e.g., Baumeister & Leary, 1995; Baumeister & Tice, 1990; Malone et al., 2012). In contrast, the importance of belonging in peoples' lives is evidenced by the fact that when this need is thwarted it can lead to increased sadness, anxiety, depression, and even suicidal ideation (e.g., Baumeister & Leary, 1995; Baumeister & Tice, 1990; Baumeister, Twenge, & Ciarocco, 2002; Cockshaw et al., 2013, 2014; Hagerty et al., 1992; Malone et al., 2012; Van Orden, Witte, Gordon, Bender, & Joiner Jr., 2008).

Subsequently, a sense of belonging at work, or lack thereof, has shown to have the same positive and deleterious effects that have been demonstrated in the social and clinical sciences. For instance, positive associations for belonging at work have been found with: organizational commitment, intentions to stay, and organizational contextual behaviors aimed at both the individual and organization (Davila & Garcia, 2012); trust in the organization and organizational justice factors (i.e., procedural, distributive, and interactional; Thau, Aquino, & Poortvliet, 2007); and helping behaviors (Den Hartog et al., 2007). In contrast, Cockshaw and colleagues (2013) showed a negative relationship between sense of belonging at work and depression. In addition, Thau and colleagues revealed a

positive association between employees' desire for belongingness versus their actual belonging with interpersonally harmful behaviors targeted at coworkers. That is, the greater the difference between employees' needs for belonging and their achieved belonging the greater their harmful behaviors. In total, these studies tend to indicate the positive influences that a sense of belonging at work can have.

In addition, McClure and Brown (2008) conducted phenomenological research to gain a better understanding on aspects of the work experience that make work meaningful. The authors explored the feeling of belonging as it was experienced at work involving 12 adults ages 20 to 80 years of age, ranging from their first jobs up to working for one company for 39 years. As a result, themes were identified based on participants' experiences related to a sense of belonging at work. The strongest theme that emerged was the discovery of self within the job. A sense of belonging at work resulted in the participants describing that they found themselves within their work at a deeper level. They described being "in" the work. "Participants became 'in-the-work-persons,' noting a sense of discovery, as though the work was not just dynamic, but living, interacting with them" (p. 13). Participants celebrated having become a certain profession and that they had not just arrived at or reached a position, but they actually took part in creating it.

Theory on belongingness related to safety performance and safety outcomes continues to gain acceptance in the literature. For instance, people-based safety (PBS) is defined by individual characteristics and inclinations including self-esteem, self-efficacy, personal control, optimism, and belongingness. PBS evolved from behavior-based safety (BBS). BBS creates a safety partnership between management and employees to increase interdependent engagement among employees to identify hazardous conditions and risky

behaviors that, in turn, are used in interventions to reduce risky behaviors and increase safe behaviors (Dula & Geller, 2007). PBS adds cognition (or self-talk), insight, and person states such as a sense of belonging to BBS. PBS empowers employees go beyond the call of duty to help other employees (Gellor, 2001). Gellor (2011) claimed that with more widespread and long-term adoption of this application of psychological science, more injuries and fatalities from medical errors and monumental disasters like recent oil spills can be prevented. In related research, Al-Hemoud and Al-Asfoor (2006) used a BBS intervention to significantly increase safe behaviors. The authors suggested that increased levels of department-level belongingness may have facilitated learning and results. The authors argued that it was the perceptions of belonging that may have led to the interpersonal trust and caring among the coworkers and the trainer which, in turn, could have facilitated the rapid improvement in behavior during the intervention and its lasting effects. As a result, Al-Hemoud and Al-Asfoor claimed that an essential ingredient in the new improved approach of BBS is culture. Subsequently, the authors presented a model by Quinn (1988) to support their assertion. Quinn developed the Competing Values Framework which represents four clusters of values for four distinct culture models. Quinn claimed that employees in the 'group culture' cluster propel through attachment, cohesiveness, and membership in the organization. This culture emphasizes belongingness, trust, and participation. Using this framework, Hee and Ping (2014) proposed that companies that adopt group culture are more likely to demonstrate safety compliance and participation. Using these lines of thought, a gap in the literature that needs to be addressed more fully is how a general sense of belonging at work can relate to workplace safety performance and outcomes.

The JD-R Model Related to Workplace Safety Outcomes

The JD-R model proposes that job demands and job resources are two sets of working conditions that can be found in every organizational context (Bakker & Demerouti, 2007; Bakker, Demerouti, & Sanz-Vergel, 2014; Demerouti et al., 2001). Bakker and Demerouti state that types of job demands include role ambiguity and conflict, hazardous work conditions, work overload, excessive production goals, overly challenging standards of quality, and impractical timelines. Subsequently, job demands involve psychological, physical, social, and organizational facets of the job that can result in sustained cognitive, emotional, and physical effort. As a result of these sustained efforts, employees can be become overly taxed both psychologically and physically. Job demands may be inherently negative or turn into job stressors when meeting the demands of the job requires efforts on behalf the employee from which the employee is not able to adequately meet (Meijman & Mulder, 1998).

Types of job resources include job knowledge, work autonomy, coworker support, and task feedback. Job resources can derive from the organization (e.g., training, benefits, pay, and job security), interpersonal relations (e.g., coworker and supervisor support), and work conditions (e.g., job autonomy and participation in decision making; Bakker & Demerouti, 2007; Demerouti et al., 2001). Job resources include physical, psychological, social, and organizational facets of the job that help employees reduce perceptions associated with job demands and the consequences related to job demands. As such, the psychological and physical expenditures related to job demands can be lessened. Moreover, job resources not only help workers deal with job demands, but they also have the potential to motivate employees and help them achieve their work goals. Additionally, according to Bakker and

Demerouti job resources can serve to stimulate employees' personal growth and development.

JD-R model research has consistently shown that job demands can lead to burnout, and job resources to engagement (e.g., Demerouti et al., 2001; Nahrgang et al., 2011). The term burnout was first coined by Freudenberger in 1974. Freudenberger defined burnout as a state of mental and physical exhaustion caused by one's professional life coupled with the loss of motivation to continue work performance. Thus, according to Freudenberger, individuals who burn out from work experience a depletion of energetic resources and lose their dedication to work. Since, research has confirmed that burnout is a slow process of progressive loss of energy and enthusiasm (e.g., Kant, Jansen, Van Amelsvoort, Mohren, & Swaen, 2004; Leiter & Maslach 2006). In 1982, Maslach claimed that burnout consists of three dimensions: emotional exhaustion, depersonalization (felt distance from others), and diminished personal accomplishment. Currently, three measures of burnout are most prevalent in the literature. The Maslach Burnout Inventory-General Survey by Schaufeli and Leiter (1996) replaced the depersonalization component of burnout with cynicism, which reflects a distant attitude toward work in general and not necessarily toward other people. Alternatively, Demerouti, Bakker, Vardakou, and Kantas (2003) developed the Oldenburg Burnout Inventory (OLBI) and Shirom and Melamed (2006) developed the Shirom-Melamed Burnout Measure (SMBM). Whereas the OLBI assesses the dimensions of exhaustion and disengagement, the SMBM assesses the dimensions of physical fatigue and cognitive weariness. Though researchers do not completely agree on how burnout should be conceptualized and measured, there appears to be a basic agreement that burnout involves a depletion of energy and increased detachment.

Engagement was first coined by Kahn in 1990. Kahn defined engagement as the harnessing of workers to their work roles. Kahn claimed that engaged employees put a great deal of effort into their work because they identify with it. As such, workers tend to employ and express themselves cognitively, emotionally, and physically during their job performances. Interestingly, it is research on burnout that has stimulated most contemporary research on work engagement (Bakker, Schaufeli, Leiter, & Taris, 2008a). Contrary to burnout, engaged employees have a sense of effective energy and connection with their work and view their work as challenging as opposed to stressful and demanding (Bakker & Demerouti, 2007; Bakker et al., 2014). Consequently, one of the most widely used measures to assess employee engagement involves a positive, fulfilling, work-related state of mind and is comprised of three dimensions labeled vigor, absorption, and dedication (Schaufeli, Salanova, Gonzalez-Roma, and Bakker, 2002).

According to Nahrgang et al. (2011), the JD-R model offered a useful conceptual model for understanding the mechanisms through which job demands and job resources relate to workplace safety outcomes. The authors claimed that the JD-R model would be useful because it includes a health impairment process in which job demands exhaust employees' physical and mental resources leading to burnout in addition to the job resources which motivate employees toward higher engagement (Bakker & Demerouti, 2007; Demerouti et al., 2001). Nahrgang and colleagues argued that because most models of workplace safety primarily focus on motivational processes (e.g., Christian et al., 2009; Neal & Griffin, 2004), they are incomplete in that they do not recognize the role that the health impairment process might play in workplace safety. Subsequently, Nahrgang and colleagues developed and meta-analytically tested a theoretical framework of workplace safety based on

the JD-R model. As such, the authors utilized the JD-R model to organize various conditions related to workplace safety to gain a better understanding of how job demands and job resources relate to workplace safety outcomes.

Nahrgang et al. (2011) listed types of job demands related to workplace safety to include risky and hazardous working conditions (e.g., exposure to heat, dust, chemicals, and dangerous equipment), aspects of the physical environment (e.g., excessive noise and unsafe materials), complexity of the work (e.g., cognitive demands, task complexity, and ambiguity in the work), and physical demands associated with the work (e.g., work overload, strenuous tasks, and long work hours). Job resources related to workplace safety included safety knowledge (e.g., the understanding of safety policies and procedures and training on how to perform safely), job autonomy (e.g., freedom to decide how to develop new ways to meet job demands and perform safety measures), and a supportive environment (e.g. advice and assistance from coworkers regarding safety, communication by leaders on the value of safety to their subordinates, and the rewarding and supporting of expected safety-oriented behaviors).

In their meta-analysis, Nahrgang and colleagues' (2011) primary findings showed that the job demands of risks and hazards and job complexity had positive associations with burnout, and the job resources of safety knowledge, job autonomy, and a supportive environment had positive associations with engagement. Moreover, job demands showed a negative relationship with engagement, and job resources showed a negative relationship with burnout. Lastly, the authors found that burnout was negatively related to working safely, and engagement was positively related to working safely.

Nahrgang and colleagues (2011) also examined which job demands and job resources explained the most variance across industry types. Across industries, risks and hazards was the most consistent job demand and a supportive environment was the most consistent job resource in terms of explaining variance in burnout, engagement, and safety outcomes such as accidents and injuries and unsafe behavior.

Sense of Belonging at Work and the JD-R Model Related to Workplace Safety

Direct Effects

According to the JD-R model, job demands evoke a health impairment process that exhausts employees' mental and physical resources leading to burnout. Accordingly, job demands are predicted to have, and have shown, direct positive relationships with burnout (Bakker & Demerouti, 2007; Crawford et al., 2010; Demerouti et al., 2001, Nahrgang et al., 2011). The job demand that will I will examine in the current investigation is quantitative work overload. Quantitative work overload will be defined as having too much work to do coupled with not having enough time to get the work completed or done well. Aspects of burnout to be included will be feelings of fatigue and emotional exhaustion (Demerouti et al., 2003; Shirom & Melamed, 2006). Feelings of fatigue will cover the physical aspect of energy depletion, and will be defined by feeling physically weak, exhausted, drained, worn out, weary, and tired. Emotional exhaustion will cover the emotional and mental aspects of energy depletion, and will be defined by feeling emotionally drained and mentally tired. Empirical research has shown high workload to have positive associations with depression (Frone, 1998), and feelings of fatigue and emotional exhaustion have consistently been listed as symptoms of depression (e.g., Beck et al., 1988; Radloff, 1977). As a result, I expect

workers who report higher levels of quantitative work overload will be more inclined to report feelings of fatigue and emotional exhaustion.

Hypotheses 1a & 1b: Quantitative work overload will have positive

associations with (a) feelings of fatigue and (b) emotional exhaustion.

Though evidence on the link between job demands and engagement has been mixed (Bakker, van Emmerik, & Euwema, 2006; Schaufeli & Bakker, 2004; Schaufeli, Taris, & van Rhenen, 2008), recent meta-analytic work suggests that the relationship between job demands and engagement depends on whether the demand is a challenge demand or a hindrance demand (Crawford et al., 2010). For instance, challenge demands promote personal growth and future gains, and employees generally view these demands as opportunities to learn, demonstrate competence, and achieve goals. As such, employees interpret challenge demands as obstacles to be overcome in order to learn and achieve. In this way, employees are increasing efforts to obtain outcomes that tend to be rewarded. In contrast, hindrance demands impede personal growth and goal attainment, and employees generally view these demands as constraints and barriers that hinder goal achievement and effective performance. In these circumstances, employees generally withdraw from the situation (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; LePine, Podsakoff, & LePine, 2005; Nahrgang et al., 2011). Cavanaugh and colleagues found that challenge demands including high responsibility, job scope, time pressure, and high work load positively associated with job satisfaction and negatively associated with job search. In contrast, types of hindrance demands including role ambiguity, red tape, concerns about job security, and organizational politics negatively associated with job satisfaction and positively associated

with job search. Further, Crawford and colleagues showed challenge demands to be positively related to engagement, whereas hindrance demands were negatively related.

Consequently, quantitative work overload can be viewed as a hindrance demand related to safety motivation (i.e., an engagement construct in the current study). Though as mentioned above that high work load and time pressure can be considered types of challenge demands, quantitative work overload is defined here as having too much work to do and not enough time to do it or do it well. As such, it is in the view of the worker, regardless of how much work they may really have, that they are expected to do more work than what can be done in the allotted time to complete it or do it well. This will not only likely increase the probabilities that their energies will be depleted in that they are doing too much work in too narrow of a timeframe, but also that they will not achieve success in that they may not get the job completed, or if completed not done well. Workers who are high on safety motivation are more inclined to believe or feel that it is important and worthwhile to volunteer for safety related tasks, get involved in developing safety procedures, and exert extra efforts to improve safety (Hee & Ping, 2014). Subsequently, it becomes more likely that the employees who perceive they are high in quantitative work overload will experience excessive energy depletions in that they are overwhelmed in the amount of work they need to complete in the allotted time they have been provided to complete it. As workers perceive they have too much work to do without enough time to get the work completed, it becomes more likely they will have substantial depletions in energy and time and, as a result, place less value on volunteering for safety-related tasks, getting involved in developing safety procedures, and exerting extra efforts into maintaining safety.

Hypothesis 1c: Quantitative work overload will have a negative

association with safety motivation.

According to the JD-R model, job resources can lessen the psychological and

physical expenditures related to job demands (Bakker & Demerouti, 2007; Crawford et al.,

2010; Demerouti et al., 2001, Nahrgang et al., 2011). One job resource that may prove

valuable in alleviating the consequences of job demands is a general sense of belonging at

work. Evidence-based studies have shown sense of belonging to be one of the most important

determinants of well-being in that it has consistently shown positive associations with

desirable aspects of well-being including self-esteem, happiness, and life satisfaction.

Moreover, sense of belonging has also consistently shown negative associations with

undesirable aspects of well-being including depression, loneliness, and suicidal ideation (e.g.,

Baumeister & Leary, 1995; Hagerty et al., 1992; Malone et al., 2012; Van Orden et al.,

2008). As such, a general sense of belonging at work could serve as an antecedent to feelings

of fatigue and emotional exhaustion. Because feelings of fatigue and emotional exhaustion

are generally considered undesirable aspects of well-being, it is reasonable to expect that a

general sense of belonging at work will have negative associations with each. Subsequently,

this line of thought aligns with the evidence that has shown job resources to have negative

associations with burnout (e.g., Bakker, Demerouti, & Euwema, 2005; Bakker, Demerouti, &

Schaufeli, 2003; Lee & Ashforth, 1996; Nahrgang et al., 2011; Schaufeli & Bakker, 2004).

Hypotheses 2a & 2b: A general sense of belonging at work will have

negative associations with (a) feelings of fatigue and (b) emotional

exhaustion.

In addition, a general sense of belonging at work could serve as a job resource related to safety motivation. More specifically, a sense of belonging at work should not only serve as a job resource to motivate employees to place value on exerting extra efforts and volunteering for safety-related activities to protect and keep individuals safe who provide them that sense of belonging, but also to protect the sense of belonging they receive from being at work. In other words, from an evolutionary perspective individuals want to feel psychologically and physically safe (e.g., Cosmides & Tooby, 2000). By placing value on protecting others who provide them with a sense of belonging and a workplace that provides that sense of belonging, an individual is also protecting their own safety. Therefore, workers who perceive a sense of belonging at work should be more motivated to participate in safety prevention activities such as being involved in the development of safe work procedures, volunteering for safety-related tasks, putting extra effort into maintaining safety, and encouraging others to use safe practices to keep others, their workplace, and themselves safe.

Accordingly, research has found positive relationships for a supportive environment with safety worker involvement and communication (Hofmann & Morgeson, 1999; Mohamed, 2002), and group cohesiveness with organizational citizenship behaviors displayed in groups (Kidwell, Mossholder, a& Bennett, 1997). As such, a general sense of belonging at work is related to a supportive work environment and group cohesiveness in that employees who feel they belong at work at some level also perceive they are accepted and connected with others at work. However, a sense of belonging at work also transcends interpersonal relationships. That is, a general sense of belonging at work can be with an object such as the organization (e.g., In regard to my organization, I feel like I fit in) or with work in general (e.g., I have a sense of belonging when I am at work). Supportive work

environments generally are reduced to support received from coworkers and/or supervisors and group cohesiveness is associated with the group. Therefore, a general sense of belonging at work is related to but distinct from a supportive environment and group cohesiveness. Hence, the current investigation will extend the supportive environment and group cohesiveness research with the idea that employees who report being higher in a general sense of belonging at work will be more motivated to participate in extra-role behaviors to increase safety in the workplace and encourage others to practice safety.

In addition, Den Hartog and colleagues (2007) found that employees who reported a sense of belonging at work were more inclined to exhibit helping behaviors beyond their assigned tasks. These helping behaviors included lending a helping hand to coworkers when needed and willingly assisting others in meeting deadlines or requirements. As such, the current investigation will also be an extension of this research in that employees who have a general sense of belonging at work should be more inclined to place value not only on extra-role behaviors related to helping others, but also in regard to participating in workplace safety (i.e., safety motivation).

> *Hypothesis 2c: A general sense of belonging at work will have a positive*
>
> *association with safety motivation.*

Because safe behavior as defined here in the current study involves employees putting in extra efforts to improve the safety of the workplace and voluntarily carrying out tasks or activities that help improve workplace safety (Hee & Ping, 2014), employees high in feelings of fatigue and emotional exhaustion should be less inclined to possess the physical, emotional, and mental energies necessary to carry out extra-role behaviors beyond their assigned tasks. In other words, these employees are using limited resources to perform and

complete their in-role tasks, and having the resources to carry out additional behaviors and activities beyond their assigned tasks is less likely. As such, Nahrgang and colleagues (2011) showed a positive relationship between burnout and unsafe behavior, and Li, Jiang, Yao, and Li (2013) found a negative relationship between emotional exhaustion and safety compliance behaviors.

> *Hypothesis 3: Feelings of fatigue will have a negative association with*
> *safe behavior.*
> *Hypothesis 4: Emotional exhaustion will have a negative association with*
> *safe behavior.*

Employees high in safety motivation place high value on improving and maintaining workplace safety as they believe it is important and worthwhile to put in extra effort to develop safe work procedures, maintain safe practices, and encourage others to use safe practices (Griffin & Neal, 2000; Hee & Ping, 2014). In this way they are exhibiting that they believe they have a certain level of control over workplace safety as they value being engaged in workplace safety and view they can influence others to perform safely in efforts to reduce workplace accidents and injuries. Subsequently, they most likely will be more inclined to have less accidents and injuries themselves as they place high value on safety. Moreover, because high safety motivation workers believe it is important and worthwhile to encourage others to use safe practices, they may influence others to be safer resulting in less coworker accidents that may have had an effect on high safety motivation workers. As a result, high safety motivation workers could be involved in fewer situations where accidents and injuries may result. As such, Hofmann and Morgeson (1999) found that safety communication had a negative relationship with workplace accidents, and Goldenhar,

Williams, and Swanson (2003) found that safety compliance had a negative relationship with near misses.

In addition, because safety motivation consists of employee feelings and beliefs that they value workplace safety beyond just performing compliant safety behaviors, it is reasonable to expect that these same individuals would be more inclined to exert extra-efforts to perform safe behaviors in the workplace. More specifically, they would be willing to perform extra efforts to improve workplace safety and voluntarily carry out tasks to improve workplace safety. Accordingly, Nahrgang et al. (2011) found negative relationships between engagement variables (e.g., a supportive environment) and unsafe behavior, and Neal and Griffin (2006) found a positive relationship between safety motivation and safe behavior. Therefore, high safety motivation workers may not only experience decreases in accidents and injuries, but increases in safe behavior.

> *Hypotheses 5a & 5b: Safety motivation will have negative associations*
>
> *with (a) accidents and (b) injuries.*
>
> *Hypothesis 5c: Safety motivation will have a positive association with safe*
>
> *behavior.*

Moderating Effects

Den Hartog and colleagues (2007) found that when workers reported a low sense of belonging at work they were influenced by leaders who they perceived as being charismatic. Specifically, when charismatic leadership was high, subordinates who reported a low sense of belonging also reported more helping and compliance behaviors compared to high belonging at work subordinates. The authors argued that employees can have different reasons to help others or be compliant (e.g., they like their coworkers or it is the "right" thing

to do), but once such behaviors are ensured through one factor, as was the case with sense of belonging at work in their study, the impact of charismatic leadership was mitigated. In this way, an external factor (charismatic leadership) had substantially more influence on helping and compliance behaviors for workers who reported low levels of belonging at work, whereas the external factor of charismatic leadership had very little impact on workers who reported high belonging at work.

As such, the current investigation will build on Den Hartog and colleagues' (2007) research to explore the moderating effects of a general sense of belonging at work in regard to internal factors. That is, does the job resource, a sense a general sense of belonging at work, impact relationships that involve feelings of fatigue and emotional exhaustion? Similar to how a general sense of belonging at work is expected to negatively associate with feelings of fatigue and emotional exhaustion, its impact on feelings of fatigue and emotional exhaustion relationships with accidents and injuries should result in weaker associations for workers high in general belonging at work. Workers with high general belonging at work, consistent with Den Hartog et al.'s research, should be less inclined to be influenced by other factors. Because high general belongingness workers are receiving the job resource of belonging at work, they should be less likely to be impacted by potential internal factors such as feelings of fatigue and emotional exhaustion. As such, the high belongingness at work serves to buffer the influences of feeling fatigued and emotional exhaustion on workplace safety outcomes. Subsequently, workers who report low general belonging at work are lacking in said job resource and become more susceptible to other factors. Consequently, it is expected that feelings of fatigue and emotional exhaustion will have interactive effects with a general sense of belonging at work related to workplace safety outcomes. Accordingly, it is

expected that relationships between feelings of fatigue and accidents and injuries, and relationships between emotional exhaustion and accidents and injuries, are likely to be stronger for workers low on a general sense of belonging at work than for workers high on a general sense of belonging at work.

Hypotheses 6a & 6b: A general sense of belonging at work will interact with feelings of fatigue, such that the effects of feelings of fatigue on (a) accidents and (b) injuries will be stronger when a general sense of belonging at work is low.

Hypotheses 7a & 7b: A general sense of belonging at work will interact with emotional exhaustion, such that the effects of emotional exhaustion on (a) accidents and (b) injuries will be stronger when a general sense of belonging at work is low.

Employees high in safety motivation hold feelings and beliefs that place value on exerting extra efforts to improve workplace safety and volunteering for safety-related tasks and activities (Griffin & Neal, 2000; Hee & Ping, 2014). Accordingly, it is predicted that these employees will be more inclined to perform extra efforts to improve workplace safety and voluntarily carry out tasks or activities that help to improve workplace safety.

Because safety motivation and safe behavior are conceptually very similar in that both constructs involve giving extra efforts beyond the basic job requirements to improve workplace safety, it is within reason to expect their relationship to be strong. However, the strength of their relationship could be dependent upon other factors as well. For instance, safety motivation entails that employees feel and believe it is important and worthwhile to encourage others to use safety practices and to be involved in the development of safe work

procedures (Griffin & Neal, 2000; Hee & Ping, 2014). In this way, high safety motivation workers likely will be required to become more engaged with and work more with others to perform their extra-role safety acts. As such, for workers who are low in a general sense of belonging at work and high in safety motivation, they may not be as inclined to follow through on their feelings and beliefs in regard to performing extra efforts to improve workplace safety because it increases the probabilities that they will have to engage and work more with the individuals who do not make them feel as if they belong. Though it is likely many high safety motivation workers will follow through on their feelings and beliefs related to improving workplace safety to perform extra safety efforts and volunteer for safety-related tasks regardless of their belongingness perceptions, it becomes less likely for individuals with a lower general sense of belonging at work.

On the other hand, workers high in a general sense of belonging and safety motivation should be more inclined to act on those feelings and beliefs to perform extra efforts to improve workplace safety and voluntarily perform safe behaviors. First, they most likely will be more apt to want to work with others who provide them that sense of belonging at work compared to their low sense of belonging at work counterparts. Second, by following through on their feelings and beliefs that putting in extra effort and volunteering to improve workplace safety is important and worthwhile, the acts they perform will serve to protect and keep safe not only those individuals who provide them a sense of belonging at work, but also the workplace that provides them that sense of belonging. Indeed, Davila and Garcia (2012) found positive relationships for employees' belonging at work with organizational contextual behaviors aimed at both the individual and organization. As such, high general belonging at

work individuals should have less reservation and added incentive to act on the feelings and

beliefs they hold in regard to improving workplace safety.

> *Hypothesis 8: A general sense of belonging at work will interact with*
>
> *safety motivation, such that the effect of safety motivation on safe behavior*
>
> *will be stronger when a general sense of belonging at work is high.*

Indirect Effects

Nahrgang and colleagues (2011) demonstrated in their meta-analytic test of the JD-R

model related to safety outcomes that the health impairment process (i.e., burnout) and the

motivational process (i.e., safety compliance) in some circumstances were mechanisms

through which job demands and job resources influenced safety outcomes. In their research,

the authors found that: (a) risks and hazards (job demand) showed a significant indirect path

to adverse events through compliance; and (b) safety climate (job resource) to adverse events

through both burnout and compliance. However, the authors also discovered nonsignificant

indirect paths for risks and hazards and safety climate to accidents and injuries. In the current

study, aspects of burnout (i.e., feelings of fatigue and emotional exhaustion) and engagement

(i.e., safety motivation) will be examined to not only provide an independent test of the

framework set forth by Nahrgang and colleagues, but also to extend the research on

mediating effects in regard to previously unexamined employee health impairment and

engagement constructs.

Evidenced-based studies have shown higher workload to be associated with increased

workplace injuries and detrimental safety-related events (e.g., Frone, 1998). One avenue to

avoid workplace accidents and injuries is for employees to have full use of their mental,

physical, and emotional capabilities. As workers become depleted of such capabilities their

capacity to sustain the focus and effective performance necessary to maintain workplace

safety diminishes. Job demands such as quantitative work overload, as predicted in this

current study, likely serves to increase employees' feelings of fatigue and emotional

exhaustion. As a result, employees become mentally, physically, and emotionally depleted

which, in turn, could likely result in increased probabilities that they will not have the

energies necessary to actively sustain thought processes, behaviors, and activities necessary

to keep them safe. In this state workers are more inclined to commit mistakes or take

shortcuts that could result in workplace accidents and injuries (Nahrgang et al., 2011).

  In contrast, job resources, such as a general sense of belonging at work, can serve to

diminish the negative effects of job demands and motivate workers to engage in safety

motivational processes (Bakker & Demerouti, 2007; Bakker et al., 2014; Demerouti et al.,

2001). Consequently, increased job resources help workers to become more motivated to

hold positive valuations and desires to engage in and perform extra-efforts related to

workplace safety. In this healthy and motivated state, workers are less likely to experience

adverse safety outcomes and more likely to experience positive safety performance (e.g.,

Nahrgang et al., 2011). In related research, Fogarty (2005) and Siu, Phillips, and Leung

(2004) found that psychological strain mediated the relationships between safety climate and

maintenance errors, and safety attitudes and accident rates, respectively.

  Although Nahrgang and colleagues (2011) did not find significant indirect effects for

job demands and job resources regarding accidents and injuries, because their method to

combine accidents and injuries into one variable and it is not clear if these were objective or

self-report incidents, the current research will remain consistent with prior expectations. That

is, when studied separately as self-report workplace accidents and self-report workplace

injuries these indirect effects may indeed be evident. Accordingly, it is reasonable to expect that feelings of fatigue, emotional exhaustion, and safety motivation will mediate the relationships between quantitative work overload and a general sense of belonging at work with accidents, injuries, and safe behavior.

> *Hypotheses 9a, 9b, & 9c: Quantitative work overload will have indirect effects on (a) accidents, (b) injuries, and (c) safe behavior through feelings of fatigue.*

> *Hypotheses 9d, 9e, & 9f: A general sense of belonging at work will have indirect effects on (d) accidents, (e) injuries, and (f) safe behavior through feelings of fatigue.*

> *Hypotheses 10a, 10b, & 10c: Quantitative work overload will have indirect effects on (a) accidents, (b) injuries, and (c) safe behavior through emotional exhaustion.*

> *Hypotheses 10d, 10e, & 10f: A general sense of belonging at work will have indirect effects on (d) accidents, (e) injuries, and (f) safe behavior through emotional exhaustion.*

> *Hypotheses 11a, 11b, & 11c: Quantitative work overload will have indirect effects on (a) accidents, (b) injuries, and (c) safe behavior through safety motivation.*

> *Hypotheses 11d, 11e, & 11f: A general sense of belonging at work will have indirect effects on (d) accidents, (e) injuries, and (f) safe behavior through safety motivation.*

Scale Development and Validation: The General Belonging at Work Scale

Background

To date, I argue there is not a valid scale for assessing a general sense of belonging at work in the literature. Accordingly, the current research aims to develop a valid scale to assess a general sense of belonging at work. Cronbach and Meehl (1955) claimed that investigating the construct validity of a measure involves at the least the following three steps: (1) articulating a set of theoretical concepts and their interrelations; (2) developing ways to measure the hypothetical constructs proposed by the theory; and (3) empirically testing the hypothesized relations among constructs and their observable manifestations.

Though Cockshaw and Shochet (2010) developed a measure to assess a sense of belonging at work in their research, the measure was adapted from a scale used in the social sciences that was developed to assess a psychological sense of school membership (Goodenow, 1993) – not necessarily a sense of belonging. Though, the Psychological Sense of Organizational Membership (PSOM) scale developed by Cockshaw and Shochet includes items that are consistent with belongingness theory, it also includes items such as: *People here know I can do good work; People here notice when I'm good at something; I can really be myself in this organization; People in this organization are friendly to me; I am treated with as much respect as other employees;* and *Other people in this organization take my opinions seriously.* These items at face value do not appear to be assessing a sense of belonging as generally depicted in the belongingness literature and in accordance to valid scales that have been developed to assess a sense of belonging (e.g., Baumeister & Leary, 1995; Hagerty et al., 1992; Hagerty & Patusky, 1995; Kohut, 1971, 1984; Leary, Kelly, Cottrell, & Schreindorfer, 2013; Lee & Robbins, 1995). These items seem to be more of an

assessment of how one perceives that others value their performance and them as an individual. Though, as presented in the literature, a sense of belonging involves acceptance by others and social involvement, a sense of belonging is not generally tied to specific activities that the individual performs and value judgments related to the individual. The inclusion of the items mentioned above draws speculation that perhaps another underlying construct maybe is being assessed, with some aspect of it including a sense of belonging. For example, the affective organizational commitment scale developed by Allen and Meyer (1990) has an item that assesses a sense of belonging to the organization, *I do not feel a strong sense of belonging to my organization*, but the scale was not developed to assess a sense of belonging to the organization. The scale was developed to assess employees' emotional attachment and commitment to the organization. Additional concerns are that Cockshaw and Shochet did not report a confirmatory factor analysis to demonstrate that the data were a good fit to the conceptual model. Moreover, the authors tested their measure using only one study. Independent samples add generalizability validity. Lastly, the PSOM consists of 18 items and was developed using a small sample size of 121 participants (i.e., though researchers have suggested 5 data points per variable as a minimum, the more acceptable ratio of data points to variables is 10:1, or even as high as 20:1, as to minimize the chances of over-fitting the data, or deriving factors that are sample-specific with little generalizability; Hair, Black, Babin, & Anderson, 2007).

In addition to Cockshaw and colleagues' (2010) aim to develop a valid measure of belonging at work, other studies that have used measures of belonging at work have not been validated (e.g., Davila & Garcia, 2012; Den Hartog et al., 2007; Thau et al., 2007).

Scale Development

Though there have been attempts to define a general sense of belonging to include multiple dimensions (e.g., Hagerty & Patusky, 1995), the pervasive reasoning and empirical evidence supports that a general sense of belonging is defined by one dimension. Following Hagerty and Patusky's attempt to define belongingness with multiple facets which resulted in a one-factor solution for their Sense of Belonging Instrument (psychological state), Hagerty, Williams, Coyne and Early (1996) ultimately supported the one-dimension postulate. Hagerty and colleagues claimed that belongingness is a unique element of relatedness that is one element among many concepts.

Consistent with the extant literature (e.g., Baumeister & Leary, 1995; Hagerty et al., 1992; Kohut, 1971, 1984), Malone et al. (2012) developed a scale to assess a general sense of belonging across multiple levels of specificity ranging from close friends and family, to societal others, to an overarching sense of belonging that transcends interpersonal relationships (GBS; General Belongingness Scale). Though the authors revealed a two-factor solution consisting of an approach (acceptance) and avoidance (not being excluded) approach to belonging, the theoretical support for one underlying construct and a high-inter factor correlation for the GBS suggests that the scale is best used as unidimensional. Building on this research, I contend that the multiple levels of specificity of the GBS would equate in the workplace to include a sense of belonging with coworkers, to supervisors, to the organization, to an overarching sense of belonging that transcends those relationships. In this way, content validity for assessing a general sense of belonging at work is enhanced by including various ranks across the organization and a general sense of belonging beyond those interpersonal relationships. As such, the current investigation will use belongingness

theory as a conceptual basis to generate items to assess a general sense of belonging at work. Specifically, the assessment of a general belonging at work will include both features of belonging posited by Baumeister and Leary (employees having regular social contact with individuals whom they feel connected with), plus a sense of belonging at work that transcends interpersonal relationships (e.g., a sense of belonging with the organization and a general sense of belonging at work).

The current research aims to develop a measure that is brief and global. The General Belonging at Work (GBW) scale will be consistent with other concise measures that focus on global or whole concepts, such as the Affective Organizational Commitment scale (Allen & Meyer, 1990) and the Organizational Identification scale (Mael & Ashforth, 1992). The aim of the GBW will be to assess an individual's general sense of belonging at work. It will be designed with the idea that it would be used in organizational settings where employees have coworkers and supervisors. To assess across the construct of belonging at work, four content domains will be assessed: (1) coworkers – a sense of belonging with other employees who the employee works with; (2) supervisor – a sense of belonging with the person who directs the employee; (3) the organization – a sense of belonging with the employing organization; and (4) general – an overarching sense of belonging at work. Experts in the area of scale development will examine the items for clarity, conciseness, and readability.

Scoring of the items will consist of a Likert-type rating choice format. Agreement response choices from low (*strongly disagree*) to high (*strongly agree*) will be used to assess the level of agreement individuals self-report related to their perceptions of belonging at work (e.g., I *strongly agree* with the statement: "Coworkers include me in their plans."). Moreover, the GBW will have a balance of positive- and negative-worded items to better

account for individual differences in how respondents may interpret an item. That is, some individuals may report a sense of belonging because they feel included, whereas others may report a sense of belonging because they do not feel excluded (Malone et al., 2012). Negative-worded items will be reverse-scored. Higher scores will indicate increased general belonging at work.

Scale Validation

Convergent, discriminant, and predictive validity will also be examined. It is expected that two constructs, PSOM and loneliness at work, will be highly-related to the GBW. The PSOM has several items that assess a sense of belonging at work and is defined as an employee's sense that they are a member of, belong to, and are appreciated by the employing organization and its representatives (Cockshaw & Shochet, 2010). Loneliness at work is conceptually similar to a lack of belonging at work in that it is defined as an employee's perception that they lack social companionship and emotional connectivity at work (Hays & DiMatteo, 1987). Moreover, loneliness has shown high associations with a general sense of belonging in the social sciences (e.g., Malone et al., 2012). Because of the strong conceptual relations to the GBW, it is expected that PSOM and loneliness at work will have the strongest associations with the GBW. Because PSOM is related to a sense of achieved belonging and loneliness at work is related to a lack of belonging, it is expected that PSOM will show a positive association with the GBW and loneliness at work a negative association. Accordingly, PSOM and loneliness at work will be used to assess convergent validity.

Moreover, affective organizational commitment (AOC) is a construct related to belonging in the workplace literature. Because AOC assesses emotional attachment to the organization in addition to having one item that assesses a sense of belonging to the

organization (Allen & Meyer, 1990), it is expected that the GBW will have a strong association with AOC. However, AOC is designed to measure commitment to the organization and does not include assessments related to coworkers, supervisors, and beyond interpersonal relationships. Consequently, AOC will be used to assess discriminant validity.

Further, a sense of belonging is similar but distinct from workplace support. That is, support in the workplace literature generally focuses on support from certain ranks in the organization such as from the organization, supervisor, and coworkers. Perceived organizational support involves employee perceptions that the organization values their contributions and cares about their well-being (Eisenberger, Huntington, Hutchison, & Sowa, 1986).In this way, the organization is perceived as having a positive relationship with the employee. Supportive supervision and coworker support is similar to the GBW in that it involves supervisors and coworkers treating their subordinates and fellow employees in a caring and helpful way (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002; Settoon & Mossholder, 2002), which reflects the aspects in the GBW that involve employees' sense of belonging with their supervisor and coworkers. These perceptions of support should increase an employee's sense of belonging at work in that positive relationships are being formed. However, because the GBW is an assessment across the ranks of the organization and beyond, it should demonstrate adequate discriminant validity with perceptions of support from the organization and from within the organization. As such, organizational, supervisor, and coworker support will be assessed for discriminant validity.

Additional constructs related to a general sense of belonging at work that will be examined to assess discriminant validity include group cohesiveness, team cohesion, supervisor mentoring, ethical leadership, and interpersonal interactions with the supervisor.

The group cohesiveness, team cohesion, supervisor mentoring, ethical leadership, and interpersonal interactions with the supervisor constructs should be positively related to the GBW because they involve relationships that when adequately achieved are generally positive in nature. Group cohesiveness are employee perceptions in regard to how positive and effective the work group is (Bernthal & Insko, 1993); team cohesion is an employee's perception on how effective and unified the team is related to work tasks (task orientation) and if employees engage in interpersonal social activity outside of work (social orientation; Carless & Paola, 2000); supervisor mentoring is an employee's perception that their supervisor takes a personal interest in the employee's career, develops a friendship with the employee, and provides special coaching to the employee (Scandura & Ragins, 1993); ethical leadership is an employee's perception that their supervisor treats employees fairly and expects others to do the same (Brown, Trevino, & Harrison, 2005); and supervisor interpersonal interactions addresses the regular interpersonal contact feature put forth by Baumeister and Leary (1995) in that the supervisor interpersonally interacts with the employee in work-related and social ways. Each of these constructs should positively associate with an employee's sense of belonging at work in that positive relationships are being formed through positive interactions. However, these constructs are assessments related to interpersonal interactions and the GBW assesses a sense of belonging at work that transcends interpersonal relationships. In addition, these constructs are assessed at specific levels of the organization (i.e., group, team, and supervisory), whereas the GBW assesses a sense of belonging at work across rankings of the organization. As such, group cohesiveness, team cohesion, supervisor mentoring, ethical leadership, and supervisor interpersonal interactions will be assessed for discriminant validity.

In contrast, adult anxious and avoidant attachment orientations are relationship styles that should demonstrate strong negative associations with the GBW. These attachment styles are defined as individuals who tend to struggle in maintaining positive relationships due to feelings and worry that others will not be supportive in relationships (anxious attachment) and in the development of relationships due to feelings of mistrust in others (avoidant attachment; Brennan, Clark, & Shaver, 1998). Because achieving a sense of belonging at work involves, at some level, developing and maintaining positive interpersonal relationships at work, it is expected that the GBW will have negative associations with anxious and avoidant attachment orientations at work. Moreover, research in the social literature has shown adult anxious and avoidant attachments to have negative associations with a general sense of belonging (e.g., Malone et al., 2012). However, these constructs assess only interpersonal relationship orientations, whereas the GBW assesses a general sense of belonging at work that not only involves interpersonal relationships but also a sense of belonging at work that transcends interpersonal relationships. As such, adult anxious and avoidant attachment orientations at work will be assessed for discriminant validity.

To demonstrate predictive validity, included in the current research will be workplace outcomes including organizational identification, organization-based self-esteem, employee engagement, and job satisfaction. Organizational identification is defined by an employee identifying with the organization in that the employing organization has personal meaning to the employee (Mael, & Ashforth, 1992); organization-based self-esteem is employee perceptions that they are valued, considered competent, and appreciated at work (Pierce, Gardner, Cummings, & Dunham, 1989); employee engagement is an assessment of how an employee approaches their work in regard to vigor, absorption, and dedication (Scaufeli et

al., 1992); and job satisfaction is an overall perception that the employee is satisfied with their job. These workplace outcomes are generally thought to be desirable workplace outcomes and have consistently shown positive associations with positive workplace constructs such as organizational, supervisor, and coworker support (e.g., Schaufeli et al., 2002). Because a sense of belonging has consistently shown positive associations with positive outcomes in the literature (see review by Baumeister & Leary, 1995), these desirable workplace outcomes will be assessed for predictive validity.

Finally, the GBW will be examined across multiple studies using advanced statistical techniques to assess the psychometric properties of the measure. Testing the scale across multiple studies can add to the generalizability of the scale in that not only are independent studies being conducted, but also different samples. More specifically, a large sample in the first study can be used to: (a) examine the factor structure of the measure, (b) test the factor solution, and (c) assess the scale's internal consistency. A second study can be used to examine convergent, discriminant, and predictive validity. Then, a large sample in the third study can be used to: (a) examine the factor structure of the measure, (b) test the factor solution, and (c) assess the scale's internal consistency using a sample with different characteristics than the first two studies. In addition, in the final study a confirmatory factor analysis will be conducted to assess if the data is a good fit to the conceptual model provided the factor structure of the measure remains intact across samples. The sample characteristics of the first two studies will include undergraduate student work samples, and the third study will be a field sample using employees from an energy organization (i.e., a pipeline operator).

METHOD

Studies 1 & 2

The primary objectives of Studies 1 and 2 were to examine the psychometric properties and validity of the General Belonging at Work (GBW) scale. These examinations would include: (a) exploratory factor analysis to assess the factor structure of the GBW; (b) parallel analyses to test the factor solution; (c) reliability assessments to examine internal consistency of the scale; and (d) bivariate analyses to assess convergent, discriminant, and predictive validity.

Sample Characteristics

Participants were working undergraduate students from a large university in the southwest United States. Participants were ages 18 and older, employed 20 hours or more per week, and reported to a supervisor.

Participants for Study 1 (n = 542) consisted of 450 females (83.0%) and 89 males (16.4%) with 3 missing data (0.6%). The average age was 24.28 (SD = 6.28) years old with an age range of 18 to 63 years. By race, 174 were Hispanic (32.1%), 152 White or Caucasian (28.0%), 97 Black or African American (17.9%), 91 Asian or Pacific Islander (16.8%), and 28 other (5.2%).

Participants for Study 2 (n = 116) consisted of 104 females (89.7%) and 11 males (9.5%) with 1 missing data (0.9%). The average age was 23.82 (SD = 5.23) years old with an age range of 18 to 43 years. By race, 32 were Hispanic (27.6%), 29 White or Caucasian (25.0%), 25 Asian or Pacific Islander (21.6%), 21 Black or African American (18.1%), and 9 other (7.8%).

Procedures

Students were recruited using the Sona online pool management system. The surveys were electronically administered online using the Qualtrics survey software for data collection. Participants were informed of the purpose of the surveys and that their participation was voluntary. Participants were able to access the surveys by clicking on a link provided within an email that was sent to them after they signed up. Participants were able to access the surveys anywhere that they had internet access and could opt out of the surveys at any time.

Instruments used in the surveys were self-report measures. Participants entered their responses by clicking on the appropriate response. Upon completing the surveys and submitting their responses, re-entry into the surveys was not allowed. Participants received partial credit for their school courses for their participation.

Measures

The following measures for Studies 1 and 2 can be found in Appendix A. Included in Appendix A are the stem directions, response choices, and items for each scale.

Studies 1 & 2

General Belonging at Work (GBW). The GBW is an 8-item measure to assess an employee's general sense of belonging at work. The GBW consists of four positive-keyed and four negative-keyed items. The GBW is conceptually similar to the General Belongingness Scale (GBS; Malone et al., 2012) in that it is devised to assess a general sense of belonging across different interpersonal relationships to a general sense of belonging that transcends interpersonal relationships. The GBW is devised to assess a general sense of belonging at work across ranks of the organization (i.e., coworkers, supervisors, and the

organization) to a general sense of belonging at work that transcends those relationships. Sample items include, "My coworkers do not include me in their plans" and "When I am at work, I have a sense of belonging." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. The GBW was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased general belonging at work ($\alpha = .88$, and .84, respectively)

Study 2

      Psychological Sense of Organizational Membership (PSOM). PSOM is an 18-item measure to assess an employee's sense that they are a member of, belong to, and are appreciated by the employing organization (Cockshaw & Shochet, 2010). Sample items include, "I feel like a real part of my organization" and "People in my organization know I can do good work." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. PSOM was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased membership to the organization ($\alpha = .93$).

      Affective Organizational Commitment (AOC). AOC is a 6-item measure to assess an employee's emotional commitment to the organization (Allen & Meyer, 1990). Sample items include, "I would be very happy to spend the rest of my career with this organization" and "I do not feel emotionally attached to this organization." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. AOC was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*).

Negative-keyed items were reverse-scored. Higher scores indicate increased affective

commitment to the organization (α = .83).

Organizational Identification (OID). OID is a 6-item measure to assess an

employee's identification with the organization (Mael & Ashforth, 1992). Sample items

include, "When I talk about this organization, I usually say 'we' rather than 'they'" and "This

organization has a great deal of personal meaning for me." Participants were directed to

select a response to indicate the extent they *agree* or *disagree* with each statement. OID was

scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*).

Higher scores indicate increased identification with the organization (α = .85).

Organization-Based Self-Esteem (OBSE). OBSE is a 7-item measure to assess an

employee's sense that they are valued, considered competent, and appreciated at work

(Pierce et al., 1989). Sample items include, "I am important at work" and "I am appreciated

at work." Participants were directed to select a response to indicate the extent they *agree* or

disagree with each statement. OBSE was scored using a Likert-type response format from 1

(*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased self-esteem and

competence at work (α = .95).

Perceived Organizational Support (POS). POS is an 8-item measure to assess an

employee's perception that the organization values their contributions and cares for their

well-being (Eisenberger et al., 1986). Sample items include, "My organization values my

contribution to its well-being" and "My organization cares about my general satisfaction at

work." Participants were directed to select a response to indicate the extent they *agree* or

disagree with each statement. POS was scored using a Likert-type response format from 1

(*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased perceived organizational support ($\alpha = .94$).

Perceived Supervisor Support (PSS). PSS is an 8-item measure to assess an employee's perceived support and care they receive from their supervisor. PSS was adapted from the Perceived Organizational Support scale (Eisenberger et al., 2002). Sample items include, "My supervisor really cares about my well-being" and "My supervisor shows little concern for me." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. PSS was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased perceived supervisor support ($\alpha = .90$).

Perceived Coworker Support (PCS). PCS is a 6-item measure to assess an employee's perceived support and appreciation they receive from their coworkers. PCS was adapted from the Interpersonal Citizenship Behavior scale (Settoon & Mossholder, 2002). Sample items include, "My coworkers go out of the way to help me with work-related problems" and "My coworkers always make me feel appreciated." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. PCS was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased perceived coworker support ($\alpha = .95$).

Group Cohesiveness. Group cohesiveness is a 4-item measure to assess an employee's perceptions in regard to how positive and effective the work group is (Bernthal & Insko, 1993). Sample items include, "My workgroup is focused on keeping a positive social atmosphere" and "I feel that my workgroup is focused on completing our tasks." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each

statement. PSS was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased group cohesiveness ($\alpha = .90$).

Team Cohesion. Team cohesion is two 4-item measures to assess an employee's perceptions in regard to how effective and cohesive the team is related to work tasks (task orientation) and interpersonal social activity outside of work (social orientation; Carless & Paola, 2000). Sample items include, "My workgroup is united in trying to reach its goals for performance" and "My workgroup would like to spend time together outside of work hours." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Team cohesion task and social orientation were scored using Likert-type response formats from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased team cohesion in regard to (a) task orientation ($\alpha = .64$) and (b) social orientation ($\alpha = .83$).

Supervisor Mentoring. Supervisor mentoring is a 12-item measure that assesses the extent that an employee perceives their supervisor takes a personal interest in the employee's career, develops a friendship with the employee, and provides special coaching for the employee (Scandura & Ragins, 1993). Sample items include, "My supervisor takes a personal interest in my career" and "My supervisor gives me special coaching on the job." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Supervisor mentoring was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased mentoring provided by the supervisor ($\alpha = .95$).

Ethical Leadership. Ethical leadership is an 8-item measure that assesses the extent that an employee perceives their supervisor as being ethical and fair in their treatment of

subordinates and in the decisions they make. These items were drawn from the original 10-item measure (Brown et al., 2005). Sample items include, "My supervisor makes fair and balanced decisions" and "My supervisor disciplines employees who violate ethical standards." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Ethical leadership was scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased ethical leadership ($\alpha = .92$).

Supervisor Interpersonal Interaction. Supervisor interpersonal interaction is a 4-item measure that assesses how often the supervisor interacts with the employee in work-related and social ways. The items were developed for the current research. Sample items include, "How frequently does your supervisor initiate work-related interaction with you" and "How frequently do you interact with your supervisor informally or socially at work?" Participants were directed to select a response to indicate the frequency of interpersonal interaction with their supervisor. Supervisor interpersonal interaction was scored using a frequency response format from 1 (*never*) to 7 (*always*). Higher scores indicate increased interpersonal interaction with the supervisor ($\alpha = .85$).

Employee Engagement. Employee engagement is a 9-item measure to assess an employee's level of engagement in their work (Scaufeli et al., 1992). The scale has three dimensions labeled vigor, absorption, and dedication. Sample items include, "I am enthusiastic about my job" and "I get carried away when I am working." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Employee engagement was scored using a Likert-type response format from 1

(*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate increased employee

engagement ($\alpha = .94$).

Job Satisfaction. Job satisfaction is a 1-item measure to assess an employee's level

of how satisfied they are with their job. This item was developed for the current research.

The item was, "Overall, I am satisfied with my job." Participants were directed to select a

response to indicate the extent they *agree* or *disagree* with the statement. Job satisfaction was

scored using a Likert-type response format from 1 (*strongly disagree*) to 7 (*strongly agree*).

Higher scores indicate increased job satisfaction.

Loneliness at Work. Loneliness at work is an 8-item measure to assess an

employee's perceptions that they lack social companionship or emotional connectivity at

work. The items were adapted from the UCLA-8 loneliness scale (Hays & DiMatteo, 1987)

to fit a workplace context. Sample items include, "At work I lack companionship" and

"When I am at work, people are around me but not with me." Participants were directed to

select a response to indicate the extent they *agree* or *disagree* with each statement.

Loneliness at work was scored using a Likert-type response format from 1 (*strongly*

disagree) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores

indicate increased loneliness at work ($\alpha = .89$).

Adult Attachment Orientations at Work. Adult attachment orientations at work are

two 7-item measures to assess an employee's feelings that they are fearful or worry that

others will not provide them the support or closeness they desire in interpersonal

relationships (anxious attachment orientation) or avoid developing interpersonal relationships

due to a mistrust in others (avoidant attachment orientation; Brennan et al., 1998). The items

were adapted to fit a workplace context. Sample items include, "I get frustrated when others

at work are not around as much as I would like" and "When I am at work I try to avoid getting too close to others." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Adult attachment orientations at work were scored using Likert-type response formats from 1 (*strongly disagree*) to 7 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased (a) anxious attachment orientation ($\alpha = .91$) and (b) avoidant attachment orientation ($\alpha = .88$).

RESULTS

Study 1

The primary aim of Study 1 was to examine the dimensionality of the scale. Exploratory factor analysis (EFA) was used to examine the factor structure. Principal axis factoring was conducted for factor extraction and the factors were allowed to correlate using promax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .87, indicating strong factorability of the item correlation matrix. One primary factor emerged with an eigenvalue of 4.41. None of the other factors had an eigenvalue that exceeded 1.0. Accordingly, evidence suggesting a 1-factor solution was predominant. A parallel analysis (Horn, 1965) using SPSS syntax produced by O'Connor (2000) was conducted to test the 1-factor solution. At a 99% confidence percentile, 1000 permutations of the original data were run resulting in confirmation of an unambiguous 1-factor solution (i.e., the Factor 1 raw data eigenvalue = 4.41 surpassed the Factor 1 randomly generated eigenvalue = 1.27; and for Factor 2 the raw data eigenvalue = 0.96 was below the Factor 2 randomly generated eigenvalue = 1.18). The factor accounted for 55.2% of the variance, and the standardized factor loadings ranged in magnitude from .79 to .62.

Considering the analyses above suggested a unidimensional measure, a reliability assessment was conducted using Cronbach's alpha. Coefficient alpha = .88 was high, demonstrating high internal consistency. The average inter-item correlation (AIC) was .49. This statistic demonstrates that although the items were highly correlated, their correlations were not so high as to suggest they were overly redundant. The mean score of the measure was 43.3 (SD = 8.7). A *t*-test showed no significant differences in the means by gender.

Study 2

The primary aim of Study 2 was to examine validity of the scale in that the construct of belonging at work as measured by the General Belonging at Work (GBW) scale was convergent, discriminant, and predictive with other related psychological constructs. Pearson's product-moment correlation coefficients were examined to assess the linear dependence between the variables. For a full listing of the bivariate correlations with the GBW, see Table 1.

Bivariate correlations were high for the GBW with the related constructs of psychological sense of organizational membership (PSOM) ($r = .70$) and loneliness at work ($r = -.77$). These high correlations were expected as PSOM has several items in the scale that relate to belonging at work, and loneliness at work is conceptually similar to a lack of belonging at work. Moreover, loneliness has shown similar associations with a general sense of belonging in the social sciences (e.g., Malone et al., 2012). As a result of these strong correlations, convergent validity was supported as these constructs were proposed as being the most conceptually related and the expectations were that they would have the highest associations with the GBW among all of the constructs presented in the current study.

Though affective organizational commitment has one item that directly assesses a sense of belonging to the organization (i.e., *I feel a sense of belonging to my organization*), the other items assess a sense of emotional attachment and commitment to the organization (Allen & Meyer, 1990). The GBW measures a sense of belonging to the organization, but also includes assessments on an interpersonal level and a sense of belonging that transcends relationships with the organization and employees in the organization. Subsequently, AOC was assessed for discriminant validity. As expected, AOC had a strong correlation ($r = .48$), but the coefficient was noticeably lower than the PSOM and loneliness at work correlations. Discriminant validity with AOC was supported.

Moreover, achieving a general sense of belonging at work involves positive relationships with the organization, supervisors, and coworkers. Supportive relationships generally can result in increased positivity in said relationships. Accordingly, perceived support from the organization ($r = .47$), supervisor ($r = .41$), and coworkers ($r = .46$) all showed strong to moderate positive associations with the GBW. These coefficients were similar to AOC but noticeably lower than PSOM and loneliness at work. Discriminant validity with organizational, supervisor, and coworker support was supported.

The anxious and avoidant adult attachment styles are relationship orientation constructs. It was expected that associations with these constructs would be strong but in the opposite directions. That is, anxious and avoidant attachment styles have shown to be constructs that inhibit adults from adequately securing positive interpersonal relationships which is counter to a sense of belonging that is, in part, achieved via having positive interpersonal relationships. Accordingly, the associations between the workplace anxious and avoidant attachment orientations and the GBW were negative and strong to moderate ($r =$

−.43, and $r = -.40$, respectively). Discriminant validity with adult anxious and avoidant attachment orientations was supported.

Lastly, because a sense of belonging has consistently shown positive associations with positive constructs in the social sciences (e.g., self-esteem, happiness, life satisfaction; Malone et al., 2012), it was expected that the GBW would have positive associations with work-related constructs that are depicted in the literature as being desirable workplace outcomes. In this way, predictive validity could be demonstrated. Accordingly, organizational identification ($r = .35$), organization-based self-esteem ($r = .52$), employee engagement ($r = .42$), and job satisfaction ($r = .38$) all showed moderate to strong positive associations with the GBW. Predictive validity was supported.

In sum, the data supported convergent, discriminant, and predictive validity for the GBW with related workplace psychological constructs. A large majority of the coefficients were moderate to strong, and all were in the expected direction. Because the loneliness at work measure showed a high association with the GBW, additional supplemental analyses were conducted to examine the distinctiveness of the two constructs. Below are those analyses.

Supplemental Analyses

Because GBW and loneliness at work showed a high correlation, hierarchical linear regressions were conducted on workplace outcomes to examine incremental validity of the GBW beyond that of loneliness at work. If significant incremental validity is demonstrated, this could add empirical support that the two constructs are distinct in that they differentially predict outcomes. The workplace outcomes tested were affective organizational commitment, organizational identification, organization-based self-esteem, employee engagement, and job

satisfaction. The GBW added significant incremental variance beyond that of loneliness at work in predicting affective organizational commitment (GBW; $R^2 = .238$, $\Delta R^2 = .028$, $\beta = .26$, $p = .042$; loneliness at work, $\beta = -.28$, $p = .029$); organizational identification (GBW; $R^2 = .051$, $\Delta R^2 = .074$, $\beta = .43$, $p = .003$; loneliness at work, $\beta = .11$, $p = .445$); and organization-based self-esteem (GBW; $R^2 = .276$, $\Delta R^2 = .032$, $\beta = .28$, $p = .024$; loneliness at work, $\beta = -.31$, $p = .015$). The GBW did not add incremental variance for employee engagement or job satisfaction.

In addition, an exploratory factor analysis (EFA) using principal axis factoring for factor extraction with a promax rotation was conducted to assess if items would cross-load among the factors. Cross-loadings indicate how strongly each item loads from one factor to another. A .40 cutoff of the standardized loadings was employed. That is, items from one factor that cross-loaded onto the other at .40 or above would be assessed as being sufficiently related to other factor (Hair et al., 2007). The GBW and loneliness at work items were entered into the EFA. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .88, indicating strong factorability of the item correlation matrix. None of the items for either of the measures exceeded a cross-loading of .40. However, a high inter-factor correlation of .72 was found.

Overall, significant incremental variance was established for three of the five workplace outcomes, plus the EFA did not show any cross-loadings that exceeded .40. Taking into account the zero-order correlation of the GBW and loneliness at work was below .80, the significant incremental variance of the GBW in predicting the workplace outcomes, and the EFA not showing any cross-loadings of the items above .40 the data generally support two distinct constructs. However, $-.77$ is a high zero-order correlation, significant

incremental validity was not shown for two of the workplace outcomes, and in addition to the high inter-factor correlation of the EFA four of the loneliness at work items showed cross-loadings above .30.

METHOD

Study 3

Study 3 was conducted to satisfy two primary objectives. First, to further assess the validity of the General Belonging at Work (GBW) scale. Second, to test the hypotheses of the study model.

In regard to scale validation, Study 3 was used to examine: (a) the psychometric properties of the GBW using a large sample that was distinct from the samples used in Studies 1 and 2 (i.e., a field sample from a large energy organization versus undergraduate student work samples from a university setting); and (b) if the data were a good fit to the conceptual model. In regard to hypotheses testing, Study 3 was used to examine: (a) direct, (b) moderating, and (c) indirect effects of the proposed study model.

Sample Characteristics

Participants were employees ages 18 and older from a large energy organization. Industry type was a pipeline operator. Examples of job types included pipeline technicians, field operators, plant operators, and terminal operators.

Participants for Study 3 were 1017 employees of the pipeline operator company. This was a response rate of 66.2%. The sample consisted of 148 females (14.6%) and 869 males (85.4%). The average age was 45.32 (SD = 10.86) years old with an age range of 22 to 73 years. By race, 884 were White or Caucasian (86.9%), 47 Black or African American (4.6%), 41 Hispanic or Latino (4.0%), 22 Asian (2.2%), and 23 other (2.3%).

Average length of time employed by the organization was 8.07 years (SD = 9.35) with a range of 0 to 42 years. In regard to how long each employee had worked with their current supervisor, 144 (14.2%) worked with their supervisor for less than 6 months, 146 (14.4%) for 6 months to 1 year, 374 (36.8%) for 1 to 3 years, 206 (20.3%) for 3 to 6 years, and 141 (13.9%) for more than 6 years, and 6 did not report their tenure (0.6%). By education level, 132 (13.0%) had a graduate/professional degree, 334 (32.8%) completed college, 336 (33.0%) had some college, 205 (20.2%) completed high school, 5 (0.5%) had some high school, and 5 (0.5%) completed grade school.

Procedures

Prior to the launch of the survey, employees were sent information by the organization informing them of the upcoming survey and that the project was being conducted to gain a better understanding of the organization's safety climate. The survey was electronically administered online using the Qualtrics survey software for data collection. Employee email addresses were provided by the organization. At the onset of the launch of the survey, employees were sent a recruitment email for their participation in the survey. They were informed further of the purpose of the survey and that their participation was voluntary. Moreover, the email informed the employees that confidentiality was of high importance to the organization and the research team, and that their responses would be reported back to the organization only in aggregate form. That is, no individual responses would be shared with the organization or any other entity. Those employees who chose to participate were able to access the survey by clicking on a link provided within the recruitment email. Participants could opt out of the survey at any time. Employees were able

to access the survey anywhere that they had internet access, and were allowed work time to participate in the survey. Data collection covered a 2-week period.

Instruments used in the survey were self-report measures. Participants entered their responses by clicking on the appropriate response. Upon completing the survey and submitting their responses, re-entry into the survey was not allowed. Following the 2-week period the survey was closed and data collection ceased.

Measures

The following measures for Study 3 can be found in Appendix B. Included in Appendix B are the stem directions, response choices, and items for the scale.

General Belonging at Work (GBW). The GBW is an 8-item measure to assess an employee's general sense of belonging at work. The GBW consists of four positive-keyed items and four negative-keyed items. The GBW is conceptually similar to the General Belongingness Scale (GBS; Malone et al., 2012) in that it is devised to assess a general sense of belonging across different relationships to a general sense of belonging that transcends interpersonal relationships. The GBW is devised to assess a general sense of belonging at work across ranks of the organization (i.e., coworkers, supervisors, and the organization) to a general sense of belonging at work that transcends those relationships. Sample items include, "My coworkers do not include me in their plans" and "When I am at work, I have a sense of belonging." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. The GBW was scored using a Likert-type response format from1 (*strongly disagree*) to 5 (*strongly agree*). Negative-keyed items were reverse-scored. Higher scores indicate increased general belonging at work ($\alpha = .89$).

Quantitative Work Overload. Quantitative work overload is a 4-item measure to assess an employee's perception that they have too much work to do and not enough time to complete it or do it well (Ivancevich & Matteson, 1980). Sample items include, "The amount of work I am expected to do is too great" and "I never seem to have enough time to get everything done at work." Participants were directed to select a response to indicate the extent they *agree* or *disagree* with each statement. Quantitative work overload was scored using a Likert-type response format from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate increased quantitative work overload ($\alpha = .92$).

Feelings of Fatigue. Feelings of fatigue is a 5-item measure to assess an employee's perception on how often they felt physically fatigued over the last 30 days (Vercoulen, et al., 1994). Sample items include, "Physically, I felt exhausted" and "I felt weak." Participants were directed to select a response to indicate their feelings at work over the past 30 days. Feelings of fatigue was scored using a frequency format from 1 (*never*) to 5 (*always*). Higher scores indicate increased feelings of fatigue ($\alpha = .93$).

Emotional Exhaustion. Emotional exhaustion is a 5-item measure to assess an employee's perception in regard to depletions in mental and emotional energies. This instrument was adapted from the Oldenburg Burnout Inventory (OBI; Halbesleben & Demerouti, 2005). Sample items include, "There are days that I feel mentally tired before I go to work" and "During my work, I often feel emotionally drained." Participants were directed to select a response to the extent they *agree* or *disagree* with each statement. Emotional exhaustion was scored using a Likert-type response format from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate increased emotional exhaustion ($\alpha = .88$).

Safety Motivation. Safety motivation is a 4-item measure to assess an employee's valuation of workplace safety and extra efforts to maintain workplace safety (Griffin & Neal, 2000). Sample items include, "I feel that it is worthwhile to volunteer for safety related tasks" and "I believe that it is worthwhile to put extra effort into maintaining safety." Participants were directed to select a response to the extent they *agree* or *disagree* with each statement. Safety motivation was scored using a Likert-type response format from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate increased safety motivation ($\alpha = .89$).

Safe Behavior. Safe behavior is a 2-item measure drawn from the Griffin and Neal (2000) safe behavior scale. The items are used to assess employee behaviors related to workplace safety in that they put in extra effort and voluntarily carry out tasks or activities to improve workplace safety. The items are, "I put in extra effort to improve the safety of the workplace" and "I voluntarily carry out tasks or activities that help to improve workplace safety." Participants were directed to select a response to the extent they *agree* or *disagree* with each statement. Safe behavior was scored using a Likert-type response format from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores indicate increased safe behavior (bivariate correlation = .76).

Self-Report Workplace Accidents. Self-report workplace accidents is a 5-item measure that was adapted from Barling, Loughlin, and Kelloway's (2002) Self-Related Events scale. These items were adapted to meet the types of accidents that would be most likely to be incurred in the type of energy organization being sampled here. Sample items include, "Contact with chemical: ingestion, inhalation, skin" and "Contact with thermal extremes (hot or cold temps)." Participants were directed to select a response to indicate how frequently they have been in the following situation in the last six months. Self-report

accidents was scored using a frequency format from 1 (*never*) to 5 (*always*). Higher scores indicate increased workplace accidents (α = .69).

Self-Report Workplace Injuries. Self-report workplace injuries is a 9-item measure drawn from Kuorinka et al.'s (1987) Work-related Musculoskeletal Strains and Disorders (WMSDs) scale. These items assess injuries that occur related to the workplace. Sample items include areas of the body that can be injured, "Upper back" and "Knees." Participants were directed to select a response to indicate how frequently they had experienced an injury to the body part in the last six months. Self-report workplace injuries was scored using a frequency format from 1 (*never*) to 5 (*always*). Higher scores indicate increased workplace injuries (α = .88).

RESULTS

Scale Validation

Exploratory factor analysis (EFA) was used to examine the factor structure of the GBW. Principal axis factoring was conducted for factor extraction and the factors were allowed to correlate using promax rotation. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .89, indicating strong factorability of the item correlation matrix. One primary factor emerged with an eigenvalue of 4.60. None of the other factors had an eigenvalue that exceeded 1.0. Accordingly, evidence suggesting a 1-factor solution was predominant. A parallel analysis (Horn, 1965) using SPSS syntax produced by O'Connor (2000) was conducted to test the 1-factor solution. At a 99% confidence percentile, 1000 permutations of the original data were run resulting in confirmation of an unambiguous 1-factor solution (i.e., the Factor 1 raw data eigenvalue = 4.60 surpassed the Factor 1 randomly generated eigenvalue = 1.19; and for Factor 2 the raw data eigenvalue = 0.82 was below the

Factor 2 randomly generated eigenvalue = 1.13). The factor accounted for 57.5% of the

variance, and the standardized factor loadings ranged in magnitude from .82 to .61.

A confirmatory factor analysis was used to examine if the data were a good fit to the

conceptual model. The following goodness-of-fit indices and cutoffs were used to identify a

well-fitting model: Comparative fit index (CFI) and Tucker-Lewis index (TLI) values of .90

or higher; and root mean square error of approximation (RMSEA) value of .08 or lower.

Based on the EFA results of the three studies, a 1-factor model using SPSS Amos Version 24

was specified and the items were allowed to load on one factor. The initial fit of the model

showed a good fit index for the CFI (.91), but the TLI (.87) was somewhat low and the

RMSEA was high (.138, 90% CI = .127–.150). Upon inspection of the modification indices,

it was determined that four pairs of residuals were moderately correlated providing model fit

issues. It was reasonable that the two strongest correlated residuals were items that had

similar wording in regard to a sense of belonging provided by supervisors and coworkers.

After allowing these four pairs of residuals to correlate, the data were a good fit to the

conceptual model (χ^2 = 120.29, df = 16, CFI = .98, TLI = .96, and $RMSEA$ = .078, 90% CI =

.066–.092). See Table 2 for the confirmatory factor analysis results.

Considering the analyses above suggested a unidimensional measure, a reliability

assessment was conducted using Cronbach's alpha. Coefficient alpha = .89 was high,

demonstrating high internal consistency. The average inter-item correlation (AIC) was .51.

This statistic demonstrates that although the items were highly correlated, their correlations

were not so high as to suggest they were overly redundant.

The mean score of the measure was 32.1 (SD = 5.2). A t-test showed no significant

differences in the means by gender. Using the Microsoft® Word program, readability of the

GBW was assessed at the 5th grade level (Flesch-Kinkaid Grade Level = 5.1). See Table 3

for a list of the scale items with their respective standardized factor loadings.

Hypotheses Testing

Descriptives

Table 4 presents the descriptive statistics, reliability coefficients, and intercorrelation

matrix. As shown in Table 4, quantitative work overload was positively related to feelings of

fatigue and emotional exhaustion ($r = .50$, and $.57$, respectively), and negatively related to

safety motivation ($r = -.14$). General belonging at work was negatively related to feelings of

fatigue and emotional exhaustion ($r = -.35$, and $-.48$, respectively), and positively related to

safety motivation ($r = .39$). Feelings of fatigue and emotional exhaustion were negatively

related to safe behavior ($r = -.12$, and $-.24$, respectively). Safety motivation was negatively

related to accidents and injuries ($r = -.12$, and $-.12$, respectively), and positively related to

safe behavior ($r = .55$).

These associations are consistent with the direct effect Hypotheses 1a-5c. The

associations were in the hypothesized directions and all of the correlations were statistically

significant. The direct effects of Hypotheses 1a-5c are further examined later in this Results

section using simultaneous linear regression to assess the independent variables' predictive

utility on the dependent variables.

Measurement Issues

Due to the limitation of survey length, scales in some circumstances were shortened.

Subsequently, safe behavior was assessed using only two items. The use of multiple,

heterogeneous indicators enhances construct validity in the sense that it increases the

likelihood of adequately identifying the construct of interest. However, in largescale data

collections organizational resources and survey time constraints often mean that only a limited number of items are available to assess a particular construct. As such, it is not uncommon to find questionnaires having no more than two indicators to gauge a particular self-assessment (Eisinga, Grotenhuis, & Pelzer, 2013). Generally, it has been accepted that to use reliability assessments such as Cronbach's coefficient alpha for unidimensional constructs a minimum of three items is required (e.g., Sainfort & Booske, 2000). However, it has been argued that using bivariate assessments such as Pearson's product-moment correlation coefficient to assess internal consistency between 2-item measures is acceptable (e.g., Michal et al., 2010). Accordingly, the two safe behavior items showed a high Pearson's product-moment correlation coefficient ($r = .76$).

In addition, because all the measures in the current investigation were responded to by the same source, a series of confirmatory factor analyses were conducted to test the distinctiveness of the constructs. Consequently, the hypothesized 8-factor model was compared to three nested models. The initial 8-factor model fit the data well (*CFI* = .92, *TLI* = .91, *RMSEA* = .051, 90% CI = .049−.053). Because accidents and injuries are conceptually similar safety outcomes in that participants who perceive they were involved in more accidents may be more inclined to perceive they were injured as a result of those accidents, the two constructs were allowed to load on the same factor. This 7-factor model did not improve model fit ($\Delta\chi^2 = 422.98$, $\Delta df = 7$, $p < .01$). Further, because feelings of fatigue and emotional exhaustion are conceptually similar in that both are perceptions of energy depletions, these constructs were allowed to load on to the same factor. This 7-factor model did not improve model fit ($\Delta\chi^2 = 1917.28$, $\Delta df = 7$, $p < .01$). Lastly, because safety motivation and safe behavior are conceptually similar in they both involve extra-role

participation in regard to workplace safety, these two constructs were allowed to load on the same factor. This 7-factor model did not improve model fit ($\Delta\chi^2 = 967.52$, $\Delta df = 7$, $p < .01$). Results of the confirmatory factor analyses are presented in Table 5.

In total, the 2-item measure for safe behavior showed a bivariate correlation that exceeded .70, and the CFA model comparison results provided support that the 8-factor model used for the study here was a better fit to the data then the three alternative 7-factor models. Accordingly, the examinations that follow will retain the 2-item measure of safe behavior as a dependent variable and the 8-factor model for hypotheses testing.

Control Variables

Covariates for hypotheses testing will include age, gender, tenure with supervisor, organizational tenure, and education level. These constructs have demonstrated in the literature to be associated with workplace safety (e.g., Frone, 1998; Hayes, Perander, Smecko, & Trask, 1998; Siu et al., 2003) and/or in the current study demonstrated significant correlations with several of the safety constructs of interest. For example, in the current study females and higher education showed significant negative associations with accidents whereas as age, tenure with supervisor, and organizational tenure showed significant positive associations (see Table 4 for correlation coefficients). By including these covariates, outcomes can be assessed based on incremental validity provided by the predictors above and beyond demographic contributions that have shown or show significant associations with the study variables.

Tests of Direct Effects

Direct effects were examined using multiple regressions to measure the linear dependence between variables. The dependent variables were regressed on the control

variables and predictors which were entered into the model simultaneously. Multiple regression in SPSS was used to test the path A direct effects for Hypotheses 1a-c and 2a-c (i.e., independent variables to the mediators), and the path B direct effects for Hypotheses 3, 4, and 5a-c (i.e., the mediators to the dependent variables).

For the first series of tests involving the direct effects of quantitative work overload and general belonging at work (GBW), in addition to the demographic control variables, quantitative work overload was entered as a covariate for the GBW tests and vice versa. In this way, incremental variance of the job demand above and beyond that of the job resource in predicting the mediators could be examined and vice versa.

Consistent with Hypotheses 1a and 1b, quantitative work overload was positively related to feelings of fatigue and emotional exhaustion ($\beta = .43$, $t = 15.03$, $p < .001$, and $\beta = .47$, $t = 18.57$, $p < .001$, respectively). Hypotheses 1a and 1b were supported. However, although a bivariate assessment showed significant association for quantitative work overload with safety motivation, when entered into the regression with the covariates, quantitative work overload was not a significant predictor of safety motivation. Hypothesis 1c was not supported. Consistent with Hypotheses 2a-c, GBW was negatively related to feelings of fatigue and emotional exhaustion ($\beta = -.21$, $t = -7.42$, $p < .001$, and $\beta = -.33$, $t = -13.28$, $p < .001$, respectively), and positively related to safety motivation ($\beta = .38$, $t = 12.41$, $p < .001$). Hypotheses 2a-c were supported. See Table 6 for the regression results.

For the second series of tests involving the direct effects of feelings of fatigue, emotional exhaustion, and safety motivation, in addition to the demographic control variables, feelings of fatigue, emotional exhaustion, and safety motivation were entered as covariates for each of the tests as appropriate (i.e., emotional exhaustion and safety

motivation as controls for the feelings of fatigue test, feelings of fatigue and safety motivation as controls for the emotional exhaustion test, and feelings of fatigue and emotional exhaustion as controls for the safety motivation tests). In addition, the independent variables of quantitative work overload and GBW were included in the models to control for their effects on the dependent variables. In this way, incremental variance of the mediators above and beyond that of the job demand, job resource, and other mediators in predicting the dependent variable could be examined for each test.

Although a bivariate assessment showed a significant association for feelings of fatigue with safe behavior, when entered into the regression with the covariates, feelings of fatigue was not a significant predictor of safe behavior. Hypothesis 3 was not supported. Consistent with Hypothesis 4, emotional exhaustion was negatively related to safe behavior ($\beta = -.11$, $t = -2.89$, $p = .004$). Hypothesis 4 was supported. Although bivariate assessments showed significant associations for safety motivation with accidents and injuries, when entered into the regression with the covariates, safety motivation was not a significant predictor of accidents or injuries. Hypotheses 5a and 5b were not supported. Consistent with Hypothesis 5c, safety motivation was positively related to safe behavior ($\beta = .50$, $t = 18.06$, $p < .001$). Hypothesis 5c was supported. See Table 7 for the regression results.

In total, of the 11 direct effects tested above, 7 were found to be statistically significant. GBW showed strong predictive utility for all three of the dependent variables (i.e., feelings of fatigue, emotional exhaustion, and safety motivation). The four hypothesized direct effects that were not significant in these regression analyses also showed the weakest bivariate correlation coefficients (.12 to .14). The findings here support that the weak correlational relationships of quantitative work overload with safety motivation, feelings of

fatigue with safe behavior, and safety motivation with accidents and injuries were not able to hold when additional explanatory variables were entered into the regression models.

Tests of Moderating Effects

The SPSS PROCESS macro (Model 74) by Hayes (2013) was used to test the stage-two (path b) moderation effects for Hypotheses 6a-b, 7a-b, and 8. In these analyses, variables were centered at their mean to reduce issues of multicollinearity between the variables and provide enhanced interpretability of the results. Interactive terms were computed by cross multiplying the variables of interest. Control variables (i.e., age, gender, tenure with supervisor, organizational tenure, and education level) were entered in the first model along with the main effects. Interactive terms were entered in the second model to assess incremental variance.

In the tests for feelings of fatigue and emotional exhaustion, because these tests included parallel mediation, both main effects were included in the first model and both interaction terms were included in the second model. Consistent with Hypothesis 6a, the GBW × feelings of fatigue interactive term predicted accidents ($\beta = -.13$, $t = -2.73$, $p = .007$). The R^2 value was .16. The form of this interaction is presented in Figure 2. Though the feelings of fatigue-accidents relationship was significant among both low- and high-GBW employees (simple slope $\beta = .32$, $t = 6.29$, $p < .001$, and simple slope $\beta = .12$, $t = 1.99$, $p = .046$, respectively), the magnitude of the simple slope for low-GBW employees was noticeably stronger. Similarly, consistent with Hypothesis 6b, the GBW × feelings of fatigue interactive term predicted injuries ($\beta = -.10$, $t = -2.07$, $p = .039$). The R^2 value was .13. The form of this interaction is presented in Figure 3. Though the feelings of fatigue-injuries relationship was significant among both low- and high-GBW employees (simple slope $\beta = $

.33, $t = 6.35$, $p < .001$, and simple slope $\beta = .17$, $t = 2.87$, $p = .004$, respectively), the

magnitude of the simple slope for low-GBW employees was again noticeably stronger.

Hypotheses 6a and 6b were supported. Inconsistent with Hypothesis 7a-b, the GBW ×

emotional exhaustion interactive term did not significantly predict accidents or injuries. The

predictions here were that a general sense of belonging at work would interact with

emotional exhaustion, such that the effects of emotional exhaustion on (a) accidents and (b)

injuries would be stronger when a general sense of belonging at work is low. Hypotheses 7a

and 7b were not supported. See Table 8 for the hierarchical regression results.

Consistent with Hypothesis 8, the GBW × safety motivation interactive term

predicted safe behavior ($\beta = .24$, $t = 3.32$, $p < .001$). The R^2 value was .36. The form of this

interaction is presented in Figure 4. Though the safety motivation-safe behavior relationship

was significant among both low- and high-GBW employees (simple slope $\beta = .44$, $t = 13.17$,

$p < .001$, and simple slope $\beta = .60$, $t = 15.13$, $p < .001$, respectively), the magnitude of the

simple slope for high-GBW employees was noticeably stronger. Hypothesis 8 was supported.

See Table 9 for the hierarchical regression results.

In total, of the five moderating effects tested above, three were found to be

statistically significant. As expected, when participants were low in GBW the relationships

between feelings of fatigue and accidents and injuries were stronger. However, in the

examination where GBW interacted with safety motivation to predict safe behavior, when

participants were high in GBW the relationship between safety motivation and safe behavior

was stronger. Note that though the three interactive effects were significant, the effect sizes

were small. The two hypotheses that were not supported both involved the GBW × emotional

exhaustion interactive term to predict accidents and injuries.

Tests of Indirect Effects

To test mediation effects, significance testing for indirect effects was conducted. These tests include a product term derived by multiplying the regression coefficient of the mediator regressed on the independent variable and the regression coefficient of the dependent variable on the mediator while controlling for the independent variable. Because the indirect effect is not normally distributed, bootstrapping, which does not require the sampling distribution of the product term of the two variables to be normal, was more appropriate than the traditional Sobel test (Preacher & Hayes, 2008). PROCESS macro for SPSS (Model 4; Hayes, 2013) was used to test the indirect effects. Bootstrapping provided confidence intervals (CI), and 95% CI that did not include zero were assessed as being significant indirect effects of the independent variable on the outcome through the mediator. Feelings of fatigue, emotional exhaustion, and safety motivation examinations were conducted as parallel mediation tests where all three mediators were entered into the same model for each test.

The first set of tests involved the indirect effects of quantitative work overload on each of the workplace outcomes of accidents, injuries, and safe behavior through feelings of fatigue, emotional exhaustion, and safety motivation. As seen in Table 10, the 95% CI that did not include zero were through feelings of fatigue to accidents and injuries, and through emotional exhaustion to safe behavior. Hypotheses 9a, 9b, and 10c were supported. See Table 10 for the bootstrapping results for quantitative work overload.

The second set of tests involved the indirect effects of GBW on the workplace outcomes of accidents, injuries, and safe behavior through feelings of fatigue, emotional exhaustion, and safety motivation. As seen in Table 11, the 95% CI that did not include zero

were through feelings of fatigue to accidents and injuries, and through emotional exhaustion and safety motivation to safe behavior. Hypotheses 9d, 9e, 10f, and 11f were supported. See Table 11 for the bootstrapping results for GBW.

In total, only 7 of the 18 hypothesized indirect effects tests were found to be significant. Feelings of fatigue consistently mediated the quantitative work overload and GBW relationships with accidents and injuries. Moreover, emotional exhaustion consistently mediated the quantitative work overload and GBW relationships with safe behavior. The indirect effect of GBW to safe behavior through safety motivation was substantially stronger compared to the other indirect effects (.210 versus the next highest effect of .041).

Supplemental Analyses

Supplemental tests were conducted for the conditional indirect effects of GBW on accidents, injuries, and safe behavior for the significant interactive effects (i.e., through feelings of fatigue and safety motivation) at three values of the GBW moderator (i.e., one standard deviation below the mean, the mean, and one standard deviation above the mean). Similar to the mediation analyses provided above, because the indirect effect is not normally distributed, bootstrapping which does not require sampling distribution to be normal was more appropriate than the traditional Sobel test (Preacher & Hayes, 2008). For the tests, a moderated path analysis approach to integrate mediation and moderation was conducted (Edwards & Lambert, 2007). To assess if mediation exists at different levels of the moderator, 95% Confidence Intervals (CI) associated with the indirect effects that did not include zero indicated significant mediation.

The SPSS PROCESS macro (Model 74) by Hayes (2013) was used to test the mediation effects. For the GBW × feelings of fatigue interaction predicting accidents, the

95% CI did not include zero for all three levels of belonging at work tests. For the GBW $\times$ feelings of fatigue interaction predicting injuries, the 95% CI did not include zero for all three levels of GBW tests. For the GBW $\times$ safety motivation interaction predicting safe behavior, the 95% CI did not include zero for all three levels of GBW tests.

Similar to the indirect effect tests provided above, feelings of fatigue demonstrated mediation effects for GBW to accidents and injuries, and safety motivation demonstrated mediation effects for GBW to safe behavior. In these tests, these mediation effects held at all different levels of the GBW moderator. See Table 12 for the bootstrapping results at different levels of the GBW moderator.

DISCUSSION

The findings of the current investigation support that a general sense of belonging at work can serve as a job resource in regard to workplace safety. As predicted, general belonging at work showed significant negative associations with employee health impairments (i.e., feelings of fatigue and emotional exhaustion) and a positive association with employee engagement (i.e., safety motivation). Further, general belonging at work significantly mitigated the feelings of fatigue (i.e., depletions of physical energy) and accidents and injuries relationships, and strengthened the safety motivation and safe behavior relationship. Though these effects were small, they were obtained above and beyond other factors including the job demand quantitative work overload and demographic variables related to workplace safety. The results here testify to the potential usefulness of applying belongingness theory to predict both positive and negative constructs related to employee health impairments, engagement, and workplace safety outcomes.

In addition, a scale to measure a general sense of belonging at work was developed and validated (GBW; General Belonging at Work). The validation process included multiple studies and different sample characteristics (i.e., undergraduate student work samples and a field sample). The scale was developed based on belongingness theory (e.g., Baumeister & Leary, 1995; Hagerty et al., 1992) and was validated using advanced psychometric tests. Examinations demonstrated that the GBW is unidimensional with high internal consistency. These results were obtained from a large student work sample and a large field sample, adding to the generalizability validity of the GBW. Further, the findings provided support for convergent, discriminant, and predictive validity with related psychological constructs (see Table 1 for a list of correlation coefficients). Finally, following four pairings of residual error terms a confirmatory factor analysis supported the data were a good fit to the conceptual model. I argue that this is the first scale to be developed and validated related to a general sense of belonging at work. As such, standardization of measuring general belonging at work for future research can be increased. Moreover, because the GBW is a brief (8 items) and global measure, for applied research where items for scales are often limited, a strength of the GBW is its practicality. Note that the loneliness at work scale showed a bivariate correlation coefficient with the GBW of $-.77$. Though additional supplemental analyses were conducted to demonstrate the distinctiveness of the two constructs, at some level the evidence supports that a lack of belonging at work highly relates to a sense of feeling lonely at work. Though the social sciences have shown discriminant validity for a general sense of belonging and loneliness (e.g., Hagerty & Patusky, 1995; Malone et al., 2012), this may not hold in the workplace. Additional research in this regard could serve to present a clearer picture if a sense of general belonging at work is statistically distinct from loneliness at work.

Further, replication of the JD-R model related to workplace safety outcomes was well supported for the main effects but not as considerable for the indirect effects. Similar to Nahrgang et al. (2011) who did not find significant results for some indirect effects in their meta-analytically tested JD-R model related to workplace safety, the current research also found non-significance results for many of the mediating effects. Quantitative work overload and general belonging at work both demonstrated indirect effects to workplace accidents and injuries through feelings of fatigue. Moreover, quantitative work overload demonstrated indirect effects to safe behavior through emotional exhaustion, and general belonging at work through emotional exhaustion and safety motivation. However, of the 18 possible mediation effects, only 7 were statistically significant.

Though the data supported many of the predictions of the current investigation, several hypotheses were not supported. For instance, four hypothesized direct effects that were not supported were quantitative work overload with safety motivation, feelings of fatigue with safe behavior, and safety motivation with accidents and injuries. In regard to the quantitative work overload direct effect on safety motivation, this non-significant effect when adding additional constructs in the regression model was not completely unexpected. As stated previously in the hypotheses section, evidence on the link between job demands and engagement has been mixed (Bakker et al., 2006; Schaufeli & Bakker, 2004; Schaufeli et al., 2008). Though it was argued in the current study based on research that quantitative work overload was a hindrance demand which has shown to be more highly related to decreases in employee engagement (e.g., Crawford et al., 2010), the initial zero-order correlation was weak (−.14). With the addition of general belonging at work in the model which showed a strong positive association with safety motivation (.39) plus the demographic constructs, the

finding suggests that the quantitative work overload-safety motivation relationship was not robust enough to withstand the addition of other explanatory constructs to provide additive effects. This finding provides additional evidence that job resources may serve to be strong contributors to employee engagement which absolve the effects of certain job demands.

In regard to the feelings of fatigue non-significant direct effect on safe behavior, because feelings of fatigue and emotional exhaustion are conceptually similar in that both involve depletions of energy, it is possible that these constructs cancelled each other's effects. That is, this non-significant finding did not only occur for the hypothesized direct effect but also for the moderating effects where both interaction terms involving feelings of fatigue and emotional exhaustion were entered in the same model. As such, though the constructs may be conceptually distinct and differentially predict outcomes, they may also be similar enough to provide inconsistent results. Accordingly, though researchers have argued over what concepts define burnout (e.g., physical fatigue, emotional exhaustion, and cognitive weariness; Demerouti et al., 2003; Schaufeli & Leiter, 1996; Shirom & Melamed, 2006) and those concepts were studied here as being distinct, the findings of the current research suggest that one measure that includes all three types of energy depletions may be more effective.

The two interactive predictions that were not supported by the data included the GBW × emotional exhaustion interactive term to predict accidents and injuries. As stated above that it might be best to assess physical, emotional, and mental depletions of energy as one construct so they do not cancel each other when entered into models simultaneously, it is possible that in the current investigation the GBW × feelings of fatigue interactive term was a significant predictor of accidents and injuries in that feelings of fatigue was defined here as

depletions of physical energies. The data collected here were from a pipeline operator company which has job types that are more physically demanding compared to other industry types such as technology, sales, and customer service. As such, depletions in physical energies for this type of company may play a more vital role in predicting accidents and injuries in that workers are not physically fit in a work role that requires being physically fit to perform their work effectively. Therefore, when workers reported being low on the job resource of general belonging at work, the feelings of physical weariness when high may have been too much to overcome to physically perform the job properly as required resulting not only in more accidents, but also more physical injuries.

Though not hypothesized that feelings of fatigue would have significant direct effects on accidents or injuries, the construct showed strong significant positive associations with both accidents and injuries (see Table 7). These effects may have contributed to safety motivation not being a significant predictor of accidents or injuries. That is, Malone et al. (2012) showed that negative constructs were more predictive of undesirable outcomes than were positive constructs (i.e., loneliness was a stronger predictor of depression compared to a sense of belonging when entered in the same regression model). In addition, safety motivation is feelings and beliefs that exerting extra efforts to improve workplace safety is worthwhile and important. However, these are not actual safe behaviors, only that performing safe behaviors is important and worthwhile. It may be that just having the feelings and beliefs that extra-role behaviors targeted at improving workplace safety may not be enough to reduce workplace accidents and injuries compared to the actual performance of those behaviors. This may be especially the case when other explanatory factors such as feelings of fatigue are entered into the equation.

Finally, in the current investigation, more than half of the indirect effects for quantitative work overload and general belonging at work on accidents, injuries, and safe behavior through feelings of fatigue, emotional exhaustion, and safety motivation were not supported by the data. Moreover, indirect effects were not found for half of the mediation predictions for the meta-analytically tested JD-R model related to workplace safety by Nahrgang and colleagues (2011). The most consistent significant finding for the current research was that feelings of fatigue mediated the relationships for both quantitative work overload and a general sense of belonging at work to accidents and injuries. As stated above, the data collected here predominately came from workers who have jobs that require a certain amount of physical prowess. Therefore, it could be that the feelings of physical fatigue served as an additional explanatory mechanism compared to the other mediators to further define how the relationships between the independent and dependent variables were linked. Accordingly, indirect effects of the JD-R model may be succinctly job specific.

Theoretical Implications

Belongingness Theory

Though belongingness has a long and storied history in the social literature (see review by Baumeister & Leary, 1995), in comparison there has been a dearth of research on belongingness in the workplace (e.g., Cockshaw et al., 2013, 2014; Den Hartog et al., 2007). The current findings contribute to the belongingness workplace literature in two ways. First, evidence is provided on how a general sense of belonging at work relates to employee health impairments and engagement related to workplace safety; and second, on how a general sense of belonging at work predicts workplace safety outcomes. In regard to workplace safety outcomes, for organizations such as the pipeline operator company studied here,

employee accidents and injuries are of primary concern. The human and financial costs of workplace accidents and injuries can be staggering. Contributing to belongingness theory related to the workplace on ways that general belonging at work can mitigate such undesirable workplace safety outcomes could serve to be a substantial contribution to the literature. As such, theory on belongingness is extended not only further into the workplace, but also in the workplace related to workplace safety.

Further, a contribution to belongingness theory is that features put forth by Baumeister and Leary (1995) and Hagerty et al. (1992) on what defines achieved sense of belonging has been transferred from the social sciences to the workplace literature. That is, achieved sense of belonging entails regular interpersonal contact with others whom one feels connected with, plus a sense of connectedness that transcends those interpersonal relationships. Malone and colleagues (2012) developed and validated a scale for assessing a general sense of belonging (GBS; General Belongingness Scale) for social science research using the concepts set forth by Baumeister and Leary and Hagerty and colleagues. In the current investigation, those same concepts were used to measure achieved and thwarted general belonging at work. Similar psychometrics properties were found for the General Belonging at Work (GBW) scale as were for the GBS. Further, similar associations with similar constructs were found between to the two research areas to demonstrate convergent, discriminant, and predictive validity. Accordingly, the findings for a general sense of belonging at work add to belongingness theory in that a sense of achieved belonging is similar across research areas (i.e., social and workplace settings).

In addition, a contribution to the belongingness literature includes the development and validation of a measure to assess a general sense of belonging at work using the

theoretical framework put forth in the social sciences (e.g., Baumeister & Leary, 1995;

Hagerty et al., 1996). In testing theoretical models it is essential that valid measures are

available not only to ensure that the constructs are being accurately and reliably measured,

but that there is a commonality among studies in that constructs that are being tested are

being assessed using similar tools. In this way, findings can not only be more accurate in

their comparison to one another, but standardization of the research process can be increased.

JD-R Model

The most substantial contribution of the current investigation related to the JD-R

model may be that a general sense of belonging at work can be added to the list of job

resources that predicts employee health impairments and engagement. A general sense of

belonging at work not only demonstrated main (additive) effects beyond that of the job

demand quantitative work overload in predicting employee physical, mental, and emotional

energy depletions, but also that of safety beliefs and feelings associated with extra-role

behaviors targeted at exerting extra efforts to improve workplace safety. Though not

hypothesized, general belonging at work also demonstrated significant direct effects for

accidents, injuries, and safe behavior after controlling for all constructs in the study model

(see Table 7). It was not until the interactive effects were entered into the models that general

belonging at work did not have a significant direct effect for accidents, though the p-value

was approaching significance ($p = .085$; see Table 8). As such, a general sense of belonging

at work consistently had strong positive associations with desirable workplace outcomes and

negative associations with undesirable workplace outcomes. Additional research using a

general sense of belonging at work as a job resource with other job demands and workplace

outcomes becomes crucial to gain a better understanding of the value that general belonging

at work can contribute to the JD-R model and JD-R model related to workplace safety.

Moreover, the general belonging at work interactive effects served to further extend

the JD-R model and JD-R model related to workplace safety. Bakker and Demerouti (2007)

stated that there is ample evidence for the main (additive) effects of the JD-R model, but only

some evidence for the interactive effects. To reason why there were few studies that look at

the interactive effects in regard to JD-R model research, the authors claimed that maybe

scientists are more interested in the additive effects or perhaps interactive effects are difficult

to detect. Moreover, interactive effects of the JD-R model are generally tested in regard to

the first stages of the model (path a). In this way, job resources mitigate the effects of job

demands on health impairments or enhance effects on employee engagement (Bakker et al.,

2014). In the current investigation, the findings add to the literature on interactive effects

related to the JD-R model in three ways. First, the evidence of the current research supports

that general belonging at work had interactive effects. This not only introduces to the

literature a new job resource, but a job resource that appears to be powerful enough to

demonstrate interactive effects on safety-related relationships. Second, the JD-R model

related to workplace safety outcomes tested only main effects (Nahrgang et al., 2011). The

current model tested and found interactive effects related to workplace safety outcomes.

Third, stage-two (path b) interactive effects were found in the current research. These

interactive effects can be beneficial in that they are more proximal effects on valuable

workplace safety outcomes such as accidents, injuries, and safe behavior.

In addition, the findings of the current study contribute to the JD-R model literature

further in that high general belonging at work serve as a job resource to mitigate undesirable

workplace safety relationships and strengthen desirable workplace safety relationships. That is, in part the interactive effects of the current research were based on Den Hartog and colleagues' (2007) research that found a desirable external factor (i.e., charismatic leadership) impacted low-belonging at work employees to predict a desirable workplace outcome (i.e., helping behaviors). The findings here that general belonging at work mitigated the relationship between an undesirable internal factor (i.e., feelings of fatigue) and undesirable workplace safety outcomes (i.e., accidents and injuries) extend the research of Den Hartog et al. (2007). In other words, not only are low-belonging employees impacted by both positive and negative factors to predict both positive and negative outcomes, but high belonging at work can serve as a buffer for undesirable workplace relationships. In addition to mitigating effects, in the current research high general belonging at work interacted with safety motivation to reinforce the safety motivation-safe behavior relationship. In this way high belonging at work can serve to strengthen desirable workplace relationships. As such, not only can high general belonging at work serve as a job resource to mitigate undesirable workplace safety relationships, but also strengthen desirable workplace safety relationships.

A primary aim of the current investigation was not only to extend theory on the JD-R model, but also to test the JD-R model related to workplace safety with an independent study. Nahrgang and colleagues (2011) introduced the JD-R model to the safety literature by analytically testing the model in regard to workplace safety outcomes. Models of this sort are based on the tenet that there is a common certainty behind conceptually similar scientific studies. A meta-analysis provides evidence that, in general, should deliver a clearer understanding on how constructs of the model are related by using a large number of studies in the area of interest. By independently testing the JD-R model related to workplace safety,

evidence can be used for support that the conceptual model can be generalized to an independent field sample. The findings of the current study for the most part supported the main effects of the model. However, the indirect effects were not, in general, supported by the evidence. The lack of indirect effects for the current research is somewhat in line with the Nahrgang et al. study as the authors did not find evidence for indirect effects for a number of their tests as well.

Practical Implications

The findings in the present research reinforce a growing literature indicating that a sense of belonging at work has considerable effects on employee well-being and positive workplace outcomes (e.g., Cockshaw et al., 2010, 2013, 2014; Davila & Garcia, 2012; Den Hartog et al., 2007). The practical implications of a general sense of belonging at work as a job resource that predicts employee health impairments plus workplace safety is especially beneficial to organizations and employees that are required to deal with workplace safety matters on a regular basis.

A general sense of belonging at work, as depicted in the general belonging at work (GBW) measure used here, in part involves supervisors being accepting of their subordinates and not treating them in an exclusive way. Hence, organizations could inform leaders on the importance of making their subordinates perceive that they belong at work and train said supervisors on how to increase a sense of belonging in the workplace. It is within reason that as supervisors provide subordinates a sense that they belong and see that it results in increases in employee well-being even when confronted with taxing job demands, those supervisors will be more inclined to act in a way that provides such belonging. This can be especially the case if said supervisors see reductions in workplace accidents and injuries, and

increases in extra-role safety behaviors. Though the reports of accidents and injuries in the current study were self-report, it is likely a number of these self-report responses at some level were also formally reported and/or documented. Subsequently, reduced accidents and injuries not only can reduce the human costs of such occurrences, but can also impact the financial bottom-line that often is very important to supervisors. One way supervisors could improve their subordinates' sense of belonging at work is to be supportive, accepting, and build mutual trust and respect (Skaalvik & Skaalvik, 2011). In addition, De Cremer and Van Knippenberg (2002) found that leaders who promoted cooperation in group projects increased group belongingness at work.

In this same vein, coworkers can also play a role in making employees perceive that they do or do not belong at work. Using the same line of thought as above in regard to supervisors, the organization as well as supervisors could deliver information and training on the value that comes with employees feeling that they belong when they are at work. Further, the information and training could include ways that coworkers could facilitate other employees' sense of belonging at work. Indeed, research has shown that when employees gain support and are treated with sincere concern from colleagues they are more likely to feel that they belong (Skaalvik & Skaalvik, 2011). Moreover, similar to how supervisors cooperated with subordinates to enhance group belongingness (De Cremer & Van Knippenberg, 2002), employees can be informed of the value that cooperation has on others sense of belonging at work and ways that cooperation at work can be increased. Further, coworkers who provide that sense of belonging to others stand to benefit themselves as well. That is, Den Hartog et al. (2007) found that when employees reported they had a high sense of belonging at work they were more inclined to help coworkers (e.g., to meet deadlines,

when their workload was too high, and when they were newcomers). As such, not only can coworkers benefit others in the organization when they facilitate their sense of belonging at work, but they themselves can gain returns on their investments. Considering that the job demand of the current study was having too much work to do without have enough time to complete the work or do it well, receiving help from coworkers in times of need that result from high belonging at work individuals can serve to mitigate deleterious workplace health impairments and safety issues that can result from such a taxing job demand. In these ways, not only are coworkers increasing the probabilities that other employees will experience enhanced workplace well-being and lessened negative safety consequences, but they themselves can reap those same benefits.

In addition, human resource managers can install or strengthen communication infrastructures that enable employees to report or gain support when involved with supervisors or coworkers who are treating them in a way that substantively excludes them. Though normative influences can inhibit employees wanting to report such circumstances, the human and financial costs associated with such supervisory and coworker methods can far outweigh those norms that encourage such non-reports. Consequently, the organization and human resource managers should not only make such a communication system available, but emphasize to all employees the importance in using such a system. This can be especially relevant in organizations where workplace safety is paramount. In these organizations, employees who do not receive the adequate assistance or support when experiencing substantial deficiencies in belonging at work significantly increase the probability that they will be inflicted with workplace health impairments, accidents, and injuries that can substantially affect the employee and organization alike.

At present, to encourage extra-role safety participation in certain organizations that are more prone to workplace safety issues can be an uphill task. With non-stop production lines, pressures from top management to meet productivity goals, and daily safety meetings it can be nearly impossible for workers to find time to volunteer for activities or provide efforts beyond their in-role tasks to improve workplace safety (Hee & Ping, 2014). However, considering the substantial benefits of increasing workplace safety, finding ways to improve extra-role workplace safety behaviors can be crucial. The current research provides one avenue in how certain types of organizations can increase safety motivation and safe behavior, even in the face of a demanding work situation. As proposed by Schein (1985) three decades ago, organizational culture is essential in forming safety values and norms shared by members to encourage safety participation. As such, companies stand to benefit by creating an organizational culture that emphasizes belonging at work as being a critical factor for increasing the motivation to engage in and actual performance of extra-role workplace safety behaviors. Indeed, along with the current research, Davila and Garcia (2012) showed that high belonging employees were more inclined to participate in extra-role citizenship behaviors directed at both the organization and individuals within the organization.

As depicted in the belonging at work measure developed in the present research, one way in which employees can sense that they belong at work is to feel as if they "fit" in the organization. Person-organization fit (P-O fit) is a concept that is generally defined as compatibility between employees and their organizations (Kristof, (1996). Accordingly, a first step in creating an organizational culture that employees feel they fit in could involve the organization providing value congruence between organizational and employee objectives. Indeed, Skaalvik and Skaalvik (2011) found a positive association between high

belonging teachers and their perceptions that they and the employing school were similar in what educational values were being emphasized and what defined good teaching. Moreover, Roeser, Midgley, and Urdan (1996) demonstrated that students who perceived they had a school culture that promoted positive, caring, trusting, and respectful relationships between the school, teachers, and students also reported a higher sense of belonging at school. Further, organizations could provide a culture that is not exclusionary. For instance, low social economic status individuals who did not have access to resources and activities in school compared to higher social economic status individuals felt excluded and reported lower belonging at school (Ostrove & Long, 2007). As such, organizations can provide a culture that facilitates a sense of belonging at work by allowing access to work activities and taking special care to not exclude employees based on circumstances beyond work-related factors. Lastly, Beck and Malley (1998) showed a positive association between perceptions of meaning in life with a sense of belonging. In other words, achieved belonging and feeling that life was worthwhile and meaningful was significantly related. Accordingly, it is reasonable to expect that this same concept could be transferred to the workplace in that fit in the organization could be improved to enhance workers' belonging at work when there are opportunities to engage in meaningful work. That is, living a life that is meaningful relates to a sense of belonging which can be similar to how doing meaningful work could relate to a sense of belonging at work.

Limitations

In the following, I provide eight potential limitations of the current investigation. First, the current research included data that were collected from a single source which could lead to issues of common method variance (CMV). Consequently, CMV could result in inter-

correlations among variables to be inflated or deflated based on systematic variance that is

attributable to the measurement method rather than to the constructs the measures are

assumed to represent (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, the

measures used in the current research relied on responses from individuals related to how

they perceive, believe, and feel about certain areas related to their work, such as if they

perceived they belong when at work, believe that it is worthwhile to volunteer for safety

tasks, and feel fatigued. These constructs are not easily observed by others (Chan, 2009;

Spector, 2006). Moreover, this research used self-report measures of workplace accidents and

injuries which can be more accurate than objective recordable measures. That is, workers can

be hesitant to formally report and document accidents and injuries that occur at work for

fears they may be viewed as, for example, inadequate workers or hurting the organization.

Lastly, as noted by researchers, CMV bias occurs less frequently than is often supposed (e.g.,

Chan, 2009; Spector, 2006).

Second, though as stated above a strength of the current investigation is that self-

report measures of accidents and injuries could serve to result in greater accuracy in the

reporting of such events, Chan (2009) proposed that objective (i.e., non-self-report) measures

such as documented accidents and injuries could be beneficial in that they could eliminate a

certain amount of subjectivity. However, Chan also claimed that the objectivity of such

measures can be compromised depending on how the documentation is perceived by the

individual making the recordings and if the documentation is accurately recorded. As stated

by Spector (2006), such inaccurate documentation of non-self-report can be systematic in

that the same inaccuracies are consistently recorded over time. However, Chan and Spector

acknowledge that the associations between self-report and non-self-report measures could

reduce bias and serve as convergent validity to add confidence to findings. Furthermore, in the current study safe behavior was self-report. Similar to accidents and injuries, non-self-report observations by supervisors or others in the organization could be used to rate these acts. However, as noted by Chan, not only does this method of observation have the same shortcomings as previously stated in that not only can bias of the rater exist, but also that such acts may be done when the rater is not available to observe said acts.

Third, the current investigation used a cross-sectional design for hypotheses testing of the conceptual model. This type of study design leaves the direction of causality between perceptions of quantitative work overload and general belonging at work with feelings of fatigue, emotional exhaustion, and safety motivation uncertain. That is, it is possible that because a worker feels physically fatigued or emotionally exhausted their perceptions that they have too much work to do without enough time to do it could be enhanced. In addition, under these same conditions of energy depletion, workers may have less desire to personally relate to or become involved with others at work which could, in turn, result in decreases in belonging at work. In regard to safety motivation, common or shared goals may play a part in employees working together and becoming more accepting of each other. As such, employees high in safety motivation may gain a sense of belonging with coworkers because of the shared goals, beliefs, or behaviors they have related to exerting extra efforts or volunteering to improve workplace safety. Indeed, safety is generally highly regarded in the energy industry (the sample studied here) and these shared goals could lead to increased perceptions of belonging at work for some employees compared to others who do not share the same feelings and beliefs. Consequently, longitudinal or experimental study designs

should be conducted when possible to provide more clarity on inferred causal directionality of the relationships.

Fourth, the data were collected only at the individual level. Investigations that include different levels of the organization could add additional explanatory value on how workplace safety is predicted by a sense of belonging at work. Future research could include, for example, supervisory, aggregated groups, or department level effects of belonging at work related to workplace safety. In addition, by including multiple levels of the organization performance outcomes such as in-role and extra-role behaviors targeted at workplace safety compliance and improvement could be observed and reported by supervisors and other workers in the organization. This could not only add to incremental variance beyond individual-level analyses, but also serve to reduce potential common method variance issues (Spector, 2006).

Fifth, due to limitations in survey length, selected items from established scales were used instead of the full scales. This was especially evident for the safe behavior scale that consisted of only two items. The uniqueness of these measures could raise concerns related to reliability and construct validity. However, Donnellan, Oswald, Baird, and Lucas (2006) noted that such short scales can be useful, practical, efficient, and economical substitutes when survey length is limited. Though the scales demonstrated high internal consistency coefficients and the two safe behavior items were highly correlated, when possible researchers should use the full scales to reduce these types of limitations.

Sixth, as is the case with most models, the current investigation did not include all possible predictors and mediators to explain the relationships with the dependent variables. Accordingly, the model used here was misspecified (Hayes, 2013) as it did not include all

likely explanatory variables. However, the current study was diligent in that it used an established JD-R model prominently presented in the literature and tested using independent studies as well as analytical tests (e.g., see review by Demerouti et al., 2014; meta-analysis by Nahrgang et al., 2011). Despite replicating an established model, there remain a number of other job demands, job resources, and mediating mechanisms beyond the current research and the study put forth by Nahrgang and colleagues that may also explain the relationships between the independent variables and mediators with the workplace safety outcomes. Additional variables could include role ambiguity, performance feedback, sleeping problems, and organizational commitment (e.g., Bakker & Demerouti, 2007).

Seventh, in regard to convergent, discriminant, and predictive validity of the General Belonging at Work (GBW) scale, the variables and sample included in the research to assess such validities could have been more comprehensive. Due to restrictions that at times can occur in applied research, limits on measures that can be included in studies due to time constraints and organizational needs can sometimes compromise the quality of the research. Despite these restrictions and that there were a number of measures included in the current investigation, a more expansive inclusion of the variables related to a general sense of belonging at work to demonstrate convergent and discriminant validity should be included in future research. Subsequent research could include measures such as person-organization fit, abusive supervision, and ostracism at work. Because a general sense of belonging at work should relate positively to workplace outcomes that have consistently shown to be desirable and negatively with outcomes generally viewed as undesirable, predictive validity of the GBW could be increased by researching desirable outcomes such as effective employee performance and perceived competence, and undesirable outcomes such as turnover and

counter-productive work behaviors. In addition, convergent, discriminant, and predictive

validity was assessed in the current investigation using an undergraduate student work

sample. An assessment of scale validity using a field study would add to the generalizability

validity of the GBW.

Eighth, there were substantial imbalances in numbers of females and males in all

three studies. Though the imbalance for gender that was reversed from Studies 1 and 2

(markedly more females than males) to Study 3 (markedly more males than females) could

serve well for validation of the GBW in that the instrument performed similarly across

studies despite such gender imbalances, for model testing this would generally not be ideal.

For instance, gender has shown to have significant associations with workplace safety (Hayes

et al., 1998), and having such a difference may not only compromise the methodology of the

study but also in how employees in the field perceive workplace safety. In other words, the

field study consisted of 148 females and 869 males. If a balance of female-to-male ratio were

to exist or in cases where females substantially outnumbered males, how may the increases

of females in the field influence workplace safety relative to a general sense of belonging at

work. Though the current study did not find significant differences in the means of achieved

belonging at work between females and males, seeking out organizations that regularly deal

with workplace safety issues and replicating the research provided here could deliver a better

understanding on how a general belonging at work generalizes to companies with a balanced

female- or high female-to-male ratio.

Conclusion

In sum, the current investigation found a general sense of belonging at work to be a

valuable job resource to mitigate undesirable workplace safety outcomes and strengthen

desirable workplace safety outcomes. These effects were direct and interactive related to valuable workplace safety constructs including employees' depletions of physical, mental, and emotional energies, beliefs and feelings for exerting extra-role efforts to improve workplace safety, and workplace accidents, injuries, and safe behavior. In addition, a scale to measure a general sense of belonging at work was developed and validated.

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Table 1

Correlations between General Belonging at Work and Related Psychological Constructs.

Variable	General Belonging at Work r
Convergent Validity	
Psychological Sense of Organizational Membership	.70**
Loneliness at Work	-.77**
Discriminant Validity	
Affective Organizational Commitment	.48**
Perceived Organizational Support	.47**
Perceived Supervisor Support	.41**
Perceived Coworker Support	.46**
Group Cohesiveness	.36**
Team Cohesion (Task)	.42**
Team Cohesion (Social)	.31**
Supervisor Mentoring	.32**
Ethical Leadership	.23*
Supervisor Interpersonal Contact	.28**
Anxious Attachment at Work	-.43**
Avoidant Attachment at Work	-.40**
Predictive Validity	
Organizational Identification	.35**
Organization-Based Self-Esteem	.52**
Employee Engagement	.42**
Job Satisfaction	.38**

Note. N = 114-116; *p < .05; **p < .01.

Table 2

Confirmatory Factor Analysis Results.

Model	χ^2	df	$\Delta\chi^2$	CFI	TLI	RMSEA
No Correlated Residuals	425.07	20	-------	.907	.869	.138
e2 ←→ e6	304.00	19	121.07	.934	.903	.119
e2 ←→ e6, e1 ←→ e5	216.48	18	208.59	.954	.929	.102
e2 ←→ e6, e1 ←→ e5, e3 ←→ e5	166.53	17	258.54	.966	.943	.091
e2 ←→ e6, e1 ←→ e5, e3 ←→ e5, e1 ←→ e8	120.29	16	304.78	.976	.958	.079

Note. N = 1017; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation.

Table 3

General Belonging at Work Items and Standardized Factor Loadings.

Item

1. I have close bonds with my coworkers. (.62)
2. I feel accepted when I am with my supervisor. (.70)
3. I feel isolated when I am at work. (.76)
4. In regard to [organization], I feel like I fit in. (.78)
5. My coworkers do not include me in their plans. (.61)
6. My supervisor treats me like a stranger. (.62)
7. When I am at work, I have a sense of belonging. (.81)
8. When it comes to [organization], I feel like an outsider. (.82)

Note. N = 1017; Items 3, 5, 6, and 8 are reverse scored; Standardized factor loadings are in parentheses.

Table 4

Descriptive Statistics, Intercorrelations, and Reliabilities among Study Variables.

Variable	*Mean*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	45.32	10.86													
2. Gend.	0.15	0.35	-.04												
3. Ten. S.	3.05	1.21	.20	-.03											
4. Org. T.	8.07	9.35	.42	-.13	.22										
5. Edu. L.	4.36	0.99	-.24	.15	-.19	-.19									
6. QWO	3.00	1.00	.07	-.03	.11	.06	.04	(.92)							
7. GBW	4.01	0.65	.01	.06	-.03	-.01	.04	-.33	(.89)						
8. FF	1.87	0.80	.03	.01	.08	.04	.00	.50	-.35	(.93)					
9. EE	2.64	0.89	-.03	.05	.07	.04	.02	.57	-.48	.66	(.88)				
10. SM	4.40	0.57	.01	-.04	-.06	-.03	.03	-.14	.39	-.15	-.25	(.89)			
11. Acc.	1.21	0.37	.09	-.17	.11	.10	-.18	.20	-.19	.28	.19	-.12	(.69)		
12. Inj.	1.09	0.26	.09	-.07	.11	.04	-.12	.19	-.20	.30	.20	-.12	.52	(.88)	
13. SB	3.97	0.71	.13	-.14	.02	.09	-.11	-.11	.30	-.12	-.24	.55	.00	-.03	(.76)

Note. Age (Years); Gend. = Gender (Male = 0, Female = 1); Ten. S. = Tenure with Supervisor (1 = Less than 6 months, 2 = 6 months – 1 Year, 3 = 1 Year – 3 Years, 4 = 3 Years – 6 Years, 5 = Over 6 Years); Org. T. = Organizational Tenure (Years); Edu. L = Education Level (1 = completed grade school, 2 = some high school, 3 = completed high school, 4 = some college, 5 = completed college, 6 = graduate/professional degree); QWO = Quantitative Work Overload; GBW = General Belonging at Work; FF = Feelings of Fatigue; EE = Emotional Exhaustion; SM = Safety Motivation; Acc. = Accidents; Inj. = Injuries; SB = Safe Behavior; Except for SB, values in parentheses on the diagonal represent Cronbach's alpha; The value on the diagonal for SB represents a bivariate inter-item correlation; $N = 1017$ ($N = 1011$ for Tenure with Supervisor assessments); Coefficients .07 to .08 are significant at $p < .05$, and coefficients greater than .08 are significant at $p < .01$.

Table 5

Comparison of Confirmatory Factor Analyses Models.

Models	χ^2	df	$\Delta\chi^2$	CFI	TLI	RMSEA
8-Factor Model (measurement model)	2889.43	791	------	.921	.914	.051
7-Factor Models						
Accidents/Injuries combined	3312.41	798	422.98	.906	.898	.056
Fatigue/Emotional Exhaustion combined	4806.71	798	1917.28	.855	.836	.069
Safety Motivation/Behavior combined	3856.94	798	967.52	.890	.875	.060

Note. $N = 1017$; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation.

Table 6

Regression Results for Path A Direct Effects.

	Feelings of Fatigue			
Independent Variable	*B*	*SE*	*t*	*p*
Age	-.000	.00	-0.11	.915
Gender	.052	.06	0.85	.394
Tenure with Supervisor	.012	.02	0.64	.520
Organizational Tenure	.001	.00	0.42	.677
Education Level	-.010	.02	-0.43	.665
Quantitative Work Overload	.342	.02	15.03	< .001
General Belonging at Work	-.259	.04	-7.42	< .001

	Emotional Exhaustion			
Independent Variable	*B*	*SE*	*t*	*p*
Age	-.007	.00	-3.04	.002
Gender	.223	.06	3.67	< .001
Tenure with Supervisor	.009	.02	0.48	.634
Organizational Tenure	.005	.00	1.82	.069
Education Level	-.002	.02	-0.08	.939
Quantitative Work Overload	.418	.02	18.57	< .001
General Belonging at Work	-.457	.03	-13.28	< .001

	Safety Motivation			
Independent Variable	*B*	*SE*	*t*	*p*
Age	.002	.00	0.95	.343
Gender	-.113	.05	-2.42	.016
Tenure with Supervisor	-.018	.01	-1.32	.189
Organizational Tenure	-.002	.00	-1.14	.254
Education Level	.013	.02	0.75	.452
Quantitative Work Overload	-.008	.02	-0.49	.628
General Belonging at Work	.329	.03	12.41	< .001

Note. $N = 1011$; Gender (Male = 0, Female = 1).

Table 7

Regression Results for Path B Direct Effect Tests.

	Accidents			
Independent Variable	*B*	*SE*	*t*	*p*
Age	.000	.00	0.31	.760
Gender	-.142	.03	-4.44	< .001
Tenure with Supervisor	.014	.01	1.51	.131
Organizational Tenure	.001	.00	0.93	.353
Education Level	-.054	.01	-4.59	< .001
Quantitative Work Overload	.026	.01	1.90	.057
General Belonging at Work	-.047	.02	-2.26	.024
Feelings of Fatigue	.117	.02	6.22	< .001
Emotional Exhaustion	-.028	.02	-1.46	.144
Safety Motivation	-.039	.02	-1.80	.072

	Injuries			
Independent Variable	*B*	*SE*	*t*	*p*
Age	.001	.00	1.55	.122
Gender	-.031	.02	-1.38	.169
Tenure with Supervisor	.013	.01	1.93	.054
Organizational Tenure	-.001	.00	-0.84	.402
Education Level	-.022	.01	-2.70	.007
Quantitative Work Overload	.013	.01	1.30	.193
General Belonging at Work	-.038	.01	-2.66	.008
Feelings of Fatigue	.087	.01	6.68	< .001
Emotional Exhaustion	-.017	.01	-1.31	.190
Safety Motivation	-.020	.02	-1.32	.187

Table 7 (continued)

Regression Results for Path B Direct Effect Tests.

	Safe Behavior			
Independent Variable	*B*	*SE*	*t*	*p*
Age	.005	.00	2.47	.014
Gender	-.200	.05	-3.81	< .001
Tenure with Supervisor	.008	.02	0.50	.615
Organizational Tenure	.003	.00	1.50	.134
Education Level	-.056	.02	-2.91	.004
Quantitative Work Overload	.017	.02	0.74	.459
General Belonging at Work	.084	.03	2.49	.013
Feelings of Fatigue	.037	.03	1.20	.229
Emotional Exhaustion	-.090	.03	-2.89	.004
Safety Motivation	.637	.03	18.06	< .001

Note. $N = 1011$; Gender (Male = 0, Female = 1).

Table 8

Hierarchical Regression Results for Moderation Tests.

| | Accidents | | | |
Independent Variable	*B*	*SE*	*t*	*p*
Intercept	1.222	.01	96.07	< .001
Age	.000	.00	0.34	.732
Gender	-.142	.03	-4.44	< .001
Tenure with Supervisor	.015	.01	1.54	.123
Organizational Tenure	.001	.00	0.98	.328
Education Level	-.054	.01	-4.60	< .001
Quantitative Work Overload	.025	.01	1.83	.068
Safety Motivation	-.043	.02	-2.01	.045
Feelings of Fatigue	.103	.02	5.38	< .001
Emotional Exhaustion	-.024	.02	-1.24	.216
General Belonging at Work	-.036	.02	-1.73	.085
GBW × Feelings of Fatigue	-.074	.03	-2.73	.007
GBW × Emotional Exhaustion	.019	.03	0.74	.459

| | Injuries | | | |
Independent Variable	*B*	*SE*	*t*	*p*
Intercept	1.096	.01	123.18	< .001
Age	.001	.00	1.57	.116
Gender	-.031	.02	-1.38	.169
Tenure with Supervisor	.013	.01	1.94	.052
Organizational Tenure	-.001	.00	-0.80	.423
Education Level	-.022	.01	-2.69	.007
Quantitative Work Overload	.012	.01	1.23	.220
Safety Motivation	-.022	.02	-1.43	.154
Feelings of Fatigue	.081	.01	6.06	< .001
Emotional Exhaustion	-.016	.01	-1.19	.235
General Belonging at Work	-.034	.01	-2.33	.020
GBW × Feelings of Fatigue	-.040	.02	-2.07	.039
GBW × Emotional Exhaustion	.015	.02	0.85	.393

Note. $N = 1011$; Gender (Male = 0, Female = 1); GBW = General Belonging at Work.

Table 9

Hierarchical Regression Results for Moderation Test.

Independent Variable	Safe Behavior			
	B	*SE*	*t*	*p*
Intercept	3.979	.02	192.93	< .001
Age	.005	.00	2.44	.015
Gender	-.188	.05	-3.58	< .001
Tenure with Supervisor	.008	.02	0.51	.610
Organizational Tenure	.004	.00	1.66	.098
Education Level	-.060	.02	-3.10	.002
Quantitative Work Overload	.019	.02	0.84	.399
Feelings of Fatigue	.032	.03	1.06	.292
Emotional Exhaustion	-.084	.03	-2.69	.007
Safety Motivation	.658	.04	18.45	< .001
General Belonging at Work	.085	.03	2.54	.011
GBW × Safety Motivation	.154	.05	3.32	< .001

Note. N = 1011; Gender (Male = 0, Female = 1); GBW = General Belonging at Work.

Table 10

Bootstrapping for Indirect Effects of Quantitative Work Overload.

	Accidents			
Variable	*Effect*	*SE*	LLCI	ULCI
Quantitative Work Overload (IV)				
Feelings of Fatigue	.040	.01	.012	.058
Emotional Exhaustion	-.012	.01	-.028	.004
Safety Motivation	.000	.00	-.001	.003
	Injuries			
Variable	*Effect*	*SE*	LLCI	ULCI
Quantitative Work Overload (IV)				
Feelings of Fatigue	.030	.01	.019	.045
Emotional Exhaustion	-.007	.01	-.019	.003
Safety Motivation	.002	.00	-.000	.002
	Safe Behavior			
Variable	*Effect*	*SE*	LLCI	ULCI
Quantitative Work Overload (IV)				
Feelings of Fatigue	.013	.01	-.062	.035
Emotional Exhaustion	-.038	.01	-.042	-.010
Safety Motivation	-.005	.01	-.035	.016

Note. $N = 1011$; IV = Independent Variable; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; CI = 95%.

Table 11

Bootstrapping for Indirect Effects of General Belonging at Work.

	Accidents			
Variable	*Effect*	*SE*	LLCI	ULCI
General Belonging at Work (IV)				
Feelings of Fatigue	-.030	.01	-.048	-.018
Emotional Exhaustion	.013	.01	-.004	.032
Safety Motivation	-.013	.01	-.029	.001
	Injuries			
Variable	*Effect*	*SE*	LLCI	ULCI
General Belonging at Work (IV)				
Feelings of Fatigue	-.023	.01	-.037	-.013
Emotional Exhaustion	.008	.01	-.003	.022
Safety Motivation	-.007	.01	-.018	.003
	Safe Behavior			
Variable	*Effect*	*SE*	LLCI	ULCI
General Belonging at Work (IV)				
Feelings of Fatigue	-.001	.01	-.028	.006
Emotional Exhaustion	.041	.02	.010	.073
Safety Motivation	.210	.02	.163	.257

Note. $N = 1011$; IV = Independent Variable; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; CI = 95%.

Table 12

Bootstrapping for Indirect Effects at Different Levels of the Moderator.
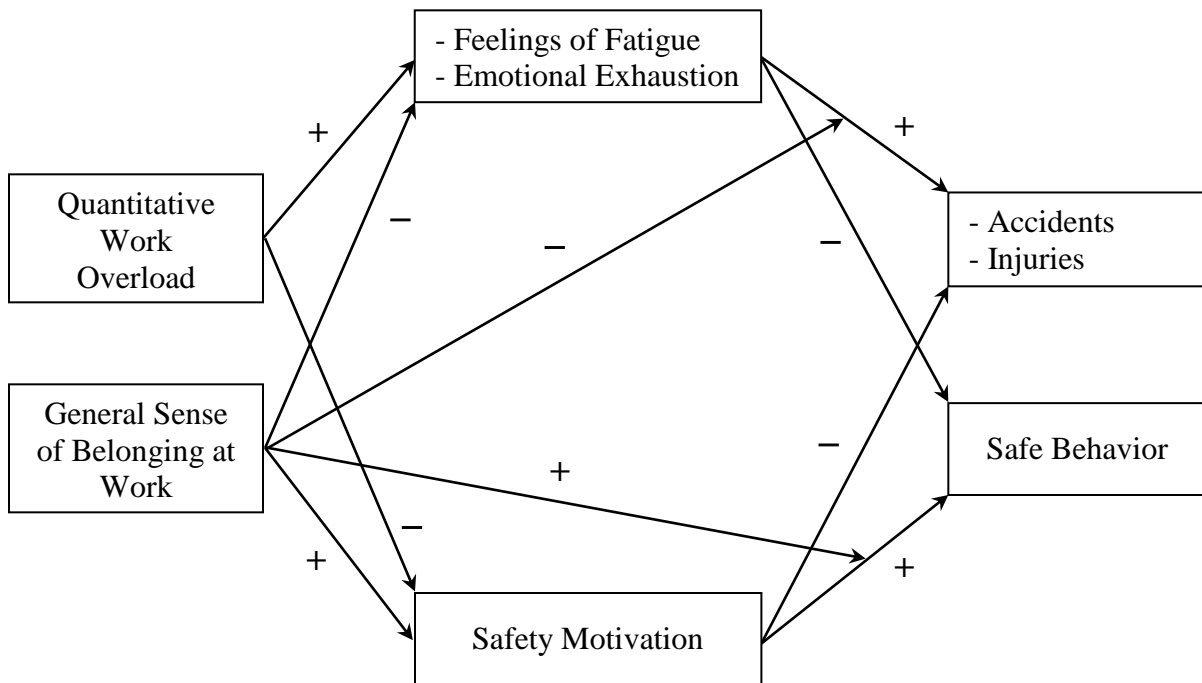
	Accidents			
Variable	*Effect*	*SE*	LLCI	ULCI
Feelings of Fatigue (Mediator)				
GBW at −1SD (−.65)	-.039	.01	-.062	-.022
GBW at the Mean (0)	-.027	.01	-.043	-.015
GBW at +1SD (+.65)	-.014	.01	-.034	-.001

	Injuries			
Variable	*Effect*	*SE*	LLCI	ULCI
Feelings of Fatigue (Mediator)				
GBW at −1SD (−.65)	-.028	.01	-.046	-.015
GBW at the Mean (0)	-.021	.01	-.034	-.012
GBW at +1SD (+.65)	-.014	.01	-.029	-.005

	Safe Behavior			
Variable	*Effect*	*SE*	LLCI	ULCI
Safety Motivation (Mediator)				
GBW at −1SD (−.65)	.170	.03	.121	.222
GBW at the Mean (0)	.201	.03	.151	.253
GBW at +1SD (+.65)	.231	.03	.175	.293

Note. $N = 1011$; GBW = General Belonging at Work; LLCI = Lower Limit Confidence Interval; ULCI = Upper Limit Confidence Interval; CI = 95%.

Figure 1. Conceptual Model. Control variables of age, gender, tenure with supervisor, organizational tenure, and education level are not shown in the model.
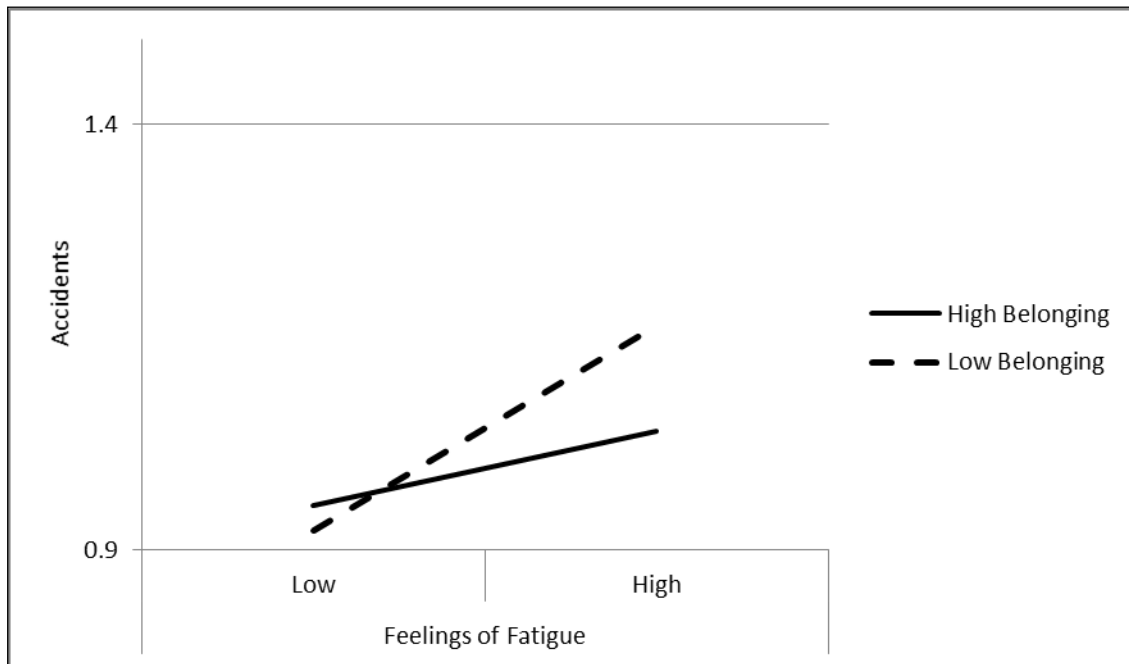
Figure 2. Regression lines for feelings of fatigue explaining accidents for individuals with a high and low general sense of belonging at work (+1SD and −1SD from Mean).
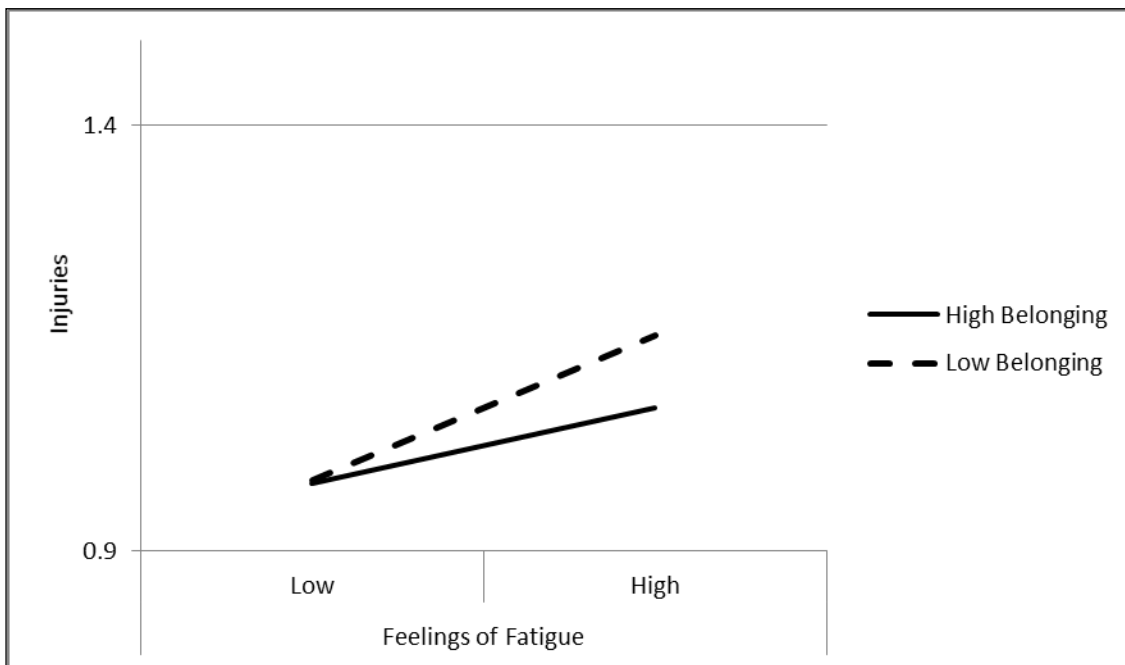
Figure 3. Regression lines for feelings of fatigue explaining injuries for individuals with a high and low general sense of belonging at work (+1SD and −1SD from Mean).
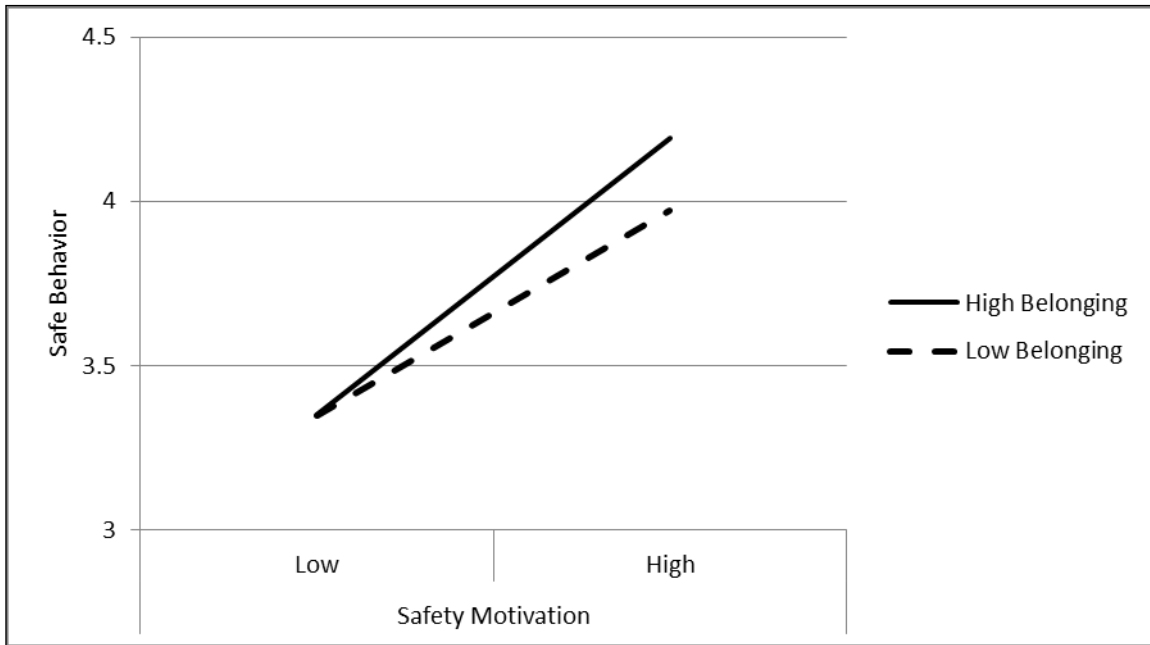
Figure 4. Regression lines for safety motivation explaining safe behavior for individuals with a high and low general sense of belonging at work (+1SD and −1SD from Mean).

Appendix

General Belonging at Work

Please rate the extent that you agree or disagree with the following statements.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I have close bonds with my coworkers.

2. I feel accepted when I am with my supervisor.

3. I feel isolated when I am at work.

4. In regard to [organization], I feel like I fit in.

5. My coworkers do not include me in their plans.

6. My supervisor treats me like a stranger.

7. When I am at work, I have a sense of belonging.

8. When it comes to [organization], I feel like an outsider.

Affective Organizational Commitment

Please rate the extent that you agree or disagree with the following statements.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I would be very happy to spend the rest of my career with this organization.

2. I really feel as if this organization's problems are my own.

3. I do not feel a strong sense of belonging to my organization.

4. I do not feel like part of the family at my organization.

5. I do not feel emotionally attached to this organization.

6. This organization has a great deal of personal meaning for me.

Psychological Sense of Organizational Membership

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. I feel like a real part of my organization.

2. People in my organization notice when I'm good at something.

3. It is hard for employees like me to be accepted at my organization.

4. Other people in my organization take my opinions seriously.

5. Most managers/supervisors in my organization are interested in me.

6. Sometimes I don't feel as if I belong in my organization.

7. People in my organization are friendly to me.

8. Managers/supervisors in my organization are not interested in people like me.

9. I am included in lots of activities at my organization.

10. I am treated with as much respect as other employees.

11. I feel very different from most other employees at my organization.

12. I can really be myself in my organization.

13. The managers/supervisors in my organization respect me.

14. People in my organization know I can do good work.

15. I wish I were in a different organization.

16. I feel proud to belong to my organization.

17. Other employees in my organization like me the way I am.

18. There's at least one supervisor/manager in my organization I can talk to if I have a problem.

Organizational Identification

Please rate the extent that you agree or disagree with the following statements.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. When I talk about this organization, I usually say 'we' rather than 'they'.

2. When someone criticizes my organization, it feels like a personal insult.

3. I am very interested in what others think about my organization.

4. My organization's successes are my successes.

5. When someone praises my organization, it feels like a personal compliment.

6. If a story in the media criticized my organization, I would feel embarrassed.

Organization-Based Self-Esteem

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. I am appreciated at work.

2. I count at work.

3. I am taken seriously at work.

4. I am important at work.

5. I am trusted at work.

6. There is faith in me at work.

7. I can make a difference at work.

Perceived Organizational Support

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. My organization values my contribution to its well-being.

2. My organization really cares about my well-being.

3. My organization would ignore any complaint from me.

4. Even if I did the best job possible, my organization would fail to notice.

5. My organization takes pride in my accomplishments at work.

6. My organization cares about my general satisfaction at work.

7. My organization fails to appreciate any extra effort from me.

8. My organization shows very little concern for me.

Perceived Supervisor Support

Please rate the extent that you agree or disagree with the following statements.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. My supervisor really cares about my well-being.

2. My supervisor strongly considers my goals and values.

3. My supervisor shows little concern for me.

4. My supervisor cares about my opinions.

5. My supervisor is willing to help me if I need a special favor.

6. Help is available from my supervisor when I have a problem.

7. My supervisor would forgive an honest mistake on my part.

8. If given the opportunity, my supervisor would take advantage of me.

Perceived Coworker Support

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. My coworkers make an extra effort to understand the problems I face.

2. My coworkers go out of the way to help me with work-related problems.

3. My coworkers help me when I'm running behind in my work activities.

4. My coworkers always make me feel appreciated.

5. My coworkers try to cheer me up when I'm having a bad day.

6. My coworkers take on extra responsibilities in order to help me when things get demanding at work.

Group Cohesiveness

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. I feel that the workers in my group have high social skills.

2. My workgroup is focused on keeping a positive social atmosphere.

3. I feel that the workers in my group have good problem-solving skills.

4. I feel that my workgroup is focused on completing our tasks.

Team Cohesion

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

Task Orientation

1. My workgroup is united in trying to reach its goals for performance.

2. I am unhappy with my workgroup's level of commitment to our tasks.

3. My workgroup has different goals for the team's performance.

4. My workgroup does not give me enough opportunities to improve my personal performance.

Social Orientation

1. My workgroup would like to spend time together outside of work hours.

2. Members of our workgroup do not stick together outside of work time.

3. Members of our workgroup rarely party together.

4. Members of our workgroup would rather go out on their own than get together as a group.

Supervisor Mentoring

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. My supervisor takes a personal interest in my career.

2. My supervisor has placed me in important assignments.

3. My supervisor gives me special coaching on the job.

4. My supervisor advised me about promotional opportunities.

5. My supervisor helps me coordinate professional goals.

6. I try to model my behavior after my supervisor.

7. I admire my supervisor's ability to motivate others.

8. I exchange confidences with my supervisor.

9. I respect my supervisor's knowledge.

10. I consider my supervisor to be a friend.

11. I respect my supervisor's ability to teach others.

12. My supervisor has devoted special time and consideration to my career.

Ethical Leadership

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. My supervisor listens to what employees have to say.

2. My supervisor disciplines employees who violate ethical standards.

3. My supervisor makes fair and balanced decisions.

4. My supervisor can be trusted.

5. My supervisor discusses business ethics or values with employees.

6. My supervisor sets an example of how to do things the right way in terms of ethics.

7. My supervisor defines success not just by results but also by the way they are obtained.

8. My supervisor when making decisions asks, "what is the right thing to do?"

Supervisor Interpersonal Interaction

Please rate the frequency that you interact with your supervisor.

1	2	3	4	5	6	7
Never	Almost Never	Sometimes	Somewhat Often	Often	Very Often	Always

1. How frequently does your supervisor initiate work-related interaction with you?

2. How frequently do you initiate work-related interaction with your supervisor?

3. How frequently do you interact with your supervisor at work?

4. How frequently do you interact with your supervisor informally or socially at work?

Employee Engagement

Please rate the extent that you agree or disagree with the following statements.

Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

1. I am enthusiastic about my job.

2. My job inspires me.

3. At work I feel bursting with energy.

4. When I get up in the morning I feel like going to work.

5. I am immersed in my work.

6. I get carried away when I am working.

7. I am proud of the work I do.

8. At my job I feel strong and vigorous.

9. I feel happy when I'm working intensely.

Job Satisfaction

Please rate the extent that you agree or disagree with the following statement.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. Overall, I am satisfied with my job.

Loneliness at Work

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

1. At work I lack companionship.

2. There is no one I can turn to at my work.

3. At work I am an outgoing person.

4. I feel left out when I am at work.

5. When I am at work, I feel isolated from others.

6. At work I can find companionship when I want it.

7. I am unhappy being so withdrawn when I am at work.

8. When I am at work, people are around me but not with me.

Adult Attachment Orientations at Work

Please rate the extent that you agree or disagree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree Nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree

<u>Anxious Orientation</u>

1. I worry a lot about my relationships at work.

2. When I am at work I worry that other people won't care about me as much as I care about them.

3. I get frustrated when others at work are not around as much as I would like.

4. When I am at work I worry about being alone.

5. If I can't get others to show interest in me when I am at work, I get upset or angry.

6. At work I often want to bond with other people, and this sometimes scares them away.

7. When I'm not connected to people at work, I feel somewhat anxious and insecure.

<u>Avoidant Orientation</u>

1. When I am at work I prefer not to show others how I feel deep down.

2. At work I feel comfortable opening up to other people.

3. I feel comfortable sharing my private thoughts and feelings with others at work

4. At work it helps to turn to others in times of need.

5. When I am at work I try to avoid getting too close to others.

6. At work I feel comfortable depending on others.

7. When I am at work I don't mind asking other people for comfort, advice, or help.

Quantitative Work Overload

Please indicate how much you agree or disagree with the following statements using the choices below.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. The amount of work I am expected to do is too great.

2. I never seem to have enough time to get everything done at work.

3. It often seems like I have too much work for one person to do.

4. I do not have enough time to get the job done well.

Feelings of Fatigue

Using the scale below, please indicate how frequently or infrequently you experienced the following statements at work over the PAST MONTH.

Never	Rarely	Occasionally	Frequently	Always
1	2	3	4	5

1. Physically, I felt exhausted.

2. I felt weak.

3. I got tired very quickly.

4. I felt physically worn out and weary.

5. I felt physically drained.

Emotional Exhaustion

Please indicate how much you agree or disagree with the following statements using the choices below.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. There are days that I feel mentally tired before I go to work.

2. After my work, I now need more time to relax than in the past to become emotionally

   fit again.

3. After working, I have enough mental energy for my leisure activities.

4. During my work, I often feel emotionally drained.

5. After my work, I usually feel mentally worn out and weary.

Safety Motivation

Please indicate how much you agree or disagree with the following statements using the choices below.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. I feel that it is worthwhile to be involved in the development of safe/standard work

   procedures.

2. I feel that it is important to encourage others to use safe practices.

3. I believe that it is worthwhile to put extra effort into maintaining safety.

4. I feel that it is worthwhile to volunteer for safety related tasks.

Safe Behavior

Please indicate how much you agree or disagree with the following statements using the choices below.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. I put in extra effort to improve the safety of the workplace.

2. I voluntarily carry out tasks or activities that help to improve workplace safety.

Self-Report Workplace Accidents

Please indicate how often you have incurred the following accidents at work in the PAST SIX MONTHS.

Never	Rarely	Occasionally	Frequently	Always
1	2	3	4	5

1. Had particles or objects enter into my eyes.

2. Caught in, under, between machines/equipment.

3. Contact with chemicals: ingestion, inhalation, skin.

4. Contact with thermal extremes (hot or cold temps).

5. Falls, slips, or trips.

Self-Report Workplace Injuries

Please indicate how often you have incurred injuries in the following areas at work in the PAST SIX MONTHS.

Never	Rarely	Occasionally	Frequently	Always
1	2	3	4	5

1. Neck

2. Shoulders

3. Upper Back

4. Elbows

5. Low Back

6. Wrists/Hands

7. Hips/Thighs

8. Knees

9. Ankles/Feet