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A static organization in a dynamic context – A qualitative study of changes in working conditions for Swedish engine officers

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ABSTRACT

During the last decades the shipping industry has undergone rapid technical developments and experienced hard economic conditions and increased striving for profitability. This has led to reduced staffing and changes in task performance, which has been reported to increase workload for the remaining seafarers. The working conditions on board have a number of distinct and in many ways unique characteristics, which makes the job demands and resources for seafarers unique in several ways. The purpose of this study was to assess how engine room staff perceives how these major technical and organizational changes in the shipping industry have affected job demands as well as resources. The study compiled individual interviews and focus groups interviews with engine crew members where they were asked to elaborate on the psychosocial work environment and the major changes in the working conditions on board. Engine crew describes a work situation where they feel a lack of resources. The content of the work has changed, staffing has been reduced, new tasks are being added but the organization of the crew and the design of the work place remains unaltered.

Working conditions in the shipping industry have a number of distinct characteristics, which make the job demands and resources needed to handle these demands unique in several ways. While most shore-based workers spend approximately 8 h per-day five days per week at work, seafarers spend each hour of their time at sea on their work site. By necessity, the work onboard is a 24/7 operation, and seafarers often experience extended shifts and variable work hours. In the Swedish merchant fleet, work is regulated to 72 h per week (Arbetsförmedlingen, 2011), although overtime is common in the shipping industry (Salyga and Kusleikate, 2011).

In a classical study, Aubert and Aner (1958) described the social organization on board the ship as a "closed institution", characterized by hierarchical organization and authoritarian leadership, with many obvious restrictions to the individual crew member. Recent studies have shown that the hierarchical work organization has remained unaltered despite rapid technological and economic changes in the shipping industry (Lundh, 2010). When the ship is sea-bound, the crew members have hardly any possibilities to escape the institutional requirements and restrictions. The seafarer is restricted to spend all off-work time within the perimeters of the hull of the ship during their turns. This means that seafarers are constantly exposed to many of the well-documented physical work hazards in the shipping industry – eg. noise, pollutants, seaways and vibrations, restricted space (Lundh, 2010), during a period that often extends over 6–8 weeks for the seafarers with Swedish employment contracts. But while sea-bound, the individual is also exposed to potential psychosocial stressors that may limit recovery during the time off-work (Lundh, 2010; Mårtensson, 2006). The seafarer is separated from his/her family, friends and shore-based network during the time onboard and restricted to exclusively interact with fellow crew members. Reduced staffing onboard and the often nationally mixed crews with different mother languages may create further restrictions. Furthermore, life onboard is associated with a number of minor limitations in everyday life that can possibly be perceived as hassling – e.g. not being able to choose his/her meals or deprived from most leisure activities.

The working conditions onboard have been shown to be associated with chronic fatigue and sleeping problems, disturbed circadian rhythms, and various stress-related and psychosomatic health problems (Jensen et al., 2006; Wadsworth et al., 2008). In an epidemiological study of the US merchant fleet, Zeitlin (1995) found midlevel managers in both deck and engine room

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departments to have significantly elevated rates of health problems such as cardiovascular disease and emotional disturbances. Higher stress levels for officers, as compared to subordinate crew members, were also found in the German merchant fleet (Oldenburg et al., 2009). Recent studies on psychosocial working conditions among engine room officers have identified negative relationships between role stress (conflict and ambiguity) and mental wellbeing and perceived safety climate onboard (Rydstedt and Lundh, 2010, 2012).

The shipping industry has undergone major changes in organizational ergonomics due to rapid technological developments and reduction in the number of crew members onboard (Allen et al., 2008; Lundh, 2010; International Ergonomics Association, 2015). Shipping is now characterized by e.g. container transports, increased engine room automation, computerization and improved communication systems (Bloor et al., 2000; Ivergård et al., 1978; Lundh, 2010; Olofsson, 1995). This, in combination with harder economic conditions and increased striving for profitability in the shipping industry, has led to reduced staffing, which in turn has been reported to increase and change the character of workload for the remaining seafarers (Bloor et al., 2000; Hetherington et al., 2006; Håvold, 2005; Lundh, 2010). The altered technological and economical environment has had consequences for the work role and work content, not the least for engine room officers. A study of the Swedish merchant fleet (Lützhöft et al., 2008) showed that the technological development in the shipping industry has led to changed work tasks, more administrative duties and increased and conflicting work tasks.

While the technical development has led to greater efficiency for many tasks, some tasks, e.g. maintenance of the equipment or machinery, have not been affected by the technical development and must still be handled manually in an often time-consuming manner (Lundh, 2010; Lundh et al., 2011). Due to reduced staffing, these tasks must now be carried out by fewer employees and Lundh and colleagues found that many engine room engineers reported to use unauthorized shortcuts to be able to handle these tasks under time pressure.

1. Conceptual models of the relationship between working conditions and employee wellbeing

The model most frequently applied during the last decades to analyze the work-related stressor-strain relationship has been the job Demand-Control-Support (DCS) model (Karasek, 1979; Karasek and Theorell, 1990). In its original version, Karasek (1979) suggested the joint effects of high psychosocial job demands (e.g. time pressure; quantitative overload) and low control of the work content and working conditions, to be the primary cause of work-related health outcomes. Later a third dimension, work-related social support, was added to the model (Karasek and Theorell, 1990). The main effects of the job dimensions included in the model have received empirical support in relation to a wide range of work-related health outcomes, while the hypothesized interactions between the main variables have received mixed support (de Lange et al., 2003; Häusser et al., 2010; Van der Doef and Maes, 1999). Despite its frequent utilization, some critical objections towards the DCS model have been raised in the literature. A major line of critique over the years has been that the DCS model is oversimplistic and includes a too narrow range of possible work stressors (De Jonge and Kompier, 1997; Fletcher and Jones, 1993; Verhoeven et al., 2003). A possible price for this simplification may have been the loss of distinction in the analysis of the influence of more unique job-specific stressors and the resources needed to handle them (Pousette and Johansson-Hanse, 2002; Sparks and Cooper, 1999). The concerns about the complexity optimally required for analyzing the impact of work characteristics on human wellbeing have been grouped in three major issues (Van Veldhoven et al., 2005) – the number of work characteristics, the specificity of the relationships between the work characteristics, and the situation specificity of the models. Van Veldhoven et al. (2005) found consistent calls in the literature for higher degrees of precision in regard to these three issues.

In response to these concerns, the more complex and flexible Job Demand-Resource (JD-R) model (Bakker and Demerouti, 2007; Demerouti et al., 2001; Demerouti and Bakker, 2011) has been gaining attention as an alternative conceptual model. In resemblance with the DCS model, the JD-R model identifies the balance between potentially negative (job demands) and positive (resources) job characteristics as crucial for work-related health and wellbeing outcomes (Schaufeli and Taris, 2014). But in contrast to the DCS model, the JD-R model neither provides a generic definition of what specific demands are to be considered as causes for job strain, nor exactly which type of resources are required to handle the job demands or support work motivation. An important assumption behind the JD-R model is that job demands as well as the necessary resources to handle them are occupation-specific and, therefore, must be assessed and analyzed in relation to the specific requirements of the occupation (Bakker and Demerouti, 2007; Demerouti and Bakker, 2011; Schaufeli and Taris, 2014).

Bakker and Demerouti (2007) define resources as "those physical, psychological, social, or organizational aspects of the job that are either/or – functional in achieving work goals, reduce job demands and the associated physiological and psychological costs/and/stimulate personal growth, learning, and development" (p. 312). Job resources may, according to the initial version of JD-R model, be at the organizational level, in the interpersonal relations, in the work organization or at the level of the job tasks (Bakker and Demerouti, 2007). In a further development, individual characteristics and traits that may contribute to successful coping with job demands, e.g. extraversion, emotional stability, self-esteem or optimism, were included as resources in the J-DR model (Xanthopolou et al., 2007). According to the revised JD-R model (Demerouti and Bakker, 2011; Schaufeli and Taris, 2014), an imbalance characterized by high job demands and a lack of adequate resources to handle the demands leads to strain and eventually to negative health outcomes. On the other hand, having access to the specific type of resources needed to master demands not only reduces the potentially harmful health impact of the job demands, but also promotes wellbeing, job motivation and work performance (Demerouti and Bakker, 2011; Schaufeli and Taris, 2014).

The main purpose of the present study was to assess how engine room officers perceive how the major technical and organizational changes in the shipping industry described above have affected their job demands and work environment, as well as the resources available for them to meet these demands.

2. Methods

This paper reports the findings of two separate studies. Study 1 was based on semi-structured interviews about the psychosocial situation on board, while Study 2 consisted of three focus group interviews concerning changes in work performance and their consequences.

2.1. Ethics

In both studies, prior to the interviews, the participants were informed about the purpose of the study and how the data were to be used and published. They were assured confidentiality and they