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Consideration of future safety consequences: A new predictor of employee safety

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ABSTRACT

Background: Compliance with safety behaviors is often associated with longer term benefits, but may require some short-term sacrifices. This study examines the extent to which *consideration of future safety consequences* (*CFSC*) predicts employee safety outcomes.
Methods: Two field studies were conducted to evaluate the reliability and validity of the newly developed Consideration of Future Safety Consequences (CFSC) scale. Surveys containing the CFSC scale and other measures of safety attitudes, behaviors, and outcomes were administered during working hours to a sample of 128 pulp and paper mill employees; after revising the CFSC scale based on these initial results, follow-up survey data were collected in a second sample of 212 copper miners.
Results: In Study I, CFSC was predictive of employee safety knowledge and motivation, compliance, safety citizenship behaviors, accident reporting attitudes and behaviors, and workplace injuries – even after accounting for conscientiousness and demographic variables. Moreover, the effects of CFSC on the variables generally appear to be direct, as opposed to mediated by safety knowledge or motivation. These findings were largely replicated in Study II.
Conclusions: CFSC appears to be an important personality construct that may predict those individuals who are more likely to comply with safety rules and have more positive safety outcomes. Future research should examine the longitudinal stability of CFSC to determine the extent to which this construct is a stable trait, rather than a safety attitude amenable to change over time or following an intervention.
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1. Introduction

1.1. Overview of the problem

According to the Occupational Health and Safety Administration, about 4 million workplace injuries occur each year (Bureau of Labor Statistics, 2008). Approximately 40% of such workplace accidents can be attributed not to the absence of proper safety practices, but rather to a failure to properly implement such practices (Zohar and Luria, 2003). As a result, it is no surprise that there has been increasing attention paid to identifying individual and organizational factors that are predictive of safety outcomes at work. Recent studies have pinpointed several important organizational factors such as safety climate (Zohar and Luria, 2004), leadership style (Zohar and Luria, 2003), and management practices (Pransky et al., 1999) that influence employee attitudes toward safety behavior, compliance with the safety regulations, and the likelihood of occupational accident occurrence. While a focus on supervisor and organizational factors is important, it is equally crucial to consider individual personality characteristics that may be predictive of positive safety behavior and outcomes. Although early research focused on variables such as gender, education, and accident proneness (e.g., Ferguson et al., 1984; Hansen, 1989; Leigh, 1986; Leveson et al., 1980), such research proved to be of limited usefulness in legally and effectively selecting employees who might prove to be safer workers.

Therefore, the purpose of our current research is to contribute to the extant literature identifying antecedents of employee safety by examining the relationship between a personality construct known as *consideration of future consequences* (Strathman et al., 1994) and employee safety attitudes, behaviors, and outcomes. Prior research on consideration of future consequences has found this construct to be related to a variety of personality and behavioral factors, yet to date, there has been no investigation of its applicability to the area of workplace safety. Moreover, we also examine the extent to which consideration of future consequences explains unique variance in

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safety behaviors and outcomes, over and above employee safety knowledge and motivation.

1.2. Consideration of future consequences (CFC)

Strathman et al. (1994) first argued that the *consideration of future consequences* (CFC) was a meaningful construct with a unique nomological network of antecedents and outcomes related to individual attitudes and behaviors and subsequently developed the Consideration of Future Consequences scale. Reponses to this scale place individuals on a continuum between high and low future consequences orientation. Individuals who score high on CFC tend to weigh the future outcomes of their actions more heavily in comparison to the importance of their present actions, and would rather abstain from immediate reward if that results in more beneficial outcomes in the future. Conversely, lower scoring CFC individuals tend to pay more attention to immediately tangible outcomes of their actions, rather than focus on future results of those current actions.

Thus, the CFC construct is considered a unidimensional construct, in which people tend to either weight immediate or distant outcomes of their behavior (e.g., Petrocelli, 2003). In support of this, when exploratory and confirmatory factor analyses have been conducted, a one-factor solution typically provides the best solution (e.g., Strathman et al., 1994). In the case where a two factor solution provided the best fit (e.g., Petrocelli, 2003), the author noted this was due to reverse-scored items loading onto a unique factor separate from the non-reverse coded items (i.e., due to item artifacts, rather than representing two unique dimensions along which individuals can vary).

The utility of the CFC construct has been demonstrated in a variety of domains. For example, CFC orientation was found to be predictive of intentions to partake in preventive health screenings (Orbell and Hagger, 2006), where individuals who were higher on CFC spectrum were more likely to engage in those screens when compared to individuals who are low in CFC. Furthermore, high CFC scoring students tended to exhibit stronger academic performance (Joireman, 1999; Peters et al., 2005), reported less need for aggression and were less likely to engage in sensation seeking behaviors (Joireman et al., 2003). Joireman and colleagues (2001a, 2001b) found that high CFC participants are more likely to engage in environmentally conscious behaviors such as making a monetary contribution to public transit or taking alternative transportation (Joireman et al., 2001a, 2001b, 2004).

Considering the results obtained in these previous studies, an underlying theme can be extracted. All behaviors researched (e.g., environmental participation, good academic record) yield long-term successes by making certain sacrifices in the short term (e.g., taking a bus, spending time studying) and participants who are high in CFC are likely to engage in those behaviors. Given the nature of safety compliance whereby obligations might be perceived as cumbersome in the short-term yet yield long-term benefits, it is important to consider the potential applicability of this construct in predicting safety behavior.

1.3. Extending CFC to workplace safety

The purpose of the current research project was to explore the application of the CFC construct to the arena of workplace safety and to evaluate its relationship with safety attitudes and outcomes.

Adherence to safety guidelines is important both for workers as well as organizations. Failure to follow safety policies is a major cause of workers' accidents and deaths (Zohar and Luria, 2003). This in turn impacts the overall company well being; it can hinder employee morale and negatively affect the company reputation. In addition, these outcomes also present a financial burden on an organization through increased insurance rates, loss of hours, and training expenses, among others. Therefore, a construct that can validly point toward potential roots and predictors of safety behavior beyond traditional personality tests or measures of safety knowledge and motivation could be promising. Of note, previous research on the predictive validity of the CFC construct found that it explained more variance than traditional personality constructs such as conscientiousness (Strathman et al., 1994). Moreover, the evidence from the CFC literature (using a general measure of future time perspective) suggests that CFC is a stable individual differences trait with test–retest coefficients ranging from .72 to .76 (Strathman et al., 1994).

Consideration of future safety consequences (CFSC) may have an impact on safety attitudes and behaviors for several reasons. First, safety protocols and regulations can often be perceived as cumbersome, and can place many demands on workers. Although these safety compliance systems are designed to keep workers safe in both the short and long term, employees might choose not to adhere to safety regulations due to a higher immediate gain (e.g., increased production). Conversely, some may choose to adhere to safety regulations in anticipation of future benefits (e.g., better health). Therefore, employees may differ on how they view safety regulations and how carefully they choose to follow them, based on immediate (saved time, higher temporary comfort) or long-term (lower chances of injury, better health) considerations. For instance, individuals scoring low on CFSC might be less prone to strictly follow safety guidelines, as this practice may in turn have more positive immediate tangible outcomes such as more time to do other tasks, fewer personal restrictions, wider range of motion, and so on. However, such behavior might also have long-term negative effects, as it is more likely for a worker to suffer an accident if they do not follow all the safety protocols carefully.

The literature on "small decisions" (e.g., Gray, 1999) is also relevant here. As Gray (1999) notes, individuals are frequently confronted with seemingly minor decisions that need to be made repeatedly over time and often involve tradeoffs between the short- and long-term consequences. For example, the motion of typing consists of small repeated behaviors (i.e., striking the keys). In the short-term, such behaviors have few, if any, adverse consequences. Yet, repeated over time for months or years, these behaviors can lead to repetitive motion injuries unless individuals recognize the long-term impact of these repeated behaviors and force themselves to take frequent breaks in the short-term. Compared to individuals low in CFSC, high CFSC individuals would be theoretically more likely to recognize the implications of these "small decisions" (e.g., whether or not to wear earplugs) and take into account the short- versus long-term safety tradeoffs (i.e., hearing loss) of those seemingly minor decisions.

In the current study, a safety-specific CFC measure called the Consideration of the Future Safety Consequences (CFSC) was developed. Whereas the original general CFC scale was largely developed and validated in academic settings using university students, the CFSC scale was designed to specifically assess the extent to which employees consider the future versus immediate consequences of their safety-related behaviors. This context-specificity is important, because personality research has found evidence of the frame of reference effect (Mount et al., 1994), i.e., the finding that respondent answers may differ based on the context in which they are presented. Further, Schmit et al. (1995) found that context-specific items had greater criterion-related validity than general personality items.

Thus, our scale was designed to determine the extent to which individuals differ in their orientation on safety-specific CFC and how that relates to important safety outcomes such as safety knowledge and motivation, safety-related organizational citizenship behaviors, compliance with safety regulations, and accident

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