



# The effect of job stress on self-reported safety behaviour in container terminal operations: The moderating role of emotional intelligence

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## ABSTRACT

This study empirically examined the moderating effects of emotional intelligence on job stress and self-reported safety behaviour in the context of container terminal operations using survey data collected from 430 respondents who worked in the container terminals in Taiwan. A hierarchical regression analysis was used for data analysis. The research findings indicate that job stress negatively affects safety behaviour in terms of safety compliance, as well as emotional intelligence positively affects safety behaviour in terms of safety participation and safety compliance. Results also indicated that emotional intelligence plays a moderating role on the relationships between job stress and safety compliance. The theoretical and practical implications from the research findings are discussed.

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## 1. Introduction

An international container terminal is an important interface between sea and land transportation, where containers are loaded onto and discharged from containerships (Lu & Shang, 2005). However, container terminal operations are hazardous since stevedores involved in various risky workplace activities that include operating cranes, lashing, electrical repairs, tally operations and truck driving. The Health and Safety Executive (HSE) (2012) recorded 392 accidents in 2010 due to workers' improper use of equipment in container terminal operations. The Pacific Maritime Association (PMA) (2012) reported that the most common injuries along the U.S. West Coast were sprains/strains/spasms, contusions, cuts/lacerations, hearing impairments, and foreign objects in the eye. Notably, the National Safety Council stated that 94% of all injuries and illnesses in the workplace were associated with human behaviour (Loafman, 1996). While several studies have investigated the determinants of accident occurrences in container terminals (Lu & Shang, 2005; Lu & Yang, 2010), the reasons for such accidents still remain unclear.

Lingard and Yesilyurt (2003) identified job stress as a critical factor impacting on human safety behaviour. The Pacific Maritime Association (PMA) (2012) found that enhanced safety practices, training and technology application decreased workers' job stress at West coastal ports in the USA and resulted in a reduction in workers' accidents. Stress has been identified as a factor with antecedent causes and behavioural consequences (Motowidlo, Packard, & Manning, 1986). Job stress has been defined as nervousness or anxiety related to the job that impacts on a worker's emotional and physical health

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(Netemeyer, Maxham, & Pulling, 2005) and influences their personal working behaviour (Hoggan & Dollard, 2007). Several studies have found that a highly stressful work environment can impact negatively on human safety (Chen & Cunradi, 2008; Greiner, Krause, Ragland, & Fisher, 2004; Greiner, Ragland, Krause, Syme, & Fisher, 1997). Job stress can increase risk and decrease safety behaviour and performance (Hoggan & Dollard, 2007; Kontogiannis, 2006; McLinton & Dollard, 2010). For example, Leung, Chan, and Yu (2012) examined the impact of stress on construction workers' safety behaviours in Hong Kong and found injury incidents were significantly related to construction workers' emotional stress and physical stress. Adam, Rasmussen, Pedersen, and Jepsen (2014) examined differences in occupational accidents according to nationality in the Danish merchant fleet. They found that the rate of serious injuries of South East Asian and Eastern European seafarers remained significantly lower than that of West European seafarers. Håvold (2005) also found significant differences in safety culture and safety behaviours between nationalities in vessels belonging to a Norwegian shipping company. These findings are not surprising given that wide differences exist in workplace conditions, safety management, competencies and requirements (Adam et al., 2014). Notwithstanding, Netemeyer, Brashear-Alejandro, and Boles (2004) investigated the relationships between job stress, performance and job satisfaction using cross-national samples from the United States, Puerto Rico, and Romania. Their study found measures and effects to be similar across the three samples.

A growing body of prior literature has identified various factors impacting on safety behaviours, including effective training (Kiani, Samavtayan, Poorabdiyan, & Jafari, 2012); supervisory behaviour (Adebayo & Ogunsina, 2011); nationality (Adam et al., 2014; Håvold, 2005); safety climate (Griffin & Neal, 2000; Lu & Shang, 2005; Lu & Tsai, 2010; Zohar, 1980); attitudes (Burt, Chmiel, & Hayes, 2009; Carmeli, 2003); leadership (Broadbent, 2004; Lu & Yang, 2010); and risk perception (Arnaud-Sabates, Sala-Roca, & Jariot-Garcia, 2012; Jones et al., 1988), however, research investigating the impact of job stress on port worker safety is lacking. If supervisors can understand the factors influencing job workers' job stress, they might avoid the high occurrence of accidents (Jones et al., 1988; Leung et al., 2012).

Emotional intelligence is another factor reported to impact on an individual's work behaviour (Groves, McEnrue, & Shen, 2008). Emotional intelligence is widely considered to be an important variable in training, leadership development and team building by organisations (Joseph, Jin, Newman, & O'Boyle, 2015). Employees with the ability to effectively manage their emotions and use emotional information have been found to better perform than those who lack such ability (Parke, Seo, & Sherf, 2015). Emotional intelligence is the ability to perceive, assimilate, understand and manage emotion (Mayer & Salovey, 1997), in other words, the ability to process emotional information. Emotional intelligence has also been defined as "the sub-set of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate between them, and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). Emotionally intelligent people understand their own feelings better than other people and are better able to communicate them (Mayer & Salovey, 1993). Employees who have high emotional intelligence achieve more in their personal life and the workplace (Carmeli & Josman, 2006). People with high emotional intelligence are more likely to have a positive outlook and be reliable (Mayer & Salovey, 1993). They are less likely to cut corners and undertake unsafe practices to achieve higher performance. Their emotional intelligence influences their safety behaviour at work (Carmeli & Josman, 2006).

A review of prior research highlights the role of emotional intelligence in perceiving and evaluating risk (Rundmo, 2002). According to Arnaud-Sabates et al. (2012), emotional intelligence plays a primary role in motivating behaviour. Previous studies have confirmed there is a relationship between emotional intelligence and risk taking behaviour (Arnaud-Sabates et al., 2012). However, an investigation of the influence of emotional intelligence on safety behaviour in the hazardous workplace environment of container terminal operations is lacking. To the authors' best knowledge, this research is one of the first to explore the relationships between emotional intelligence, job stress, and self-reported safety behaviour in the context of container terminal operations. The objectives of the study are to examine the effects of job stress and emotional intelligence on self-reported safety behaviour and to investigate whether emotional intelligence plays a moderating role in the relationship between job stress and self-reported safety behaviour.

This paper is organised as follows: Section 1 introduces the study and discusses the background. The research model is developed and the hypotheses formulated in Section 2. Section 3 details the development of the research instruments, presents the measurement constructs used in the survey, explains the sampling techniques, and describes the research procedures. In Section 4 analyses results that address the research hypotheses are presented. In Section 5, conclusions drawn from the research findings and their theoretical and managerial implications are discussed.

## 2. Theoretical background and hypotheses

### 2.1. Self-reported safety behaviour

Safety behaviour can be defined as "the behaviour and attitudes of employees to safety activities" (Burt et al., 2009). Parboteeah and Kapp (2008) stated that safety behaviours are critical components since they reflect individuals' real behaviours to maintain a safe work environment. According to Larsson, Pousette, and Törner (2008), safety behaviour consists of structural safety behaviour (SSB) (i.e. participation in organised safety activities); interactive safety behaviour (ISB) (i.e. management and subordinates' interaction at work in safety activities); and personal safety behaviour (PSB) (i.e. concerned behaviour aimed at personal protection). Broadbent (2004) defined two types of self-reported safety behaviours, namely, compliance and participation. Safety compliance behaviour is the core activities that individuals have to maintain for

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