



Supervisory interpretation of safety climate versus employee safety climate perception: Association with safety behavior and outcomes for lone workers



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ABSTRACT

Research has shown that safety climate predicts safety behavior and safety outcomes in a variety of settings. Prior studies have focused on traditional work environments in which employees and supervisors work in the same location and the mechanisms through which safety climate affects behavior are largely understood. However, the nascent research examining safety climate among lone workers suggests that safety climate may have some uniqueness in this context. Based on leadership theories and utilizing an exploratory approach, this study increases our understanding of the lone worker context by examining employee perception of safety climate and supervisory interpretation of safety climate; how similar or different they are, and how they are related to important safety outcomes. Surveys were administered to a matched sample of 1831 truck drivers and their 219 supervisors at four different trucking companies. Objective data on employee injuries were collected six months after survey administration. The results provided support for the measurement equivalence of the Trucking Safety Climate Scale at the organization level for both employee and supervisor respondents. For both organization- and group-level safety climate, employee perceptions of safety climate and supervisory interpretation of safety climate were significantly different, such that supervisors provided higher ratings for both safety climate sub-scales. Further, only employee safety climate perceptions significantly predicted self-reported safety behavior (directly) and objective injury outcomes (indirectly). This suggests that when trying to gauge and improve upon a trucking company's safety climate, we should rely on employee perspectives, rather than supervisory interpretation, of safety climate.

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1. Introduction

Occupational safety is an issue with significant financial and societal consequences. In 2011, there were over 4600 fatal workplace injuries in the U.S. (Bureau of Labor Statistics, 2012). According to the 2012 Liberty Mutual Workplace Safety

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Index, the most disabling workplace injuries and illnesses in 2010 amounted to \$51.1 billion in direct U.S. workers' compensation costs (Liberty Mutual Research Institute for Safety, 2012). When considering both direct and indirect costs of all occupational injuries and illnesses, estimates are as high as \$250 billion annually (Leigh, 2011).

While there has been a resurgence in workplace safety research in recent years, there are still many gaps that need to be addressed in order to improve the health and safety of workers. One major gap regards how to improve safety among lone workers (e.g., truck drivers), defined as employees who work alone and perform an activity that is intended to be carried out in isolation from other workers, without close or direct supervision (British Security Industry Association, 2010; Hughes & Ferrett, 2009). There is reason to believe that the mechanisms through which safety climate influences behavior are different among lone workers as compared to those in a traditional work environment. In developing and validating safety climate scales for lone workers (using truck drivers as an exemplar), Huang et al. (2013) found that truck drivers' safety climate perceptions predicted drivers' safety behaviors and future road injuries, and their industry-specific items provided stronger predictive value in safe driving behavior than did generic safety climate items. This suggests that taking the context of the work environment into account is important in understanding safety climate for lone workers (specifically, truck drivers).

In the Huang et al. study (2013), the authors found that, contrary to the established conceptualization of safety climate (e.g., Zohar, 1980, 2000, 2011), there were no shared safety climate perceptions among the groups of lone workers that they studied. This implies that in the unique context of trucking, something other than shared perceptions with peers may be informing employees' safety climate perceptions. A study from Zohar, Huang, Lee, and Robertson (2014) showed that dispatcher (distant) leadership (measured by the Leader-Member Exchange scale; Graen & Uhl-Bien, 1995) is a significant antecedent of truck drivers' safety climate perceptions, driving behaviors, and hard-braking frequencies (i.e., accident near-miss events). Thus, absent frequent contact with co-workers, the dispatcher (supervisor), despite her/her remoteness, is likely to be the primary conduit through which the employee picks up the informational elements upon which to base his/her safety climate perceptions. In turn, these informational elements are presumably based on the dispatcher's own interpretation of organizational-level safety climate and his/her own values and attitudes. For in-house workers, the supervisor's role in this transmission would be supplemented by co-workers.

Continuing this line of lone worker/truck driver research, and based on leadership theories, the current study compares supervisory interpretation of safety climate and employee safety climate perceptions in order to better understand the antecedents of lone worker safety, which ultimately impacts accident and injury outcomes. Specifically, this study makes the following three contributions: (1) it demonstrates measurement equivalence (ME) of the organization-level safety climate sub-scale items among employee and supervisor respondents. Establishment of ME allows meaningful and fair comparisons of ratings on a single scale from multiple parties; (2) it is the first study to explore the similarity or difference between supervisory interpretation of safety climate versus employee safety climate perception for lone workers (using dispatcher and truck drivers as exemplar, respectively), for both organizational-level and group-level safety climate perceptions; and (3) it expands prior research by testing simultaneously the impact of supervisory interpretation of safety climate and employee safety climate perception on safety outcomes.

1.1. Safety climate

Research has shown that safety climate (traditionally defined as workers' shared perceptions of their organization's policies, procedures, and practices as it relates to the value and importance of safety within the organization; Griffin & Neal, 2000; Zohar, 1980, 2000, 2011) predicts safety behavior and safety outcomes (such as accidents and injuries) in a variety of settings (e.g., Beus, Payne, Bergman, & Arthur, 2010; Christian, Bradley, Wallace, & Burke, 2009). It is a multilevel construct comprising two levels: organization-level safety climate (employees' perceptions of the company's commitment to and prioritization of safety) and group-level safety climate (employees' perceptions of their direct supervisors' commitment to and prioritization of safety) (e.g., Zohar, 2008). While similar to safety culture, safety climate is a distinct construct. Safety culture is defined as shared values and beliefs that interact with an organization's structure and control systems to produce behavioral norms (Reason, 1998; Thompson, 1996). Safety climate, on the other hand, focuses on workers' perceptions. In other words, safety climate can be viewed as a measurable marker of safety culture (e.g., Huang et al., 2013).

1.2. The need for studying safety climate among lone workers/truck drivers

A "lone worker" can be anyone who works on his/her own, either regularly or occasionally, without access to immediate support from coworkers or managers (National Health Service (NHS), 2005). In today's workforce, an increasing number of employees perform work assignments away from the traditional office setting, either because the type of work they perform requires them to do so, or because advances in technology have allowed for flexibility in work location (Golden, Veiga, & Dino, 2008). While professional isolation has only recently come into the spotlight in the behavioral science literature, some research has begun to suggest that remote workers may feel "out of the loop" (Baruch & Nicholson, 1997) and experience a decreased sense of belonging (Baumeister & Leary, 1995), among other negative outcomes. However, other studies have shown that there can be a positive side to working remotely. For example, Gajendran and Harrison (2007) found that isolated workers experienced increased perceived autonomy and lower work-family conflict. They also found that telecommuting did not have detrimental effects on workplace relationships (except for those who telecommuted for the majority of their workweek).

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