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The relationship between psychological capital, job satisfaction, and safety perceptions in the maritime industry

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ABSTRACT

In two studies we examine whether Psychological Capital (PsyCap) is related to perceptions of safety climate and job satisfaction among maritime workers from three Norwegian shipping companies. Results from Study 1 ($N = 486$) and Study 2 ($N = 594$) showed that PsyCap was positively associated with – and explained between 10% and 12% of the variance in perceptions of safety climate. PsyCap contributed to the variance in safety climate after adjusting for social desirable responding. An interaction analysis indicated that officers and non-officers perceived the safety climate as similar when their PsyCap is low, but that officers with high levels of PsyCap have a more positive perception of the safety climate than non-officers with high levels of PsyCap. In Study 2 a positive association was established between safety perceptions and job satisfaction, as well as between PsyCap and job satisfaction in a multicultural sample of maritime workers. Findings from analyses of indirect effects suggest that PsyCap has an indirect (mediating) relationship with perceptions of safety climate through job satisfaction. Altogether, PsyCap and job satisfaction explained 21% of the variance in safety climate. Cross-national differences were established in that the indirect effect was only valid for European workers, and not for Filipinos. An important implication of these findings is that safety focused interventions could benefit from taking PsyCap into account in training and motivating for safety.

1. General introduction

In safety critical organizations (SCOs) workers are faced with significant hazards. The maritime industry represents a SCO where maritime workers[1] are exposed to a number of risk factors in combination, for instance weather conditions, navigation failure or accidents during cargo operations. The maritime industry has high potential for accidents and catastrophes due to the nature of the working environment.

The maritime industry is regulated by the International Maritime Organization (IMO). Still there can be significant differences in the organizational cultures and safety practices onboard ships due to national and/or company specific characteristics. The well-known expression "happy ship" indicates that job satisfaction and individual motivation are considered crucial elements in maritime organizations. *Organizational culture* is used to capture more generic, trait like aspects of maritime organizations. *Organizational climate* is more often used about specific, state like capacities that may index a "happy" or "unhappy" ship. Organizational climate is made up of shared perceptions among workers concerning the procedures and practices that are rewarded within a specific organization (Mearns et al., 1998). In SCOs like the maritime industry, safety climate in the form of shared perceptions of safe behavior and loss prevention should have high priority (Zohar, 2010).

In the following we will refer to safety climate as "a coherent set of perceptions and expectations that workers have regarding safety in their organization" (Gyekye, 2005, p. 291). According to Mearns et al. (2003) one may see safety climate as a snapshot of selected aspects of organization safety culture at a particular point in time. In the maritime industry it is a vital part of the culture to maintain safety barriers to prevent hazards and accidents from occurring. To keep a safe distance and to detect and defer potential hazards below the surface, have literal and very specific implications in the maritime domain. This focus on potential threats to safety is well illustrated by Reason (1990) in his so-called "Swiss Cheese Model". This model shows how there could be a number of threats to safety barriers in the form of organizational factors (e.g. conflicting goals and priorities), active failures (e.g. mistakes

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[1] The terms "maritime worker" and "crew member" are used interchangeably throughout the paper.

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and procedural violations) and latent conditions (e.g. decisions made by designers or senior management). When the "holes" in the different safety systems coincide, a hazard can pass through all of the defense layers, leading to failure (see Dekker, 2006, for a further explanation of Reason's model).

Despite the obvious risks associated with the maritime industry, research has devoted little attention to antecedents, moderators and mediators of safety climate in the shipping industry, compared to other industries (Håvold, 2005). Over the years, improvements in technology, ship design and navigation aids have reduced the frequency and severity of shipping incidents, leaving the influence of human error open to investigation (Hetherington et al., 2006). The risk potential from human error is significant and some researchers claim that as many as 96% of marine accidents are caused in part by some form of human error, or multiple causes involving human misjudgment (Hetherington et al., 2006; Rothblum, 2013).

These observations are well in line with the awareness that organizational, managerial and human factors are prime causes of accidents in safety critical organizations (Weick et al., 1999). In addition to failures in the management and safety systems, work pressure and (lack of) competence in the workforce are frequently seen as predetermining factors in work related accidents (Flin et al., 2000). Håvold (2007) has suggested that laissez-faire culture and fatalism are examples of factors that influence negative safety behavior in the shipping industry. Factors that influence positive safety behavior are employees' satisfaction with safety activities and management safety attitudes (Håvold, 2007).

Through two independent studies of maritime workers we wanted to extend and complement the focus by Håvold (2007) on attitudes and behavior by examining how positive work motivation and job satisfaction could influence safety perceptions in crew members. From a review of the literature, the core construct of *Psychological Capital* (PsyCap; Luthans et al., 2007a, 2007c) emerged as a promising index of positive work motivation. Over the last decade an accumulating body of research has suggested that this motivational state is linked to organizational effectiveness and desired work outcomes (Newman et al., 2014; Youssef and Luthans, 2012).

PsyCap resources are most often referred to as "more stable than states such as moods or emotions, but not as fixed as personality traits such as conscientiousness or core self-evaluations" (Luthans et al., 2010, p. 44). According to Luthans et al. (2013), PsyCap is best described as falling into the middle ground of the trait-state continuum in between transient states, which are momentary and changeable, and 'hard wired' traits, which are stable and difficult to change (Luthans et al., 2007b). This conceptualization of PsyCap as a developmental state is supported by a growing number of studies indicating that PsyCap can be developed through training interventions (Newman et al., 2014).

A person's PsyCap profile can be described along four core dimensions. The first dimension is the belief (*efficacy*) in one's abilities to successfully execute and accomplish tasks. The second dimension is the tendency to make positive attributions and have positive expectations (*optimism*) about future events. The third dimension is the tendency to persevere toward goals and, when necessary, redirecting paths to goals (*hope*) in order to succeed. A final aspect is related to positive coping and the ability to bounce back and even beyond (*resiliency*) when beset by problems and adversity (Luthans et al., 2007c).

In a recent conceptual model of the associations between PsyCap and safety it was argued that PsyCap may represent a positive motivational state that will facilitate and encourage safety focused behavior and practices in safety critical organizations (Eid et al., 2012). This idea is supported by empirical evidence from our study of air traffic controllers (ATCs; Bergheim et al., 2013) which found that individual differences in PsyCap explained about 15.5% of the variance in perceived safety climate among ATCs. The positive resource of hope had the highest unique contribution in explaining air traffic controllers' perceptions of safety climate. This is noteworthy since hope is a positive psychological resource that is related to higher work performance outcomes across a number of independent studies (Peterson and Byron, 2008). These outcomes includes organizational commitment, employee performance and job satisfaction (Luthans et al., 2007b; Youssef and Luthans, 2007).

Our main objective of this two-part study was to investigate if PsyCap was related to crew members' perceptions of safety climate across two samples from different segments of the maritime industry. Specifically, the aim of Study 1 is to replicate and extend the previous findings on PsyCap and safety climate among air traffic controllers (Bergheim et al., 2013), to the maritime industry. In Study 2 we will expand our focus by examining if job satisfaction mediates the relationship between PsyCap and safety climate in the maritime industry, and determine whether cross-cultural factors influence this association.

2. Study 1

2.1. Introduction

Shipping represents a unique occupational setting in that maritime workers are onboard 24/7, and the ship is therefore a closed social milieu. There is also a very hierarchical structure onboard, and often crews with people of different nationalities (Håvold, 2005). The multicultural and multinational aspects of the maritime industry might contribute to differences in safety climate across ships in the same trade or even from the same company.

According to Zohar (2010), safety climate is an expression of how well safety focused behaviors and priorities are rewarded and supported in the organization. Zohar (2010) considers safety climate to be the workers' shared perceptions of safety, which is heavily influenced by managerial practices and the social norms in the work group. It is therefore not surprising that safety climate has been shown to predict safety outcomes across different industries and countries (Nahrgang et al., 2011; Zohar, 2010). Few studies have to date examined antecedents of safety climate and explored how worker perceptions and motivation for safety might be shaped and sustained in this industry. Previous reviews of the safety literature have identified symbolic social interaction and supervisory leadership as the two primary antecedents likely to promote the emergence of shared climate perceptions (Ostroff et al., 2003; Zohar, 2010). In the maritime industry symbolic interactionism would imply that the meaning and reality of work onboard is socially constructed, arising from social exchanges among workers seeking to comprehend their environment and the organization they live in (Stryker, 2008). In other words, the meaning of work and the interpretation of safety related events and dilemmas arise from the interplay between one's own perceptions and those of others in the same situation.

According to symbolic interactionism, workplace socialization and learning involves constant comparison of bits of information and cues, discussing possible interpretations, and attempting to reach consensual interpretation of the meaning of events, procedures and practices at the workplace. As a result group members' perceptions are expected to converge over time, resembling the processes of newcomer socialization (Schneider and Reichers, 1983). Because workers within a ship by nature will interact more often with each other than with workers on other ships, their individual perceptions of safety climate will over time shape safety focused behavior onboard (Schneider and Reichers, 1983; Zohar, 2000, 2002, 2010).