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Boundary conditions of the emotional exhaustion-unsafe behavior link: The dark side of group norms and personal control

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Abstract This study focuses on the conditions under which emotional exhaustion leads to employee unsafe behavior. In a sample of 592 construction workers nested in 33 groups, we found that both emotional exhaustion and unsafe behavior norms were positively related to unsafe behavior by employees. Unsafe behavior norms moderated the relationship between emotional exhaustion and unsafe behavior, such that high group unsafe behavior norms strengthened the emotional exhaustion-employee unsafe behavior link. Furthermore, results indicated a three-way interaction effect in which employees with high emotional exhaustion conducted the highest levels of unsafe behavior when both group unsafe behavior norms and personal control over work were high. This paper provides important implications on understanding the influence of group norms on employee unsafe behavior, as well as its magnifying effect with personal control on the emotional exhaustion-unsafe behavior link.

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Employee unsafe behavior, an important form of deviant behavior, is pervasive and costly to both organizations and employee well-being (Christian, Bradley, Wallace, & Burke, 2009; Hofmann & Morgeson, 1999; Nahrgang, Morgeson, & Hofmann, 2011). Occupational health and safety have received intense attention due to their influence on both work-related outcomes and the overall quality of life of employees (c.f., Christian et al., 2009; Clarke, 2010; Hofmann & Morgeson, 1999; Li, Jiang, Yao, & Li, 2013). It is estimated that on-the-job accidents and illnesses take some two million lives every year, and cost the global economy approximately 1.25 trillion US dollars, which is four percent of global GDP (International Labour Organization, 2014). Moreover, the ramifications of unsafe behavior extend beyond the employee and pose great risks to fellow coworkers and even customers as well (Institute of Medicine, 1999; Nahrgang et al., 2011). Thus, given the costs and perils associated with hazardous behavior in the workplace, it is particularly important that we continue to develop a further understanding of the antecedents and conditions that give rise to unsafe behavior at work (Christian et al., 2009; Nahrgang et al., 2011).

Previous studies have highlighted the effects of emotional exhaustion on employee unsafe behavior and safety-related outcomes (e.g., Halbesleben, 2010; Hofmann & Stetzer, 1996). Additionally, recent meta-analyses have found burnout—a concept that contains emotional exhaustion—to be associated with unsafe behavior as well (Nahrgang et al., 2011). Hence, emotional exhaustion is likely to trigger employees' positive attitude toward unsafe behavior so as to protect their energy from being further depleted. Similarly, Shinan-Altman and Cohen (2009) found that nurses' emotional exhaustion was associated with their positive attitude toward counterproductive behavior. However, limited research has explored the boundary conditions of the emotional exhaustion-employee unsafe behavior link. That is, although burnout and/or emotional exhaustion likely increase the chances that employees will engage in risky behavior at work, we do not know the mechanisms that can facilitate or counteract this effect. Research addressing these issues may provide organizations and managers with beneficial interventions aimed at reducing the likelihood of potentially dangerous behavior and costly accidents in the future.

As captured by the theory of planned behavior (TPB) (Ajzen, 1991, 2001), a specific behavior is triggered by three factors: attitude, perceived norms of the behavior, and perceived control over the behavior. Group norms can profoundly impact the actions of employees (e.g., Bamberger & Biron, 2007; Coch & French, 1948; Robinson & O'Leary-Kelly, 1998). Hence, in the present research we consider group unsafe behavior norms which represent a shared set of beliefs and perceptions regarding the value of adhering to safety protocols and the acceptable level of risky or unsafe behavior in the workplace. Contextual factors, such as safety climate, have shown great impact on safety performance (Zohar, 2000, 2010). We suggest safety climate is a more general construct, while unsafe behavior norms are more specific and emphasize the subjective norms within groups (especially coworkers). Further, climate emphasizes the shared perception of all the group members, while unsafe behavior norms emphasize the expectations and behaviors of coworkers. Fugas, Meliá, and Silva (2011) found that coworker's safety norms impacted safety behavior. They state that "organizational safety initiatives should be aware of the important role of fellow team members on individual attitudes and safety behaviors at work" (Fugas et al., 2011: 247). Given that coworkers' behavior can form norms of what is socially acceptable in a workgroup, we aimed to operationalize the norms of unsafe behaviors using a coworker-referent measure. This study employs multilevel analysis to examine not only the direct effect of group norms on the occurrence of unsafe behavior by employees, but also the potential augmenting effect that group-level unsafe behavior norms may have on the emotional exhaustion-employee unsafe behavior relationship. By introducing the norm of unsafe behavior, this paper contributes to further understanding contextual factors that can induce unsafe behaviors.

Additionally, as suggested by the TPB model, we examine the role of personal control on the relationships between emotional exhaustion, group norms, and employee unsafe behavior. Personal control reflects a person's perception of the ease or difficulty of performing a behavior (Brockner, Spreitzer, Mishra, Hochwarter, Pepper, & Weinberg, 2004; Tangirala & Ramanujam, 2008). Research has extensively documented the positive influence of personal control on a number of psychological and managerial outcomes (Bazerman, 1982). Although we acknowledge the many positive attributes of personal control for organizations and their employees, we nevertheless take a more conservative stance regarding the ubiquity of its beneficial effects. Because personal control entails discretion over how jobs are performed (Brockner et al., 2004), it provides employees with the capacity to pursue personal goals, which may diverge from organizational interests and possibly cause harm to the organization and its employees (Ames & Janes, 1987; Hitz, 1973; Hollinger & Clark, 1983; Langfred, 2004; Litzky, Eddleston, & Kidder, 2006). As such, some authors have suggested that too much employee discretion can negatively impact organizational effectiveness (e.g., Langfred, 2004), arguing that when employee control is high, measures need to be taken to protect against individual opportunism and self-interests (Eisenhardt, 1989; Langfred, 2004) that may violate the legitimate interests of the organization (Martinko, Gundlach, & Douglas, 2002; Sackett & DeVore, 2001). In this vein, we suggest that within the context of safety, personal control can potentially be harmful to organizations in that it may further exacerbate the occurrence of unsafe behavior by emotionally exhausted employees working in characteristically unsafe groups.

Theories and hypotheses

Emotional exhaustion as a trigger for employee unsafe behavior

As noted above, research has indicated an association between emotional exhaustion and employee unsafe behavior (Halbesleben, 2010; Li et al., 2013; Nahrgang et al., 2011). Emotional exhaustion is consistently regarded as the core component of job burnout (Cordes & Dougherty, 1993; Lee & Ashforth, 1993; Maslach & Jackson, 1981; Shirom, 1989; Wright & Bonett, 1997; Wright & Cropanzano, 1998) and is characterized by a lack of energy and a feeling that one's emotional resources are used up (Maslach, 1982; Maslach & Jackson, 1981; Pines & Maslach, 1980). Within the workplace, emotional exhaustion is a "chronic state of physical and emotional depletion" (Wright & Cropanzano, 1998: 486) that results from stressors including excessive workload, role ambiguity, role conflict, organizational constraints, and interpersonal conflict (see Fox, Spector, & Miles, 2001, for a review). Therefore, emotional exhaustion represents a state of depleted resources (Hobfoll & Freedy, 1993), which is caused by the accumulation of various stressors over time (Baker & Karasek, 2000; Halbesleben & Buckley, 2004; Hobfoll & Freedy, 1993).

Conservation of resources (COR) theory suggests that as resources are depleted, employees become more judicious with regard to where and how they allocate remaining stores of resources and energy (Hobfoll, 1998, 2001; Hobfoll & Freedy, 1993). Through both conscious and unconscious inaction, individuals begin to protect their limited remaining resources from further depletion, causing them to mentally withdraw from their work, and exert less effort (Halbesleben & Bowler, 2007; Qin, DiRenzo, Xu, & Duan, 2014). Consequently, in the present context, emotionally exhausted workers are unlikely to "have the mental or physical energy to perform safe behaviors" (Nahrgang et al., 2011: 75) as these typically require added time and effort in order to follow proper procedures and caution. Rather than struggling to regulate their behavior by restraining from deviant behavior (Christian & Ellis, 2011) emotionally exhausted workers are likely to engage in unsafe workarounds (Halbesleben, 2010) that bypass the procedures meant to protect them yet allow them to complete tasks with considerably less effort (Probst & Brubaker, 2001; Zohar & Erev, 2007). As such, emotional exhaustion reduces the likelihood that workers will put forth the extra effort required to follow safety protocols.

Hypothesis 1 Emotional exhaustion will be positively related to employee unsafe behavior.

Workgroup unsafe behavior norms

Norms are not formally written policies or regulations, but can form informal rules that govern behavior within collectives (Morrison, 2006) and exert influence on employees in organizational contexts (e.g., Bamberger & Biron, 2007; Coch & French, 1948; Robinson & O'Leary-Kelly, 1998; Walsh, Magley, Reeves, Davies-Schrils, Marmet, & Gallus, 2012). Norms develop in accord with social information processing theory, which states that employees form appropriate attitudes about, and expectations for, their behaviors with the information they absorb from their immediate social environments (Salancik & Pfeffer, 1978). As such, shared group norms perform an important regulatory function in groups (Baron, Kerr, & Miller, 1992; Postmes, Spears, & Cihangir, 2001) and strengthen over time as individual members continually receive social cues that direct their behavior in line with group customs (Robinson & O'Leary-Kelly, 1998). Employees experience "strong social pressure within the organization to perform work using 'normal' work methods (e.g., what everyone else does) rather than following formalized safety procedures" (Mullen, 2004: 283). Indeed, employee behavior may be most influenced by the standards and norms of their work-based referent others (Bamberger & Biron, 2007). Moreover, because group norms are locally and situationally defined, they can diverge from widespread social norms that regulate behavior at broader levels of the organization and society (Postmes & Spears, 1998). For instance, scholars have found that group members match their level of productivity to the norms of their workgroup (Coch & French, 1948; Roethlisberger & Dickson, 1947) and that group norms can even encourage unethical behaviors, such as drinking and theft (Altheide, Adler, Adler, & Altheide, 1978; Applebaum, 1984; Dalton, 1959; Greenberg, 1997; Greenberg & Scott, 1996; Hawkins, 1984; Hollinger & Clark, 1982; Horning, 1970).

Similarly, we anticipate that individuals will also act in accord with group norms regarding safe practices at work. As individuals routinely witness coworkers engaging in unsafe behaviors, it acts as a signal that such behavior is tolerated or even accepted by the workgroup. If work within the group is interdependent, there may even be pressure from group members to enact unsafe behavior so as to perform work more quickly or to enable fellow group members to engage in shortcuts and workarounds. Consequently, individuals are less likely to follow proper procedures and caution when group norms dictate a lack of concern over safety regulations and a general acceptance of risky behavior. In line with this rationale, Fugas et al. (2011) found that coworkers' safety norms impacted safety behavior. That is, individuals are likely to match their behavior with the extent to which unsafe behavior represents the norm within the workgroup.

Hypothesis 2 Unsafe behavior norms will be positively related to employee unsafe behavior.

As previously discussed, when employees are emotionally drained, they are more likely to engage in unsafe behavior (Halbesleben, 2010; Li et al., 2013; Nahrgang et al., 2011). Additionally, unsafe behavior norms convey the degree to which safe performance is valued and expected by the group. Therefore, in groups where unsafe behavior is not the norm (i.e., low unsafe norms), there are likely strong social expectations regarding safe performance that encourage precaution and act to buffer against this effect (Chowdhury & Endres, 2010). For instance, as emotionally exhausted employees consider ways to conserve energy and resources, those in groups characterized by low unsafe norms will place high importance on safety and, therefore, will prefer alternative methods of energy reduction or disengagement. Moreover, in groups characterized by low unsafe norms, not following proper safety measures would likely serve to accelerate the depletion of emotion resources as bucking the group norm, combating social pressure, and ignoring highly valued practices will produce added stress on the employee. Finally, because fellow group members presumably value safe behavior, it is probable that they will attempt to compensate for the employee's exhaustion level by providing various forms of safety-related support, assistance, and advice (Morgeson & Humphrey, 2006). Therefore, low unsafe behavior norms may serve as a group-level resource that can attenuate the relationship between emotional exhaustion and the enactment of employee unsafe behaviors.

Conversely, high unsafe norms are likely to accentuate this relationship. Emotionally exhausted employees are prone to taking short-cuts (Halbesleben, 2010), and can more readily do so when such behaviors are encouraged by the group. Because their groups do not value safety, these individuals are particularly likely to reduce job-related strain by ignoring protocols as they will not receive backlash from their peers and are unlikely to be reprimanded by superiors. Moreover, given that utilizing unsafe workarounds reflects the norms in these groups, individuals would seemingly have extensive knowledge of and access to various safety-related shortcuts, and would likely be assisted by coworkers in their attempts to perform energy-saving unsafe behavior.

Hypothesis 3 Unsafe behavior norms will moderate the relationship between emotional exhaustion and employee unsafe behavior such that the relationship will be stronger when unsafe behavior norms are high.

Personal control

Employees who are emotionally exhausted are expected to conduct more unsafe behaviors, especially when they are in groups characterized by high unsafe norms. In the same vein, we suggest that personal control over one's work may also increase the likelihood that emotional exhaustion translates into increased incidences of unsafe behavior at work. Personal control is the extent to which an employee perceives that he or she is free to make choices to initiate and regulate work outcomes (Brockner et al., 2004; Spector, 1986; Spreitzer, 1995; Tangirala & Ramanujam, 2008). With high personal control, employees perceive they have substantial freedom and independence in making choices and decisions about their work, and more specifically, they can schedule activities and decide on procedures to carry out the work (Hackman & Lawler, 1971; Richer & Vallerand, 1995). Though previous research has repeatedly shown the positive influence of personal control on many psychological and managerial outcomes (e.g., Averill, 1973; Bazerman, 1982; Elovainio, Kivimaki, & Helkama, 2001; Glass & Singer, 1972; Hackman & Lawler, 1971; Karasek, 1979; Miller, 1977; Seligman, 1975; Thompson, 1981), we suggest that, in the context of workplace safety, it may not always be beneficial to the organization.

Opportunity is a necessary precondition for deviant behavior to occur (e.g., Gottfredson & Hirschi, 1990; Marcus & Schuler, 2004). Because, personal control entails extensive discretion at work, it therefore affords individuals greater opportunity to engage in unsafe behavior and take shortcuts without interference from others. With less oversight and supervision, individuals are more likely to develop bad habits and can more easily bypass or ignore regulations as they have both less fear of reprisal and greater occasion to develop alternative, and possibly unsafe, methods of performance. Conversely, low levels of personal control will curtail chances to perform deviant behavior (Marcus & Schuler, 2004), as employee behaviors will be monitored and highly regulated. Therefore, similar to findings that job autonomy strengthens the relationship between job stressors and deviant behavior (Fox et al., 2001), we suggest that personal control provides emotionally exhausted workers the means necessary to alleviate strain by developing and enacting unsafe shortcuts and workarounds.

Hypothesis 4 Personal control will moderate the relationship between emotional exhaustion and employee unsafe behavior such that the relationship will be stronger when personal control is high.

The joint moderating roles of unsafe behavior norms and personal control

In line with previous research (Halbesleben, 2010; Li et al., 2013; Nahrgang et al., 2011), we have suggested that emotionally exhausted employees are motivated to engage in unsafe workplace behaviors so as to reduce job strains and conserve depleted emotional resources and energy. Additionally, we have proposed that unsafe group norms and personal control will strengthen this effect by further enabling workers to engage in unsafe behavior via shortcuts, workarounds, and other types of risky performance. At this point, we further delineate the boundary conditions surrounding the emotional exhaustion-employee unsafe behavior link by describing the interplay between group norms and personal control on this effect. That is, we suggest that these two factors jointly moderate the relationship such that the occurrence of unsafe behavior in response to emotional exhaustion is greatest when both unsafe behavior norms and personal control are high.

This is because the freedom provided by personal control, that can facilitate risky behavior, may be contrasted by conflicting pressures to conform to the norms of the group. Therefore, regardless of one's desire to "slack off," if group norms reflect a strong value for safety and no tolerance for unsafe performance, social pressure may supersede individual motivations and inhibit workers from acting out their desires. Under such conditions, employee actions are coerced by "environmental forces and thus do not represent true choice" (Deci & Ryan, 1987: 1024). Therefore, the influence of personal control over one's work is likely to be negated under conditions of low unsafe group norms. On the other hand, the conditions for excessive unsafe behavior likely occur when motive (high emotional exhaustion), opportunity (high personal control), and context (high unsafe norms) all align. In this instance, unsafe group norms may act as a complementary social resource (Adler & Kwon, 2002) that fosters workers' discretion and fully enables them to act out their desires without restraint.

Hypothesis 5 Unsafe behavior norms and personal control will jointly moderate the relationship between emotional exhaustion and employee unsafe behavior such that the relationship will be strongest when both moderators are high.

We present the theoretical model in Fig. 1.

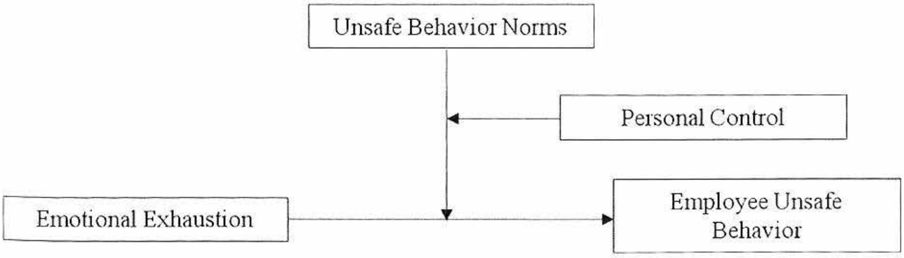

Fig. 1 The theoretical model

Methods

We utilized a multilevel design in which employees (level 1) were nested in workgroups (level 2). Employees completed surveys that included measures of emotional exhaustion, unsafe behavior (self-referent), unsafe behavior (coworker-referent), and personal control. For our level 2 unsafe behavior norms measure, we aggregated coworker-referent unsafe behavior to address a group-level phenomenon from one data set divided based on the split-sample technique (Ostroff, Kinicki, & Clark, 2002; Podsakoff, MacKenzie, & Podsakoff, 2012; Rousseau, 1985; Wilderom, van den Berg, & Wiersma, 2012).

Sample and procedures

We conducted an on-site survey in a large Chinese construction company. While 750 questionnaires were distributed, our final valid sample consisted of 592 employees (78.93 % response rate) after clearing missing values. These participants belonged to 33 construction workgroups, with an average group size of 18. Among the 592 respondents, 95.44 % were males (N = 565) and the average age, tenure, and extent of formal education were 35.67, 6.50, and 8.97 years respectively.

Individual-level measures

For the scales originally in English, we translated them into Chinese following Brislin's (1980) "back translation" approach. Unless otherwise indicated, all the measurements were presented on a 5-point Likert format (1 = strongly disagree; 5 = strongly agree) and all the following analyses and calculations were calculated based on the dataset B (N = 273), which is discussed in detail in the "split-sample technique" section below. Results derived from dataset B were similar to those based on the overall sample (N = 592).

Emotional exhaustion Emotional exhaustion was measured by five items developed by Schaufeli, Leiter, Maslach, and Jackson (1996). Two example items are "I have felt emotionally drained from my work," "I have felt used up at the end of the work day" (α = .87).

Personal control Following prior literature (e.g., Brockner et al., 2004; Tangirala & Ramanujam, 2008), we measured personal control using six items from the self-determination and impact subscales of Spreitzer's (1995) empowerment measure. Two example items from the self-determination subscale are "I have significant autonomy in determining how I do my job," "I can decide on my own how to go about doing my work." Two example items from the impact subscale are "My impact on what happens in my team is large," "I have a great deal of control over what happens in my team" (α = .84).

Employee unsafe behavior We measured unsafe behavior with items adapted from the Classification Criteria for Casualty Accidents of Enterprises Employees GB6441-86 (State Administration of Work Safety & Standardization Administration of the People's Republic of China, 1986), which contained definitions of workplace unsafe behavior. In order to fit the construction-site context, eight items were chosen. Participants responded to these items using a 5-point Likert scale (1 = never; 5 = always). Several example items include "In order to work conveniently, I remove some security equipment or facilities," "Wear slippers or do not wear a seat belt when working," and "Continue working after drinking" ($\alpha = .93$).

The use of self-report measures for employee unsafe behaviors was strategically chosen for several reasons. First, archival safety data kept by organizations is typically limited to reports of large accidents, which may severely underestimate the prevalence of unsafe behavior (Newnam, Griffin, & Mason, 2008) and are highly prone to reporting bias (Barling, Loughlin, & Kelloway, 2002; Hofmann & Morgeson, 1999). Second, employees likely hide unsafe behavior from their supervisors, therefore causing supervisors to lack the awareness necessary to accurately assess the prevalence of unsafe behavior by their employees. Finally, self-report data is not scant in the unsafe behavior literature (e.g., Barling et al., 2002; Newnam et al., 2008), and Lajunen and Summala (2003) found self-report safety data to be significantly associated with objective safety data.

In order to further establish the validity of our employee unsafe behavior measure, we also assessed "tangible events or results" such as near misses and injuries (Christian et al., 2009: 1104), since employee unsafe behavior has been found to significantly predict near misses and accidents (Christian et al., 2009; Clarke, 2010; Parker, Reason, Manstead, & Stradling, 1995; West, French, Kemp, & Elander, 1993). More specifically, near misses was assessed by asking respondents to report whether they almost experienced one or more particular types of injury (0, "no," 1, "yes," a dichotomous variable) in the past 3 months. In addition, we measured injuries by asking respondents to report whether they had the following eight kinds of injuries (0, "no," 1, "yes") defined by Zacharatos, Barling, and Iverson (2005) in the past 3 months: (a) fractures; (b) dislocations, sprains, and strains; (c) bruising and crushing; (d) superficial wounds (i.e., scratches and abrasions); (e) open wounds (i.e., cuts, lacerations, and punctures); (f) burns and scalds; (g) eye injuries; and (h) concussions and other head injuries. We then calculated injuries by summing all the eight items above. Following prior literature, we chose 3 months as a retrieving period, as it was suitable for employees to recall near misses and injuries they experienced with accuracy (Veazie, Landen, Bender, & Amandus, 1994; Zacharatos et al., 2005). Due to some missing values of near misses and injuries, we obtained 571 valid matching subjects, which were not significantly different from our overall 592 sample. The correlation analyses based on the 571 participants indicated that employee unsafe behavior was positively associated with near misses ($\beta = .13, p < .01$) and injuries ($\beta = .18, p < .001$) which suggested that our employee unsafe behavior measure had high validity in this study. Note that in the current study, we used near misses and injuries to check the validity of unsafe behavior scale. We did not use these measure as dependent variables due to their "highly skewed distribution characteristic" (Zohar, 2000: 589), the low base rates of both accidents and near misses (Newnam et al., 2008; Zohar, 2000) and particularly low predictabilities (Newnam et al., 2008).

Group-level measures

All the calculations including Cronbach's alphas for the group-level measures were assesses based on the dataset A ($N = 319$), which is described in detail in the "split-sample technique" section below.

Unsafe behavior norms To reflect workgroup norms, we reworded the unsafe behavior items to use co-workers as the referent. Participants also responded to these items using a 5-point Likert scale (1 = never; 5 = always). An example item is "In order to work conveniently, my co-workers remove some security equipment or facilities" ($\alpha = .93$). We then aggregated every group member's rating within each group to generate unsafe behavior norms (coworker-referent). Before aggregating the data, we checked to see whether aggregation was appropriate. One-way analysis of variance confirmed that there were significant differences between groups, with an ICC[1] of .19. The within group agreement measured by median r_{wg} (James, Demaree, & Wolf, 1984) was .72. We also calculated the intraclass correlation coefficients (ICC[2]) (Bliese, 2000; McGraw & Wong, 1996) of the variables. The F-test and ICC[2] produced acceptable values (F (32,286) = 3.33, $p < .001$, ICC[2] = .70).

Control variables

Prior reviews on safety research indicated that demographic variables (e.g., gender, age, educational level, and tenure), job satisfaction, safety knowledge and safety motivation account for significant variance in employee unsafe behavior (e.g., Dupre, 2000; Helsing & Comstock, 1977; Loughlin & Barling, 2001; Reason, Manstead, Stradling, Baxter, & Campbell, 1990; Reason, Parker, & Lawton, 1998; Romano, Tippetts, Blackman, & Voas, 2005). Thus, we included gender (female was coded as 0, male was coded as 1), age (in years), education (in years), and tenure (in years), safety knowledge and safety motivation as control variables due to their potential impact on employee unsafe behavior. More specifically, in the context of construction industries, we measured safety knowledge by eight typical and objectively true or false questions chosen from one classical training textbook (Zhang, 2005), and calculated it through the summation of the eight items (0, "wrong," 1, "right"). An example item is "When cutting the rebar, the distance between hands with the knife-edge shall not be less than 15 cm." Meanwhile, safety motivation was assessed by four items developed by Neal, Griffin, and Hart (2000). An example item is "I feel that it is important to maintain safety at all times" ($\alpha = .91$).

Treatments and tests for common method variance

Although self-report measures may induce common method variance (CMV), this concern is attenuated by this study's primary purpose—to test interaction effects which cannot be artificially created through CMV in multiple regression (Evans, 1985; Podsakoff et al., 2012; Siemsen, Roth, & Oliveira, 2010) or multilevel modeling (Lai, Li, & Leung, 2013). Nevertheless, we adopted the split-sample technique

(Ostroff et al., 2002; Podsakoff et al., 2012; Wilderom et al., 2012) which minimized any potential effects and conducted analyses to test for the presence of CMV.

Split-sample technique In order to obtain the measures from different sources and reduce the potential CMV, we randomly split our sample into two datasets A and B for each group following prior literature (Ostroff et al., 2002; Wilderom et al., 2012). The split-sample technique has been recommended by a number of researchers (Ostroff et al., 2002; Podsakoff et al., 2012; Rousseau, 1985; Wilderom et al., 2012), because it can help to effectively reduce common source bias. The philosophy behind the split-sample technique is to obtain measures from different sources through randomly splitting the whole sample into two datasets (Ostroff et al., 2002; Podsakoff et al., 2012). That is, in this research, the group-level variable (i.e., unsafe behavior norms) was derived from dataset A, and the other variables (including emotional exhaustion, personal control, unsafe behavior, and control variables) were derived from dataset B. More specifically, responses from dataset A were used to obtain aggregate measures of unsafe behavior norms. These aggregated scores then were assigned to individuals in dataset B and hypotheses were tested based on this dataset, so that the group-level variable (i.e., unsafe behavior norms) is from another source. Since Bliese and Halverson (1998) demonstrated that the biases in using aggregate scores diminished with groups of eight or more employees, and in line with Ostroff et al. (2002), we conducted the following way to randomly split the sample through STATA software. For those groups whose sizes were 16 or more, we randomly split the sample in each group into half—assigning half of the respondents to dataset A and half to dataset B. For those groups whose sizes were less than 16 but greater than eight, we randomly chose eight individuals into dataset A for aggregation, and the remaining samples individuals were assigned to dataset B. For those groups whose sizes were eight or less than eight, we randomly chose one individuals into dataset B, and put the remaining into dataset A to let there are as many individuals as possible for aggregation (Bliese & Halverson, 1998; Ostroff et al., 2002). For example, if a group had eight individuals, one individual was selected into dataset B while the remaining (i.e., seven) individuals were selected into dataset A, and these seven respondents were then used for aggregation. Ultimately, employing the split-sample resulted in 319 respondents for dataset A and 273 for dataset B.

Tests for common method variance When comparing different strategies for detecting CMV using simulations under different scenarios, Richardson, Simmering, and Sturman (2009) found that the confirmatory factor analysis (CFA) marker technique (Williams, Hartman, & Cavazotte, 2010) was the most accurate in detecting or denying the existence of CMV. Thus, in line with prior literature (Bock, Opsahl, George, & Gann, 2012; Kovjanic, Schuh, Jonas, Van Quaquebeke, & Van Dick, 2012), we used the CFA marker technique to test the presence of biasing effects (Richardson et al., 2009; Williams et al., 2010). In this study, following their suggestions that the marker variable is suitable when it has weakest relationships with other variables, we chose *optimism of safety* as the marker variable (Table 2). We assessed optimism of safety through four items developed by Williamson, Feyer, Cairns, and Biancotti (1997). An example item is "It is not likely that I will have an accident because I am a careful person" ($\alpha = .77$). The estimations for CMV were calculated based on the overall sample ($N = 592$), while those calculated based on dataset B ($N = 273$) were similar.

When performing the CFA marker technique (Richardson et al., 2009; Williams et al., 2010), we estimated five nested CFA models (i.e., the initial CFA model, the baseline model, Method-C Model, Method-U Model, Method-R Model). First, we estimated the initial CFA model, in which the marker latent variable (optimism of safety) and the four latent variables (emotional exhaustion, personal control, employee unsafe behavior and coworker unsafe behavior) correlated freely. Then, in the baseline model, the correlations between the marker variable and all the other four constructs were forced to zero and the marker variable's parameters were constrained to the values obtained from the initial CFA model. In the Method-C model, on the basis of the baseline mode, we added 27 factor loadings from the marker construct to the four constructs. In order to reflect the assumption of equal (i.e., noncongeneric) method effects, this model fixed all these factor loadings to be equal. We found that the Method-C Model fitted significantly better than the baseline model ($\Delta\chi^2 = 13.41$, $\Delta df = 1$, $p < .001$). Furthermore, we estimated the Method-U Model, which was similar to the Method-C Model, except that the 27 factor loadings from the marker latent variable to the four indicators were freely estimated, reflecting the assumption of nonequal (i.e., congeneric) method effects. When comparing the Method-U Model with the Method-C Model and the baseline model, the results indicated that the Method-U Model was significantly better than the Method-C Model ($\Delta\chi^2 = 64.85$, $\Delta df = 26$, $p < .001$) and the baseline model ($\Delta\chi^2 = 78.29$, $\Delta df = 27$, $p < .001$), suggesting evidence of unequal method effects. Finally, we estimated the Method-R Model based on the Method-U Model, except that we fixed the factor correlations for the four constructs to values obtained from the baseline model. Comparison between the Method-R Model and the Method-U Model revealed that the associations in our model were not significantly biased by method variance ($\Delta\chi^2 = .85$, $\Delta df = 6$, *n.s.*).

Analytical strategy

Our subjects were nested in 33 groups, indicating they were hierarchical in nature. Thus, in order to account for the correlation structure of data within groups and estimate the impact of group-level factors on individual-level outcomes (Bryk & Raudenbush, 1992), we chose hierarchical linear modeling (HLM) to examine our hypotheses. We grand-mean centered the individual-level predictors following Hofmann and Gavin's (1998) and Raudenbush's (1989) suggestions, since this approach makes it easier to interpret results, control for individual-level effects when testing the incremental effects of the group-level variables, and relieve multicollinearity in group-level estimation. Furthermore, in addition to the hypothesis tests, following prior literature (e.g., Liao & Chuang, 2007; Uotila, Maula, Keil, & Zahra, 2009), a series of analyses were conducted to test the robustness of our results.

Results

Multi-level confirmatory factor analysis

In line with prior literature (Wang, Liao, Zhan, & Shi, 2011), we conducted multi-level CFA using Mplus 6.0 (Muthén & Muthén, 2007) to ensure the factorial validity of the scale measures. The four-factor measurement model (emotional exhaustion, personal control, employee unsafe behavior, coworker unsafe behavior) provided a very good fit to the data (χ^2 = 906.43, *df* = 636, $p < .001$; $SRMR_{within}$ = .05, $SRMR_{between}$ = .17, RMSEA = .03, CFI = .94, TLI = .94) based on the overall sample (N = 592). In this model, the within-structure SRMR was much smaller than the between-structure SRMR, which suggested that the within-structure model fitted well at the individual level, whereas the between-structure fitted only marginally well at the group level. Because most of the variables were derived at the individual level, this may be the reason why the model fitted better at the individual level than at the group level (Cheung, Leung, & Au, 2006; Sexton et al., 2006).

Table 1 summarizes the means, standard deviations, and correlations among all studied variables.

Given the data's nested nature, we adopted HLM to examine the hypotheses (Hofmann & Gavin, 1998). We first ran a one-way analysis of variance with random effects, and the "null model" (Model 1) showed significant variance across groups with respect to individual unsafe behavior: τ_{00} = .08, and the Chi-square test, which compared the "null model" and the corresponding linear regression model that ignored the hierarchical structure, further revealed that Model 1 was significantly better than the corresponding linear regression

Table 1 Means, standard deviations, and correlations for all studied variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	.96	.20										
2. Age	35.38	9.99	−.06									
3. Education	9.06	2.78	.04	$-.41^{***}$								
4. Tenure	6.39	5.45	.06	$.42^{***}$	$-.29^{***}$							
5. Safety knowledge	6.36	1.62	.03	.05	.05	.04						
6. Safety motivation	4.20	.68	.02	.09	.00	.07	$.21^{***}$					
7. Emotional exhaustion	2.61	.77	−.02	−.06	.08	−.07	−.09	$-.18^{**}$				
8. Personal control	2.98	.65	.05	−.02	$.13^{*}$	.02	−.02	.07	.00			
9. Unsafe behavior norms[a]	1.58	.38	−.04	.04	−.01	−.01	−.10	$-.23^{***}$	.09	−.09		
10. Employee unsafe behavior	1.49	.71	−.05	.07	−.09	.07	$-.25^{***}$	$-.36^{***}$	$.28^{***}$	−.09	$.43^{***}$	
11. Marker variable (optimism of safety)[b]	2.98	.80	.01	.04	.04	.01	−.07	.00	−.04	$.12^{**}$	$.11^{*}$	$.13^{**}$

N = 273, *N(group)* = 33, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

[a] Group level

[b] N = 592

model ($\chi^2(32) = 23.66$, $p < .001$). Meanwhile, ICC[1] showed that 16 % variance of employee unsafe behavior originated from the groups (Table 2).

Hypothesis 1 proposed the effect of emotional exhaustion on employee unsafe behavior. The results of Model 2 indicated that emotional exhaustion was positively related to employee unsafe behavior ($\hat{\gamma} = 0.20$, $p < .001$), which is consistent with Hypothesis 1. Model 2 provided better fit (i.e., deviance of 30.72, $p < .001$) and accounted 19 % more of within-group variance than Model 1. Furthermore, Model 3 showed that workgroup unsafe behavior norms also predicted employee unsafe behavior ($\hat{\gamma} = 0.64$, $p < .001$), supporting Hypothesis 2.

Hypothesis 3 proposed that unsafe behavior norms would enhance the relationship between emotional exhaustion and employee unsafe behavior. Model 4 is a random slope model, which fitted better than the fixed slope model (Model 3) (i.e., deviance of 7.72; $p < .01$), indicating nonzero variance of slope. The results of Model 5 showed that this two-way interaction (Emotional exhaustion × Unsafe behavior norms) significantly predicted employee unsafe behavior ($\hat{\gamma} = .48$, $p < .001$). The interaction accounted for about 67 % of the total variance of slope across groups. To further interpret this interaction effect, we plotted the two-way interactions following Aiken and West's (1991) recommendations—using one standard deviation above and below the mean on the predictor variables (see Fig. 2). In line with Hypothesis 3, the relationship between emotional exhaustion and employee unsafe behavior was stronger when unsafe behavior norms were high ($\beta = .42, t = 4.89, p < .001$) than when they were low ($\beta = .04, t = .64, n.s.$). Thus, Hypothesis 3 was supported.

We also predicted that personal control will enhance the emotional exhaustion-employee unsafe behavior link in Hypothesis 4. However, the results of Model 6 indicated that the interaction between emotional exhaustion and personal control was not significant ($\hat{\gamma} = -.00$, *n.s.*). Thus, Hypothesis 4 was not supported.

In Hypothesis 5, we proposed that unsafe behavior norms and personal control would jointly moderate the relationship between emotional exhaustion and employee unsafe behavior. The result of Model 7 showed that the three-way interaction was significantly related to employee unsafe behavior ($\hat{\gamma} = 0.56$, $p < .001$). To further interpret the result, we also plotted the three-way interaction as Aiken and West (1991) recommended (Fig. 3). Consistent with Hypothesis 5, when unsafe behavior norms and personal control were both high, the slope of the effect of emotional exhaustion on employee unsafe behavior was positive, and was steepest among the four lines. Simple slope analyses also indicated that the relationship between emotional exhaustion and employee unsafe behavior was positive and significantly different from zero when unsafe behavior norms and personal control were both high ($\beta = .61, t = 4.94, p < .001$). Furthermore, the results of slope difference test proposed by Dawson and Richter (2006) showed that the slope for the relation between emotional exhaustion and employee unsafe behavior when both unsafe behavior norms and personal control were high was indeed significantly more positive than the other three slopes (Table 3). Thus, Hypothesis 5 was supported.

Further robust analysis

In line with prior literature (e.g., Hambrick, 1983; Uotila et al., 2009), we conducted robustness checks for the multi-level moderator-unsafe behavior norms. Because some

Table 2 HLM results: The effects of emotional exhaustion, unsafe behavior norms, and personal control on employee unsafe behavior[a]

Variables	Model 1 (Null)	Model 2 (random intercept, fixed slope)	Model 3 (random intercept, fixed slope)	Model 4 (random intercept, random slope)	Model 5 (cross level interaction)	Model 6 (individual level interaction)	Model 7 (cross and individual level interaction)
Intercept	1.48***	1.49***	.47**	.51***	.47**	1.49***	.48***
	(.07)	(.06)	(.15)	(.15)	(.15)	(.05)	(.15)
Gender		−.04	−.08	−.13	−.12	−.09	−.09
		(.19)	(.18)	(.17)	(.17)	(.18)	(.17)
Age		.00	.00	.00	.00	.01	.00
		(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Education		−.02	−.01	−.01	−.01	−.02	−.02
		(.02)	(.01)	(.01)	(.01)	(.01)	(.01)
Tenure		.01	.01	.01	.01	.01	.01
		(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Safety knowledge		−.07**	−.07**	−.07**	−.06**	−.07**	−.06**
		(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Safety motivation		−.25***	−.23***	−.23***	−.20***	−.24***	−.22***
		(.06)	(.05)	(.05)	(.05)	(.05)	(.05)
Emotional exhaustion		.20***	.20***	.22**	−.53*	.22**	−.51**
		(.05)	(.05)	(.07)	(.23)	(.07)	(.19)
Unsafe behavior norms			.64***	.61***	.63***		.63***
			(.09)	(.09)	(.09)		(.09)
Emotional exhaustion × Unsafe behavior norms					.48***		.48***
					(.14)		(.12)
Personal control						−.07	−.18
						(.06)	(.23)
Emotional exhaustion × Personal control						.00	−.85***
						(.06)	(.25)

Table 2 (continued)

Variables	Model 1 (Null)	Model 2 (random intercept, fixed slope)	Model 3 (random intercept, fixed slope)	Model 4 (random intercept, random slope)	Model 5 (cross level interaction)	Model 6 (individual level interaction)	Model 7 (cross and individual level interaction)
Unsafe behavior norms × Personal control							.06 (.15)
Emotional exhaustion × Unsafe behavior norms × Personal control							.56*** (.16)
Within-group variance (σ^2)	.42	.34	.33	.30	.30	.34	.29
Intercept variance (τ)	.08	.05	.00	.00	.00	.05	.00
Slope variance (τ_{11})				.06	.02		.00
Proportion within-group variance explained[b]		.19	.21	.29	.29	.19	.31
Proportion variance of intercept explained[b]		.38	1.00	1.00	1.00	.38	1.00
Proportion variance of slope explained[c]					.67		1.00
N (Level 1)	273	273	273	273	273	273	273
N (Level 2)	33	33	33	33	33	33	33
−2 log-likelihood	562.75	502.64	471.92	461.80	453.28	491.14	439.54

* $p < .05$, ** $p < .01$, *** $p < .001$

[a] The standard errors in the estimations are reported in parentheses

[b] The proportion was calculated based on the parameters in Model 1

[c] The proportion was calculated based on the parameters in Model 4

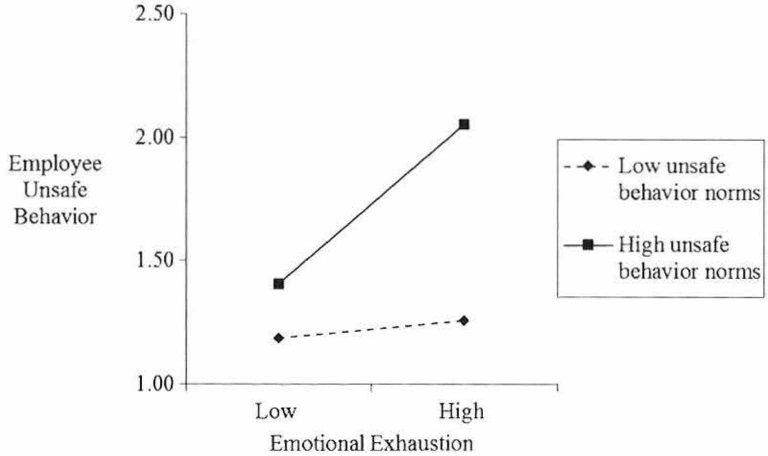

Fig. 2 The interaction effect of emotional exhaustion and unsafe behavior norms on employee unsafe behavior

scholars have suggested using a coworker-referent rather than a self-referent assessment for aggregation to a multi-level construct (Kozlowski & Klein, 2000), this study measured group unsafe behavior norms through both coworker-referent and self-referent methods in order to compare their effects in predicting employee unsafe behavior. As noted, the analysis above was conducted using the unsafe behavior norms (coworker-referent) construct. In order to obtain the unsafe behavior norms (self-referent) construct, we aggregated the self-referent employee unsafe behavior scores within groups based on dataset A ($N = 319$). Both the F-test and the intraclass correlation coefficients of unsafe behavior norms (self-referent) also produced acceptable values (F (32,564) = 3.36, $p < .001$; median $r_{wg} = .76$; ICC[1] =

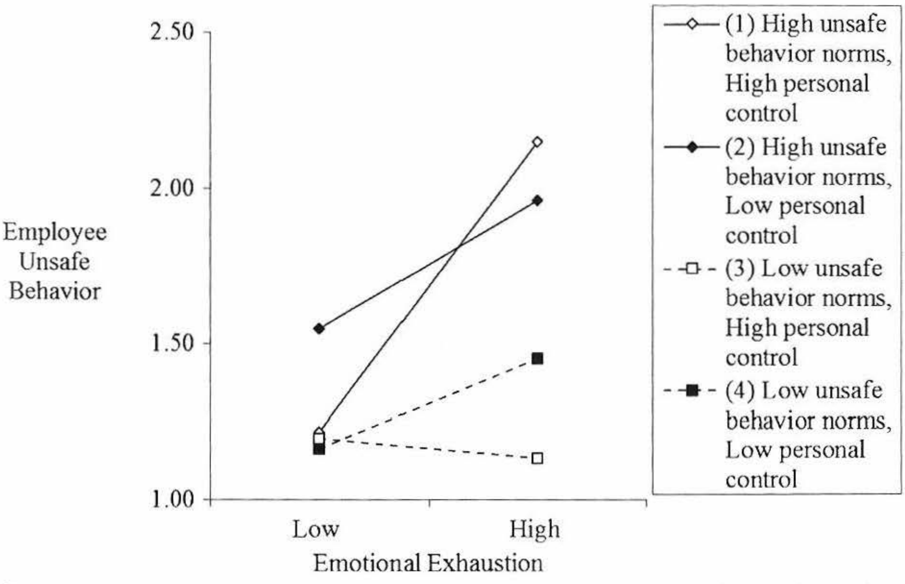

Fig. 3 The interaction effect of emotional exhaustion, unsafe behavior norms and personal control on employee unsafe behavior

Table 3 Results of *t*-test of slope differences

Slope pairs	*t*-tests
Unsafe behavior $norms_{high}$ and personal $control_{high}$ vs. Unsafe behavior $norms_{high}$ and personal $control_{low}$	3.27^{**}
Unsafe behavior $norms_{high}$ and personal $control_{high}$ vs. Unsafe behavior $norms_{low}$ and personal $control_{high}$	5.31^{***}
Unsafe behavior $norms_{high}$ and personal $control_{high}$ vs. Unsafe behavior $norms_{low}$ and personal $control_{low}$	3.29^{**}
Unsafe behavior $norms_{high}$ and personal $control_{low}$ vs. Unsafe behavior $norms_{low}$ and personal $control_{high}$	3.38^{***}
Unsafe behavior $norms_{high}$ and personal $control_{low}$ vs. Unsafe behavior $norms_{low}$ and personal $control_{low}$	.67
Unsafe behavior $norms_{low}$ and personal $control_{high}$ vs. Unsafe behavior $norms_{low}$ and personal $control_{low}$	-2.39^{*}

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

.20; ICC[2] = .70). These results suggested that individual team members' responses within the groups had sufficient agreement to aggregate to level 2. We then replaced unsafe behavior norms (coworker-referent) with unsafe behavior norms (self-referent) in the HLM analyses conducted above. Results were quite similar to those using the group-referent measure. The results indicated that there were no significant differences in ICC[1] and hypotheses tests between the coworker-referent and self-referent approaches.

Furthermore, consistent with prior literature (e.g., Liao & Chuang, 2007), we conducted ordinary least squares (OLS) analysis and regressions with a cluster correction of the error covariance matrix (Rogers, 1993) to examine the robustness of HLM results (James & Williams, 2000; Liao & Chuang, 2007). The results of OLS analysis showed a particularly consistent pattern with the HLM results. In addition, the cluster method adjusts the estimated variances and covariance structure in each group to let errors be heterogeneous and freely correlate within each group (Rogers, 1993). The results of regressions with a cluster correction of the error variance-covariance matrix were mostly consistent with the HLM results. Ultimately, all of our hypotheses were confirmed by the robustness tests.

Discussion

This study examined the boundary conditions between emotional exhaustion and employee unsafe behavior. Through multi-level modeling, we showed that the relationship between emotional exhaustion and employee unsafe behavior was moderated by group unsafe behavior norms alone and by the combination of group unsafe behavior norms and personal control. That is, employees with high emotional exhaustion are most likely to engage in unsafe behavior when unsafe norms and personal control are both high. However, we did not find an enhancing effect for personal control on the emotional exhaustion-employee unsafe behavior link. This finding is enlightening as it suggests that personal control, by itself, is not a sufficient condition to enhance the likelihood that emotional exhaustion will give rise to risky workplace behavior. Rather, the influence of personal control is dictated by the degree to which group norms align with individual motivations such that it acts to further enhance the relationship between emotional exhaustion and unsafe behavior only when working in characteristically unsafe groups.

Theoretical implications

The present research contributes to literature in several important ways. First, we echoed the call for more human factors to predict unsafe behaviors (Fogarty & Shaw, 2010). We proposed and found that emotional exhaustion interacted with group norms and personal control to predict employee unsafe behavior. Traditionally, studies of safety have centered on the physical work environment and work procedures of employees (Chhokar & Wallin, 1984; Komaki, Barwick, & Scott, 1978). More recently, however, researchers are claiming that a majority of workplace accidents and injuries are attributed to human factors rather than unsafe working conditions (Fogarty & Shaw, 2010). In the present study, we not only examined the effect of emotional exhaustion, but also we integrated the arguments from the TPB (Ajzen, 1991; 2001) to highlight the role of norms played in predicting unsafe behavior. Thus, in addition to individual human factors, the present study supports Mullen's (2004) argument and suggests unsafe behavior should be viewed as a combination of organizational and social factors.

Second, we explored the influence of group norms and found they were positively related to individuals' unsafe behavior at work. The safety literature has indicated that safety climate (perceptions of workplace safety policies, procedures and practices) can exert influence on employees' safety behaviors, and that a supportive safety climate can reinforce safe performance (Beus, Payne, Bergman, & Arthur, 2010; McGonagle & Kath, 2010; Morrow, McGonagle, Dove-Steinkamp, Walker, Marmet, & Barnes-Farrell, 2010). Safety climate consists of three facets: management safety, coworker safety, and work-safety tension (Morrow et al., 2010). Unsafe behavior norms are quite relevant to the second facet of safety climate—coworker safety, which describes the extent to which employees perceive that their peers value safety. Unsafe behavior norms provide social cues for the types of behaviors regarding safety that are appropriate and expected within the organization. As shown in this study, unsafe norms are not only related to individual incidences of employee unsafe behavior, but also enhance the potential for emotional exhaustion to manifest in unsafe performance. Thus, this study broadens conceptualizations and our understanding of safety in the workplace by introducing group unsafe behavior norms, its effect on employee actions, and its influence on the emotional exhaustion-unsafe behavior relationship.

Third, we furthered understanding of personal control by showing that job discretion can afford employees greater opportunity to conduct unsafe behavior under certain conditions. As such, despite extensive evidence of the positive influence that personal control can have for workers and organizations (e.g., Averill, 1973; Bazerman, 1982; Elovainio et al., 2001; Glass & Singer, 1972; Hackman & Lawler, 1971; Karasek, 1979; Miller, 1977; Seligman, 1975; Thompson, 1981), our findings suggest that in certain contexts, e.g., safety, there may be a dark-side to autonomy and control by individual workers. As such, this research opens the door for the exploration of other potentially negative effects associated with personal control in the workplace.

Managerial implications

The study's findings have several practical implications as well. First, emotional exhaustion can motivate unsafe behavior. Organizations should adopt various measures to reduce employee emotional exhaustion, such as a well-designed work schedule, policies that support work-life balance, and programs designed for burnout prevention and intervention so as to reduce the potential for costly and harmful workplace accidents.

Second, the findings indicate that unsafe behavior can be contagious within groups. That is, social pressure to conform to group norms increases the likelihood that individual members will enact unsafe behaviors, which in turn further reinforce this potentially dangerous norm. Accordingly, we suggest the management be cautious not to allow unsafe behavior norms to become established. Managers should pay careful attention to unsafe behaviors and take appropriate actions to create a culture of safety in the workplace, and maintain it through constant encouragement and goal-setting regarding safety behaviors in order to curtail the development of unsafe behavior norms within groups. Low unsafe group norms will not only reduce employee unsafe behavior directly, but also will help to attenuate the triggering effect of emotional exhaustion on employee unsafe behavior as well.

Third, the present study provides an interesting implication of personal control. In interpreting our results, it is important to note that we are *not* advocating that managers should somehow try to decrease levels of employee control in order to reduce unsafe behavior. Rather, the present findings suggest that when employees are empowered with control, management needs to be sure to provide a non-stressful and healthy work environment.

Limitations and future directions

This study has several limitations that should be addressed in future research. First, the self-report data may be susceptible to common method variance (Lindell & Whitney, 2001). However, we used the split-sample technique to minimize common source bias (Ostroff et al., 2002; Podsakoff et al., 2012; Rousseau, 1985; Wilderom et al., 2012), with one dataset being used to aggregate group-level measures, and a separate dataset used to calculate the individual-level variables and examine the hypotheses. Moreover, given the study's primary focus on interaction effects, concerns over method are attenuated as it is unlikely that the moderator effects could be produced by CMV (Lai et al., 2013). Further, this research employed a cross-sectional design, which limits causal inferences between independent and dependent variables. Future research should assess issues of causality by conducting longitudinal research. In addition, the sample was from the construction industry in China. Although the improvement of safety performance is critical for construction firms (Mearns, Whitaker, & Flin, 2003), construction workers may be different from workers in other organizational settings.

Second, unsafe behaviors may be pervasive in the Chinese construction industry (Tam, Zeng, & Deng, 2004), and most construction workers were from the countryside and have relatively limited opportunity to receive formal education and safety training (Zai, 2001). We recommend that future research address whether our findings hold across other occupational contexts. Also, it will be interesting and useful to test these relationships in Western contexts. Confucian value is one of the most representative indigenous values of Chinese culture (Chinese Culture Connection, 1987), and empirical evidence shows that Confucian values continue to have a strong influence on Chinese society (Hofstede & Bond, 1988; Huang, Liang, & Hsin, 2012). One of the important parts of Confucian value is that a noble person should be an active member of the group through fulfilling his or her expected roles (Tan, 2013). Chinese employees are more likely to base their identities on group memberships (Hofstede, 2001), and they align their behaviors with the perceived expectation of the entire group. Thus, once a workgroup norm for unsafe behaviors is formed, the team members will be much more aware of its influence. Also, we suggest that collectivism can determine how Chinese employees view themselves with the group. Collectivists regard themselves as an extension of the various social systems to which they belong, and the distinction between the individual and the group is blurred (Hofstede, 2001). In comparison with employees in Western countries, Chinese employees are more connected with significant others and pay more attention to maintaining harmonious interpersonal relationships, and are more sensitive to the demands of their social context (Bochner, 1994). Thus, in addition to Confucian values, we also suggest the cultural feature of collectivism may impact employees' evaluation of the group and the extent to which they will align their behaviors with the group norms. Considering the cultural differences between Chinese employees and employees in Western settings, it is worthwhile to replicate the findings in Western countries.

Third, while this study has added to our understanding of the factors that influence the relationship between emotional exhaustion and unsafe behaviors in the workplace, there is continued opportunity to address the impact of various other conditions such as job type, or resources such as supervisor support that may strengthen or weaken this effect. Meanwhile, considering the highly skewed distributions of near misses and injuries, it will be useful to examine whether and how the factors discussed in this study may influence them as well. Further, it will be beneficial to investigate the explanatory mechanisms and psychological processes that transmit these triggers and interacting factors into unsafe behavior.

Finally, our models exhibited small within-structure SRMR but medium between-structure SRMR. As demonstrated in the simulation study of Marsh, Hau, and Wen (2004), SRMR can be biased by sample size, which may be the reason for the small within-structure SRMR (sample size = 592 for individual level in our study) and medium between-structure SRMR (sample size = 33 for group level) found in this study. Hence, it will be helpful if future studies can collect data from more groups in order to overcome the issues associated with investigating the fit of measurement models at the group level.

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