



Curvilinear effects of personality on safety performance: The moderating role of supervisor support



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ABSTRACT

Personality has long been assumed to be linearly associated with safety performance. Focusing on the benefits and costs of personality traits, this study investigates the curvilinear effects of personality traits (i.e., Conscientiousness, Emotional Stability and Extraversion) on safety performance. Results support our hypothesized curvilinear effects that their relationships are initially positive but become negative as personality trait scores increase to extremely high. Furthermore, drawing on theory of purposeful work behavior, this study proposes and finds that the curvilinear effects of personality traits on safety performance are moderated by team-level supervisor support climate, such that the inflection points after which the personality–performance relationship becomes negative are higher under high levels of supervisor supportive environment than those under low levels of such environment. Implications for research and practice, as well as limitations and directions for future research, are provided.

1. Introduction

Workplace safety is an increasing concern worldwide. To ensure high levels of safety performance, considerable research has focused on the role of personality (e.g., Beus, Dhanani, & McCord, 2015). Early studies have shown that Extraversion and Neuroticism were weakly positively associated with accidents within the framework of Eysenck's theory (e.g., Hansen, 1988). With the emergence of the “Big Five” personality theory, the positive role of Conscientiousness in predicting safety behavior was observed (Postlethwaite, Robbins, Rickerson, & McKinniss, 2009). Christian, Bradley, Wallace, and Burke (2009) summarized the importance of three personality traits, namely Conscientiousness, Emotional Stability and Extraversion, to safety performance in organizational settings. However, the relatively weak or equivocal correlations remain as issues (e.g., Beus et al., 2015).

A promising idea is that personality–safety performance relationship may be nonlinear instead of linear. Growing researches have begun to examine curvilinear personality–performance relationship (e.g., Le et al., 2011). However, minimal attention has been given to safety performance. Although Carter et al. (2014) has provided initial evidence for curvilinear Conscientiousness–safety performance relationship, the theoretical framework for this relationship remains insufficient. In addition, Emotional Stability and Extraversion should be

further explored (Christian et al., 2009). Therefore, this study aims to explore the curvilinear effects of Conscientiousness, Emotional Stability and Extraversion on safety performance.

Moreover, the effects of personality on performance vary across different situations (Barrick, Mount, & Li, 2013). If a curvilinear relationship exists between personality and safety performance, how will such a relationship vary across different situations, and how the negative consequences of extremely high trait scores can be mitigated? To address these issues, the second objective of this study is to develop and test the theoretical argument that team-level supervisor support climate (SSC) (Bliese & Castro, 2000) moderates the curvilinear personality–safety performance relationship.

1.1. Curvilinear effects of personality on safety performance

Neal and Griffin (2006) differentiated two types of safety performance behaviors: safety compliance (rule-complying behaviors) and safety participation (voluntary safety-related behaviors). Although personality traits were assumed to facilitate safety behaviors (Beus et al., 2015), increasing evidence indicates that all positive traits have benefits and costs, and the costs would begin to outweigh the benefits at high levels (Grant & Schwartz, 2011). Accordingly, we believe that personality traits are curvilinearly related to safety behaviors.

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1.1.1. Conscientiousness and safety performance

Conscientiousness describes the extent to which individuals behave responsibly and cautiously, follow rules, and pursue high-order achievement goals (i.e., desire to fulfill obligations) (Barrick et al., 2013). Maintaining safety is a fundamental obligation of employees (Beus et al., 2015). Thus, working safely can aid in pursuing achievement goals. Supporting this view, Conscientiousness has been meta-analytically demonstrated to be positively associated with safety motivation and safety behaviors (Neal & Griffin, 2006).

However, an extremely high Conscientiousness may reduce safety performance. First, highly conscientious individuals may be self-deceptive (Martocchio & Judge, 1997) and excessively focus on the tasks at hand (Judge & LePine, 2007). Both characteristics hinder safety performance. Second, extremely high Conscientiousness decreases well-being (Carter, Guan, Maples, Williamson, & Miller, 2016), which is a key antecedent of occupational injuries (Yuan, Li, & Lin, 2014). Moreover, high Conscientiousness may decrease safety participation because extremely high conscientious individuals consider going beyond their formal responsibilities (e.g., helping coworkers) inappropriate (Le et al., 2011).

1.1.2. Emotional Stability and safety performance

Emotional Stability describes the extent to which individuals are calm, resilient, and effective when coping with stress (Barrick et al., 2013). Emotionally stable individuals display less negative emotions and are capable of coping with threatening situations, which facilitate safety performance. Moreover, inspired by a desire for achievement and communion, employees with high Emotional Stability are motivated to undertake safety activities given that working safely can aid in the accomplishment of both goals (Beus et al., 2015).

However, the weak and inconsistent correlations between Emotional Stability and safety performance (e.g., Beus et al., 2015; Clarke & Robertson, 2005) imply a possible curvilinear relationship. First, individuals with excessively high Emotional Stability are oblivious to signs of threat (Widiger & Mullins-Sweatt, 2009); thus, they may be incapable of reacting to risks in the workplace. Second, extremely highly emotionally stable employees tend to underestimate the risks of unsafe behaviors because they are excessively optimistic (Anderson & Galinsky, 2006). In addition, extremely high Emotional Stability may hinder the ability of employees to connect with others for the characteristic of too calm (Le et al., 2011), thereby decreasing safety participation.

1.1.3. Extraversion and safety performance

Extraversion describes the extent to which individuals are sociable, adventurous, ambitious, and reward-seeking (Barrick et al., 2013). The research findings on Extraversion and safety performance are conflicting (e.g., Beus et al., 2015; Christian et al., 2009); therefore, we infer that the relationship between Extraversion and safety performance may be nonlinear.

First, the relationship between Extraversion and safety motivation are complex. Extraverts are motivated by a desire to get ahead of others and to strive for rewards (Barrick et al., 2013). In safety-priority industries where incentive mechanisms to promote safety behaviors are established (Zohar & Polachek, 2014), extraverted employees tend to work safely due to the desire to be promoted. Consistently with it, Henning et al. (2009) found that Extraversion was positively correlated with safety attitude. However, this effect may diminish at extremely high levels due to high motivational conflicts between productivity and safety (Xu et al., 2014).

In addition, according to Eysenck (1967)'s theory, extraverts are chronically under-stimulated, and thus they regularly seek adventure and perform poorly in vigilant task. By contrast, introverts are chronically overstimulated and attempt to avoid stimuli, and thus they perform poorly in tasks under stressful situations (Eysenck, 1967). Being more likely to operate near the optimal arousal level, ambiverts

may successfully execute safety behaviors given that they can cope with stress effectively and will not seek adventure.

Taken together, personality facilitates safety behaviors primarily through motivational processes. However, the costs of personality outweigh the benefits at extremely high levels, thereby resulting in an overall pattern of curvilinearity.

Hypothesis 1. Conscientiousness (H1a), Emotional Stability (H1b), and Extraversion (H1c) are curvilinearly related to safety behaviors.

1.2. Moderating effect of SSC

This study regards supervisor support as a contextual variable shared by group members (Bliese & Castro, 2000), and proposes that SSC influences curvilinear personality–safety performance relationships drawing upon theory of purposeful work behavior (Barrick et al., 2013). This theory posits that the primary mechanism underlying personality–performance relationship is motivation, and the motivational process will be triggered depending on opportunities to fulfill employees' goals in specific situations (Barrick et al., 2013). We argue that SSC provides cues congruent with the employees' goals, which in turn optimize motivational striving and maximize the benefits of high trait scores on safety performance. Accordingly, the points at which personality–safety performance relationships turn negative (i.e., inflection points) will occur at a higher level under high SSC than those under low SSC.

Conscientious employees are motivated by achievement goals and tend to be engaged in work when they know how they are doing (Barrick et al., 2013). Supervisor feedback functions as an important cue regarding the effectiveness of performance to optimize the achievement striving process among highly conscientious employees under high SSC. By contrast, the positive effect of Conscientiousness on safety behavior will be weaker under low SSC.

Emotionally stable employees exhibit a high desire for achievement and communion (Barrick et al., 2013). The benefits of Emotional Stability on safety performance can be maximized under high SSC because supervisor support can provide performance feedback and create a harmonious environment. Under low SSC, however, where feedback and opportunities to interact cooperatively with others are few, working safely cannot aid in accomplishing both goals. Thus, the positive effect of Emotional Stability on safety behavior is weaker.

Extraverted employees are motivated to work by their desire to get ahead and gain rewards (Barrick et al., 2013). Performance feedback from supervisor can inform employees of their position within the status hierarchy, thereby fulfilling their intention to get ahead (Barrick et al., 2013). Moreover, supervisor support is an important antecedent of safety climate. Therefore, employees will perceive safety to be highly valued and will be rewarded under high SSC (Zohar & Polachek, 2014). Accordingly, the desire to strive for status and rewards of extraverted employees under high SSC can be fulfilled by achieving high safety performance, and the benefits of Extraversion on safety performance can be maximized.

In sum, when employees are provided with opportunities to fulfill goals, the benefits of personality on safety performance are maximized, and the inflection points will occur at a higher level under high SSC.

Hypothesis 2. SSC moderates the curvilinear relationship between personality (i.e., Conscientiousness, Emotional Stability and Extraversion) and safety performance, such that inflection points are higher under high SSC than those under low SSC.

2. Method

2.1. Participants and procedures

Participants were 430 male operators of nuclear power plants in

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