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# The role of prosocial and proactive safety behaviors in predicting safety performance

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ABSTRACT

Employees' engagement in safety is assumed to be a significant contributor to safety performance within the chemical industry. The current study tested this assumption by examining the role of prosocial safety behaviors (e.g., helping others) and proactive safety behaviors (e.g., seeking change) in predicting four safety performance outcomes: micro-accidents, property damage (accidents without injury), near-miss events, and lost-time injuries. Two-wave data collected from 511 employees located in 2 Italian chemical plants revealed that prosocial safety behaviors predicted micro-accidents and property damage, and proactive safety behaviors predicted near-miss events and lost-time injuries. These results suggest that benefits can be gained from distinguishing between prosocial and proactive safety behaviors when seeking to improve safety performance. Organizations may reduce the rate of minor injuries and property damage by increasing helping among employees. However, this approach will be less effective in reducing more serious accidents or increasing near-miss event reporting. More effective in these cases is creating environments in which employees feel able to raise their suggestions and concerns about safety.


## 1. Introduction

The importance of human action in the causation of workplace accidents and incidents is well established (e.g., Hale and Glendon, 1987; Seo, 2005; Williamson and Feyer, 1990). Early work illustrated this by showing that unsafe acts were positively related to accident rates (e.g., Reason, 1997), and that compliance with safety procedures was negatively related to near-misses (Goldenhar et al., 2003). In subsequent research, attention turned to employees' active participation in safety, where it was shown that employees' active engagement in related initiatives resulted in improved safety performance (Hofmann and Morgeson, 1999; Neal and Griffin, 2006). Indeed, research shows that, when compared to safety compliance, safety participation is more effective longer-term at reducing workplace accidents and injuries through the creation of a better context supporting work safety; and that this effect is consistent across work contexts (Clarke, 2006; Neal and Griffin, 2006). As a consequence, safety participation has become the focus of much research in a bid to understand how these acts, which are volitional in nature, may be promoted (Christian et al., 2009; Griffin and Neal, 2000; Martinez-Córcoles et al., 2012; Neal and Griffin, 2006).

Safety participation comprises a number of specific acts, such as helping others, voicing concerns about safety and looking out for the welfare of others (Neal et al., 2000). Typically these acts are presented in the safety literature as belonging to a single class of behavior, which arguably implies that they are all of equal importance in predicting an organization's safety performance (i.e., injuries, accidents and near-miss events). However, research in non-safety domains has shown that specific acts of participation (as manifested in their general form) are associated with different antecedents and outcomes (e.g., LePine et al., 2002; McAllister et al., 2007). One implication of this for safety research is that current conceptualizations of safety participation as a single construct may be too simplistic and in danger of missing important differences in how these specific acts relate to different safety performance outcomes.

The current study addresses this limitation by looking at the role that two types of safety participation behaviors (prosocial and proactive) play in predicting an organization's safety performance. More specifically, it asks the question of whether safety outcomes, such as accidents and near-miss events, are best pre-

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dicted by prosocial acts (e.g., helping others) or proactive acts (e.g., raising suggestions for change). Examining these relationships will contribute to the literature in two important ways. First, it will tease apart the effects of different acts of safety participation on safety outcomes and provide organizations with a more detailed understanding of which acts to target in their efforts to improve safety. Second, it will extend current models of safety that concentrate on safety participation as a final outcome (e.g., Clarke and Ward, 2006; Conchie and Donald, 2009; Conchie et al., 2012) by showing how these acts subsequently relate to the final link in the chain: safety performance outcomes. In the following sections we review research in this area and then present the findings of a longitudinal study that was carried out in the Chemical industry.

### 1.1. Safety participation: prosocial and proactive behaviors

Safety participation, as defined by acts such as helping co-workers with safety, seeking to promote the safety program, and making suggestions for change, shares a number of similarities with general organizational behaviors refereed to as acts of citizenship (Organ, 1988; van Dyne and LePine, 1998). Similar to safety participation, organizational citizenship behaviors (OCBs) are voluntary work behaviors that hold a positive value to the organization, but are not recognized by the formal reward system. As such, their omission is not generally understood as punishable (Podsakoff et al., 2000), and they are difficult to promote through formal routes.

A number of multi-dimensional models of how OCBs group together have been proposed (e.g., Organ et al., 2006). Prominent among these are models that distinguish between OCBs that are prosocial and those that are proactive (e.g., van Dyne and LePine, 1998). Prosocial behaviors are affiliative in nature and typically manifest as helping colleagues and looking out for their welfare. Essentially, they focus on ensuring safety of the social group and on fostering good social relationships. In contrast, proactive behaviors are challenging in nature and seek to bring about positive change in workplace practices, such as in safety. These behaviors are less focused on social relationships and more focused on system changes. While both sets of behaviors are related by their volitional nature, they are distinct in as far as prosocial behaviors focus on cooperation, and proactive behaviors focus on challenge. For this reason, proactive behaviors carry more risk when they are performed owing to the possibility that they may be regarded as criticism of current (safety) management systems.

The notion that prosocial and proactive behaviors are distinct, yet related, has gained much support in non-safety domains. Studies have shown, for example, that prosocial and proactive behaviors are differentially related to individual and organizational processes. LePine and van Dyne (2001) showed that agreeableness was positively related to prosocial behaviors but negatively related to proactive behaviors. Graham and van Dyne (2006) showed that self-esteem and justice impacted proactive behaviors but not prosocial behaviors. van Dyne et al. (2008) found that role perceptions differentially moderated the effects of leadership on each type of behavior. Namely, when leadership was low, regarding behaviors as part of one's job increased prosocial behaviors, but had no effect on proactive behaviors.

Within the domain of safety, research on OCBs—as they relate specifically to safety—is relatively less advanced and tends to treat these behaviors as a single construct (in much the same way as safety participation research) (Conchie and Donald, 2009; Hofmann et al., 2003; Mearns and Reader, 2008; Turner et al., 2005). However, within constructs of safety citizenship behavior are six sub-dimensions of action: (i) helping (assisting colleagues to fulfill their safety responsibilities); (ii) stewardship (protecting colleagues from risks and dangers); (iii) initiating change (taking action to improve safety); (iv) voice (promoting the safety of activities); (v) civic virtue (being involved in non-mandatory organizational programs and meetings), and (vi) whistleblowing (reporting those who violate safety procedures) (Hofmann et al., 2003). These sub-dimensions mirror those from the general OCB literature and suggest that safety behaviors may too be teased apart to look at their differential effects on outcomes. Support for this suggestion comes from recent research that shows these behaviors operate differently with safety processes. In a study looking at the effects of leaders on citizenship behaviors, Conchie (2013) showed that leaders influenced employees' proactive safety behaviors by increasing their intrinsic motivation, but affected their prosocial safety behaviors through a different route (one not identified in the study). Further, Curcuruto et al. (2013) found that team climate influenced proactive behaviors by increasing proactive orientation, but influenced prosocial behaviors by increasing affective commitment. In light of such differences, we propose in the following section that prosocial and proactive safety behaviors likely have a different relationship with safety performance outcomes.

### 1.2. Prosocial behaviors, proactive behaviors and safety performance outcomes

An organization's safety performance can be measured by tangible events, such as the frequency of injuries, accidents or near-misses. These outcomes are distinct from individual safety behaviors, such as those discussed in Section 1.1, which precede performance outcomes in time and may contribute to their occurrence (Christian et al., 2009). Evidence suggests that specific safety behaviors have a differential influence on safety performance outcomes. Namely, that prosocial safety behaviors may be more important in predicting the frequency of micro-accidents and accidents that involve no injury, while proactive safety behaviors may be more important in predicting the frequency of near-miss events and lost-time injuries.

#### 1.2.1. Prosocial safety behaviors, micro-accidents and accidents without injury

Micro-accidents are on-the-job injuries that require medical attention, but do not incur lost workdays (Zohar, 2000, 2002a). Compared to accidents, micro-accidents are more frequent and offer a reliable outcome measure against which antecedents, such as safety behaviors, may be tested. Their primary cause is linked to individual unsafe action, which predicts the frequency of micro-accidents over and above the level of risk inherent within the workplace (e.g., unsafe conditions; Zohar, 2000, 2002a). For this reason, it can be assumed that interventions focused on correcting employee unsafe behaviors are likely to see a bigger reduction in the rate of these events than interventions focused solely on structural features.

The link between micro-accidents and unsafe behaviors suggests that prosocial behaviors may play a stronger role in predicting an organization's rate of micro-accidents, when compared to proactive behaviors. This is because prosocial behaviors are concerned with looking out for the safety of others and helping teach co-workers safer ways of working. It is less focused on bringing about improvements in the conditions in which people operate or the procedures by which tasks are completed. This latter focus is concentrated more on structural type changes and sits more comfortably with proactive safety behaviors. As such, we might expect prosocial safety behaviors to be negatively related with micro-accidents such that an increase in prosocial behaviors will be associated with a reduction in the rate of on-the-job injuries that require medical attention. Geller (2001, 2002) offered some support for this suggestion by showing that micro-accidents were