Work-family conflict and safety participation of high-speed railway drivers: Job satisfaction as a mediator

Wei Wei[a], Ming Guo[a],*, Long Ye[a], Ganli Liao[a], Zhehan Yang[b]

[a] School of Economics and Management, Beijing Jiaotong University, 100044, China
[b] Sino-American Elite Education & Technology Co., Ltd., China

ARTICLE INFO

ABSTRACT

Despite the large body of work on the work-family interface, hardly any literature has addressed the work-family interface in safety-critical settings. This study draws from social exchange theory to examine the effect of employees' strain-based work-to-family conflict on their supervisors' rating of their safety participation through job satisfaction. The sample consisted of 494 drivers from a major railway company in China. The results of a structural equation model revealed that drivers' strain-based work-to-family conflict negatively influences safety participation, and the relationship was partially mediated by job satisfaction. These findings highlight the importance of reducing employees' work-to-family conflict in safety-critical organizations.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Safety at the workplace is an enduring and pivotal issue for safety-critical industries such as high-speed rail (HSR), in which safety is among the most important performance measures. Although technical failures have been reduced dramatically worldwide in the last three decades, unsafe human behaviors have become one of the most important sources of injuries and accidents (Christian et al., 2009). Whereas compliance with safety rules and procedures provides reliability, safety participation improves the capacity for safe conduct under less predictable circumstances (Zohar, 2008) and is more effective in the long term at reducing workplace accidents and injuries through the creation of a better context supporting work safety (Clarke, 2006; Neal and Griffin, 2006). As a result, it is very important to investigate factors that can influence safety participation (Griffin and Neal, 2000; Neal and Griffin, 2006).

Work and family are the most central and salient domains in a person's life. Given the increasing number of dual-earner couples and single-parent workers and the greater elder care responsibilities, the work-family interface has become an important and complex issue in contemporary societies. When people report high levels of work-life balance, they are experiencing a state in which their work life and non-work life are perceived as generally com-patible. Contemporary research suggests that work-life interface perceptions are bidirectional (e.g., work can interfere with non-work and vice versa; Greenhaus and Beutell, 1985) and include both negative (e.g., conflict and interference) and positive (e.g., facilitation and enrichment) exchanges between work and non-work roles (Fisher et al., 2009; McNall et al., 2010).

Safety participation has been found to be positively affected by various organizational, leadership and individual factors, such as safety climate (Barbaranelli et al., 2015; Hicks et al., 2016), morality leadership (Chen and Chen, 2014a,b), emotional intelligence (Lu and Kuo, 2016), dispositional mindfulness (Zhang and Wu, 2014), and attentional bias toward safety (Xu et al., 2014). Researchers have examined the effects of job characteristics as antecedents of safety behavior (e.g., job demands and job resources), but these studies have generally ignored the effects of work-family conflict in favor of more obvious and immediate factors within the workplace (e.g., Hansez and Chmiel, 2010; Li et al., 2012; Turner et al., 2012). Existing research has witnessed the unique contribution of the work-family interface to job performance (e.g., Witt and Carlson, 2006; Steenbergen and Ellemers, 2009) but has provided few answers about how it affects employees' safety participation. Previous research has examined the direct relationship between work-family conflict (WFC) and safety performance in health care industry but has failed to find a significant effect (Cullen and Hammer, 2007). Because job characteristics might play a more important role in affecting safety participation among drivers than among nurses, unfolding the relationship between work-family conflict and safety participation will help transportation organiza-

tions solve of the riddle of why employees may remain unwilling to make extra-role contributions to safety, even if the job demands are not very high. Previous research has found a negative relationship between strain-based WFC and organizational citizenship behaviors (OCB) (Lambert et al., 2013). Safety participation is the major reflection of OCB in safety-critical organizations. Thus, the finding in Lambert et al. (2013) implies that strain-based WFC might be a more important determinant than the other two components of WFC, i.e., time-based and behavior-based WFC. Similar to critical jobs in other safety-critical organizations, HSR drivers strictly comply with safety rules, and their safety participation is critical not only for preventing personal injuries but also for enhancing passenger safety. The present study explores how strain-based work-family conflict can specifically influence participative safety behavior in HSR. Drawing from social exchange theory (Blau, 1964), a low level of WFC is a resource that will generate a sense of gratitude and obligation from the individual, who is then inclined to reciprocate with greater safety participation.

Our study makes two important contributions to the literature. First, we contribute to both the safety and work-family interface literature by demonstrating a relationship between work-family conflict and safety participation based on social exchange theory (Blau, 1964) because the work-family interface has rarely been used to explain safety behavior. It is thus believed that examining whether WFC may discourage or boost drivers' safety participation contributes to the current safety-related literature and may enhance actual practices. This work thus constructs a conceptual model that aims to explore the direct and indirect effects of work-family conflict on safety participation through job satisfaction. Second, we address the generalizability of the role of WFC in extra-role job performance and safety behavior within Chinese HSR, which is a typical safety-critical industry. By contrast, most extant studies have collected data from Western samples, and few studies have examined safety behavior in safety-critical industries, such as the railway industry. Thus, understanding the influence of WFC on safety participation will shed light on how safety-critical organizations should act to motivate employees in terms of proactive safety behaviors.

2. Proposed conceptual model

2.1. Safety participation

In keeping with traditional theories of job performance (e.g., Borman et al., 1993; Katz and Kahn, 1966) and the concept of OCB (Podsakoff et al., 2000), Griffin and Neal (2000) differentiate between two types of safety performance behaviors. Safety compliance refers to work activities that individuals need to perform to establish workplace safety. These behaviors include adhering to standard work procedures and wearing personal protective equipment. Safety participation describes behavior that does not directly contribute to an individual's personal safety but that helps to develop a safe work environment. It includes activities such as participating in voluntary safety tasks, helping coworkers with safety-related issues, or attending safety meetings. Whereas safety compliance may be viewed as in-role safety behavior, safety participation activities are associated with broader participative concepts such as safety citizenship behavior (Hofmann et al., 2003; Fugas et al., 2012).

Using longitudinal data, Neal and Griffin (2006) showed that safety performance had a lagged effect on the number of accidents later on, demonstrating the importance of employees' behaviors in organizational safety outcomes. Several meta-analytic studies have consistently demonstrated that high safety performance is related to fewer accidents and injuries (Clarke, 2010; Christian et al., 2009;

Nahrgang et al., 2011). Thus, safety behaviors, including safety participation, are important in safety-critical organizations.

2.2. Strain-based work-to-family conflict

Work-family conflict refers to a form of inter-role conflict that results from the mutually incompatible role pressures between work and family domains (Greenhaus and Beutell, 1985). As a dimension of work-family conflict, strain-based conflict occurs when the stress experienced in one role bleeds over into the other role, limiting participation in that role. Work-family conflict is bidirectional. Work-to-family conflict (WFC) is the situation in which work interferes with family, and family-to-work conflict (FWC) is the situation in which family interferes with work (Frone et al., 1992). Although work-family conflict can be bidirectional, research has shown that work demands interfere with the private life more often than home demands interfere with work (Geurts et al., 2005; Grzywacz and Marks, 2000; Montgomery et al., 2006). Among the dimensions of WFC, strain-based WFC is particularly relevant in the Chinese HSR context because the work of Chinese HSR drivers is characterized by repetitive operations, long working hours, constant on-the-job training, and shifts at night and during public holidays.

2.3. Strain-based work-to-family conflict and safety participation

Social exchange theory (Blau, 1964) suggests that people feel obligated to return the benefits they receive from another party. In this exchange process, people will cognitively conduct a cost and benefit analysis to determine whether the worth of social benefits received and the value of social benefits returned are comparable (Ekeh, 1974). Therefore, workers with a lower level of work-family conflict are more likely to be satisfied with their job and to do extra-role safety-related work than individuals with higher levels of work-family conflict.

Though existing research did not find a significant effect of strain-based WFC on safety, various constructs that are similar to strain-based WFC have been found to be related to safety behavior. Previous research supports the negative effects of job demands (Hansez and Chmiel, 2010; Nahrgang et al., 2011; Bronkhorst, 2015), job stress and work pressure (Brown et al., 2000; Hofmann and Stetzer, 1996; Seo, 2005) on safety behavior.

In the last decade, researchers have applied the concept of OCB to distinguish safety behavior into in-role and extra-role behaviors (Fugas et al., 2012; Hofmann et al., 2003). Safety participation is the major measure of extra-role work performance in safety-critical industries. As a concept of extra-role work performance, OCB is defined as individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system and that in aggregate promotes the effective functioning of the organization (Organ, 1988). Examples of OCB include helping other employees, volunteering for things that are not required, and making innovative suggestions to improve a department (Kidwell et al., 1997; Van Dyne et al., 1994). OCB differs from in-role task performance in that the former is not formally prescribed by the job, whereas the latter is mandatory. Despite its discretionary nature, OCB is a facet of job performance that results in beneficial outcomes for employees (Allen and Rush, 1998). Previous research reveals consistent views regarding the effect of strain-based WFC and similar constructs on OCB. Though the dimensions of job demands such as role overload were positively related to OCB in some previous studies (e.g., Eatough et al., 2011), more studies have found negative relationships between dimensions or consequences of job demands and OCB. For example, employees who experience stress tend to engage less in OCB (Kaplan et al., 2009). Similarly, strain-based work-family conflict has been negatively associated with OCB (Lambert et al.,