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Relationships between work environment factors and workers' well-being in the maritime industry

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ABSTRACT

Background: *The aim of this study was to determine whether physical and psychosocial work factors are related to the levels of job satisfaction and intentions to leave in the maritime industry, and to determine whether there exist cross-cultural differences in work factors, job satisfaction and intentions to leave between European and Filipino crew members.*

Material and methods: *Using a cross-sectional survey design, the variables were assessed in a sample of 541 seafarers from 2 large Norwegian shipping companies. Work factors included safety perceptions, leadership, job demands, harassment, and team cohesion.*

Results: *The findings show that physical and psychosocial work factors are important correlates of both intentions to leave and job satisfaction, with safety perceptions, job demands, and team cohesion as the strongest and most consistent factors. As for cross-cultural differences, the findings show that European and Filipino respondents differ with regard to safety perceptions, laissez-faire leadership, authentic leadership, exposure to harassment, team cohesion, and intentions to leave. No differences were established with regard to overall job satisfaction.*

Conclusions: *The findings support occupational stress models which emphasise the importance of situational factors in the understanding of well-being among workers. Shipping companies should therefore always take these factors into consideration when developing and implementing interventions aimed at improving employee well-being.*

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Key words: seafaring, job satisfaction, turnover intentions, work environment, safety

INTRODUCTION

Due to the unpredictable and demanding working conditions, as well as the high potential for risks and accidents, seafaring has been described as one of the world's most dangerous occupations [1]. In addition to such contextual factors, seafarers are also exposed to the stress factors in the working environment such as adverse weather conditions, noise, high job demands, shift work and isolation from family and friends [2]. Research findings from other occupations show that these kinds of physical and psychosocial factors in the work situation are important predictors of health and well-being among the employees [3–5]. It is therefore reasonable to assume that the occupation specific characteristics of the maritime industry may influence the well-being of the seafarers. Although there has been considerable interest in health and well-being of employees in other industries, little attention has been given to work-related well-being among employees in the shipping industry. The overarching aim of the current study is to bridge this gap by investigating physical and psychosocial work environment factors as correlates of job satisfaction and intent to leave. In doing so, cross-cultural differences between crew members of different nationalities will be taken into consideration.

Job satisfaction and intent to leave reflect how content an individual is with his or her job, and are considered as reliable indicators of work-related well-being. Formally, job satisfaction is defined as *"a pleasurable or positive*

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emotional state resulting from the appraisal of one's job or job experience" [6], whereas intent to leave, also labeled as "intent to quit" or "turnover intentions", can be defined as *"an employee's plans to quit the present job in the near future"* [7]. In their comprehensive theoretical model of safety critical workplaces, Barlow and Iverson [8] suggest that job satisfaction and intent to leave among employees is especially influenced by occupational stressors related to: 1) safety, 2) organisational leadership, 3) characteristics of the job and the organisation. The importance of these factors has also been supported by the empirical evidence [e.g. 9–11], among others from the offshore petroleum industry [4, 5].

Theoretically, the Job Demands-Resources model (JD-R) [12] may represent a useful approach to understand how physical and psychosocial work factors are related to well-being in the maritime industry. The basic assumption in the JD-R model is that every occupation has its own specific characteristics associated with work stress, and that these can be classified into 2 general categories of job demands and job resources [13]. Job demands refer to the physical, psychological, social, or organisational aspects of the job that require sustained physical or mental efforts and are therefore associated with the certain physiological or psychological costs. Job resources, on the other hand, refer to those physical, psychological, social, or organisational aspects of the job that are functional in achieving work goals, reduce job demands and the associated physiological and psychological costs, or stimulate personal growth and development [12].

With regard to job demands, the maritime industry includes both universal demands, such as high workload and pressure, and more occupation specific demands such as high potential for risks and hazards. For instance, manoeuvring of the ship has many mentally demanding aspects in littoral waters, during night time and heavy trafficked straits. Workers on deck and the engine room crew will be exposed to heavy lifting, confined work spaces, noise and mentally loading [2]. As for job-resources, ship leadership, safety routines and measures, as well as team cohesion between crew members are obvious factors. As an example, findings from the offshore petroleum industry have shown that high levels of risk perceptions are associated with the reduced job satisfaction, but that this effect is attenuated in cases where the workers rated their safety climate as positive [14]. Hence, high levels of safety seem to be a job resource that protects employees from the negative effects of risks and accidents.

Shipping companies employ people from many different countries, and nearly 50% of the total crew members in Norwegian registered vessels are foreigners, with Filipinos constituting the largest group [1]. The multicultural and mul-

tinational aspects of the maritime industry might contribute to differences in perceptions of safety and well-being across ships in the same trade or even from the same company [15]. For instance, empirical evidence show that vessels with crews from a single nationality or with only 2 nationalities revealed more positive attitudes towards safety and risk than those with multinational crews [16]. An implication of this multinational composition of crew members is therefore that cultural differences between employees should always be taken into consideration when investigating work environment, safety, health, and well-being in this specific industry.

Taking such multicultural differences between crew members into account, we will apply the JD-R model as our point of departure for investigating how physical and psychosocial work factors are related to well-being in the maritime industry. More specifically, we will: 1) examine whether perceptions of safety, work demands, leadership, harassment, and team cohesion are related to the levels of job satisfaction and intentions to leave among seafarers, and 2) determine whether there exist cross-cultural differences in work factors, job-satisfaction and intentions to leave between European and Filipino crew members.

MATERIAL AND METHODS

DESIGN AND PROCEDURE

The data utilised in this study is based on a survey among 817 crew members working on vessels belonging to 2 large Norwegian shipping companies. The maritime sector is Norway's second largest industry after the oil and gas industry, and employs about 31,000 persons, of which 17,000 are Norwegians [17]. By being relatively large and well-established companies that specialise within several segments of the industry (e.g. subsea, marine seismic, platform supply, and construction), the surveyed companies can be considered as typical for the maritime industry in Norway. As all the crew members that were employed in 2 companies at the time of the survey were invited to participate in it, the design is completely randomised.

Questionnaires were distributed to crew members during their offshore working period on the vessels, and the respondents were asked to complete the questionnaire towards the end of their stay onboard. The length of the work period varied between respondents, and captains worked shorter periods than subordinates. Participation in the survey was voluntary, and respondents could withdraw from the study without further explanation. Altogether 594 individuals from 40 vessels returned completed questionnaires. The response rate of 73% is higher than the mean response rate of survey studies in general [cf. 18], and higher than the response rate for surveys conducted among

employees of similar industries such as the United Kingdom (UK) offshore petroleum industry [19, 20]. Due to the differences in the questionnaire design between captains and crew members, captains (n = 53) are not included in the present survey, thus reducing the total number of respondents to 541. The survey was approved by the Norwegian Social Science Data Service.

SAMPLE

The sample consisted of 56% Filipinos and 26% Norwegians, whereas the remaining 18% had other European origins (Poland, UK). Mean age in the sample was 40 ± ± 10.0 years with a range from 18 to 63. The sample was predominately male (99%). Altogether 30% had a permanent employment relationship with their company, 4% had a temporary employment, whereas 66% was employed through an employment agency. As for length of service in the company, about 24% had less than 1 year, 32% between 1 and 3 years, whereas 41% had 3 years or longer seniority. Overall, the length of service under the current captain was relatively short, as 68% had sailed with the captain for less than a year.

INSTRUMENTS

Crew members' intentions to leave were assessed by the following 3 items: "I often think of leaving the shipping company", "In the next 12 months I wish to move to an onshore job", and "It is very possible that I will look for a new job within the next 12 months". Responses were given on a 5-point scale ranging from "Completely disagree" to "Completely agree". The internal consistency of the items was satisfactory (Cronbach's alpha = 0.70).

Three items from the Job Satisfaction Scale — short version [21] were included to investigate job satisfaction among the respondents. For each item, respondents gave their answers on a 5-point Likert scale, where 1 = "strongly disagree" and 5 = "strongly agree". The internal consistency of the scale was satisfactory (Cronbach's alpha = 0.70).

Perceptions of safety onboard were measured by the 11-item "Brief Norwegian offshore risk and safety climate inventory" (Brief-NORSCI) [22]. This instrument builds on the full version of the NORSCI [23, 24], and has been shown to be a valid and reliable indicator of safety perceptions [22]. Respondents were asked to rate their agreement with statements concerning elements such as individual conditions for safe work execution, behavior characteristics relevant for safety, and situational aspects that influence safety behavior. The ratings followed a 5-point scale, ranging from 1 (fully agree) to 5 (fully disagree). To counteract response style bias, both positively and negatively keyed items are included in the inventory. The scores were reversed on the positively formulated items; hence on all the items a score

of 1 would indicate evaluating the safety climate as poor, whereas a score of 5 would indicate evaluating it as good. This measure of safety perceptions comprises 3 subscales: Individual intention and motivation (Cronbach's alpha = = 0.65), Management prioritisation of production vs. safety (Cronbach's alpha = 0.58), and Safety routines (Cronbach's alpha = 0.64).

Two indicators of leadership were employed in the present study. Laissez-faire leadership refers to the avoidance or absence of leadership [25], and was measured by the 5 items (Cronbach's alpha = 0.72) from the Multifactor Leadership Questionnaire [26]. Authentic leadership is defined as 'a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development' [27]. In the current study, the authentic leadership was measured by the 16-item Authentic Leadership Questionnaire, measuring the first order factors of transparency, self-awareness, balanced processing, and moral perspective [27]. The scale demonstrated strong internal reliability as measured by Cronbach's alpha (0.90). All the leadership's items were measured on a 5-point scale ranging from 1 "Not at all" to 5 "Frequently, if not always".

Three items were employed to examine aspects of job demands among the crew members. The respondents were asked to rate the degree to which they perceive the following issues as demanding while working: "Difficult working conditions", "Pressure from contractors/customers", and "Stress related to work". Responses were given on a 5-point scale ranging from "Not at all" to "Frequently". The internal consistency for the scale was good (Cronbach's alpha = 0.73).

Exposure to workplace harassment was measured by a 9-item version of the Negative Acts Questionnaire Revised [28]. The respondents were asked to report the degree to which they have experienced typical acts of harassment and bullying (e.g. "Being ignored, excluded or being ostracised", "Persistent criticism of your work and effort", and "Someone withholding information which affects your performance") during the last 6 months. The items describe specific acts, without referring to terms like "bullying" and "harassment". The response categories were 1 "Never", 2 "Now and then", 3 "Monthly", 4 "Weekly" and 5 "Daily". The internal consistency of the scale was good (Cronbach's alpha = 0.85).

Team cohesion refers to the degree to which members are attracted to a group, motivated to remain a part of it, and work together to achieve common goals, and was assessed with 4 items from the Platoon Cohesion Index [29], reworded and adapted to the maritime context. Responses were

Table 1. Descriptives and intercorrelations for study variables (Cronbach's alpha in bold along the diagonal)

Variables	Items	Scale	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Age	–	–	40.01	10.06	–										
2. Intentions to leave	3	1–7	2.23	0.81	–0.10	**0.70**									
3. Job satisfaction	3	1–5	4.17	0.62	0.04	–0.48	**0.70**								
4. Individual intention and motivation	4	1–5	4.74	0.46	0.06	0.23	0.16	**0.65**							
5. Management prioritisation	4	1–5	3.06	0.97	0.00	–0.10	–0.41	0.04	**0.58**						
6. Safety routines	3	1–5	4.64	0.51	–0.02	0.19	0.14	0.39	–0.10	**0.64**					
7. Laissez-faire leadership	5	1–5	3.18	0.54	–0.11	0.15	–0.05	0.03	0.19	0.00	**0.72**				
8. Authentic leadership	16	1–5	4.01	0.60	–0.19	0.24	0.19	0.23	–0.02	0.17	0.41	**0.90**			
9. Job demands	3	1–5	2.08	0.77	–0.02	–0.22	–0.23	–0.12	0.10	–0.10	0.06	–0.17	**0.73**		
10. Harassment	9	1–5	1.25	0.42	–0.07	0.09	–0.22	–0.13	0.20	–0.13	0.19	–0.14	0.32	**0.85**	
11. Team cohesion	5	1–5	4.34	0.63	0.02	0.26	0.16	0.21	0.03	0.18	0.13	0.28	–0.24	–0.18	**0.73**

Correlations ≥ 0.09 are significant at p < 0.05; correlations ≥ 0.12 are significant at p < 0.01.

given on a 5-point scale ranging from 1 "Totally disagree" to 5 "Totally agree". Sample items were: "I am in a work group that supports me" and "The people in my work group cooperate with each other". Cronbach's alpha for the scale was satisfactory (0.73).

STATISTICAL ANALYSIS

Pearson Product Moment correlation analyses, independent samples t-tests, and multiple linear regression analysis were conducted to analyse the data. Statistical analyses were conducted with SPSS 20.0. Interaction analyses were performed with the supplemental PROCESS macro script [30]. Level of significance was set to p < 0.05. For all t-test, effect sizes, as measured by Cohen's d statistic, were calculated. Effect sizes in the area of 0.2 are small, while those in the area of 0.5 are medium and those in the area of 0.8 are large [31].

RESULTS

Descriptive statistics and intercorrelations for continuous study variables are presented in the Table 1. The intercorrelations show significant associations between all indicators of safety and both intentions to leave and job satisfaction. Authentic leadership, but not laissez-faire leadership, is associated with job satisfaction and intentions to leave. Quantitative work demands and exposure to harassment are both positively related to intentions to leave and negatively related to job satisfaction; team cohe-

sion is positively related to job satisfaction, and negatively related to intentions to leave. A relatively strong negative association was found between intentions to leave and job satisfaction (r = –48; p < 0.001).

A series of t-tests were performed to examine differences between European and Filipino crew members with regard to the included study variables. As displayed in Table 2, Filipino crew members had significantly higher scores on intentions to leave, individual intention and motivation with regard to following safety regulations, management prioritisation of production over safety, laissez-faire leadership, authentic leadership, exposure to harassment, and team cohesion. No significant differences between the groups were found for job satisfaction, safety routines, and quantitative job demands. Indicators of the effect size show that the established difference in perception of management prioritisation of production over safety is large, whereas the other differences can be considered as small to medium.

Multiple regression analyses were conducted in order to examine the relative impact of the work factors on intentions to leave and job satisfaction. For each outcome, separate analyses were performed for the European and Filipino respondents in order to examine cultural differences. Due to the significant correlations between age and some of the work factors (Table 1), the regression analyses were adjusted for age. The impact of work factors on intentions to leave is presented in Table 3. For the total sample of seafarers, the findings show that intentions to leave are

Table 2. Differences between European and Filipino crew members with regard to study variables

	Europeans		Filipinos			
	M	**SD**	**M**	**SD**	**T-test**	**Cohen's d**
Intentions to leave	2.15	0.90	2.36	0.75	–2.63**	–0.25
Job satisfaction	4.22	0.65	4.13	0.61	1.39	0.14
Individual intention and motivation	4.63	0.52	4.80	0.40	–3.71**	0.37
Management prioritisation	2.40	0.82	3.57	0.77	–15.44**	–1.47
Safety routines	4.63	0.57	4.66	0.44	–0.58	–0.06
Laissez-faire leadership	3.07	0.47	3.26	0.60	–3.66**	–0.35
Authentic leadership	3.92	0.54	4.04	0.66	–2.10*	–0.20
Job demands	2.21	0.72	2.09	0.81	1.59	0.16
Harassment	1.19	0.27	1.31	0.50	–3.41**	–0.30
Team cohesion	4.24	0.64	4.37	0.62	–2.26*	–0.21

*p < 0.05; **p < 0.01

Table 3. Relationships between work environment factors and intentions to leave (Multiple regression)

	Sample								
	Europeans (n = 192)			Filipinos (n = 272)			Overall (n = 464)		
Work factors	**B**	**SEB**	**b**	**B**	**SEB**	**b**	**B**	**SEB**	**b**
Age	–0.01	0.01	–0.16*	0.00	0.01	0.01	–0.01	0.00	–0.09*
Individual intention and motivation	–0.41	0.15	–0.23**	–0.28	0.12	–0.15*	–0.28	0.09	–0.16**
Management prioritisation	0.08	0.08	0.07	0.08	0.06	0.08	0.11	0.04	0.13**
Safety routines	–0.05	0.13	–0.03	–0.05	0.11	–0.03	–0.14	0.07	–0.09
Laissez-faire leadership	–0.17	0.16	–0.09	0.05	0.09	0.04	0.05	0.08	0.03
Authentic leadership	0.17	0.15	0.10	–0.05	0.09	–0.05	–0.06	0.07	–0.05
Job demands	–0.31	0.10	0.24**	0.16	0.06	0.17*	0.16	0.05	0.15**
Harassment	0.32	0.25	0.10	0.05	0.10	0.03	0.16	0.09	0.08
Team cohesion	–0.18	0.11	–0.13	–0.26	0.08	–0.22**	–0.19	0.06	–0.15**

*p < 0.05; **p < 0.01

negatively associated with age, individual intention and motivation to follow safety regulation, and team cohesion, and positively associated with management prioritisation of production over safety and high levels of quantitative job demands. As for cross-cultural differences, team cohesion was negatively associated with intentions to leave among Filipino, but not European, crew members. Altogether, the work factors explained 21% of the variance in intentions to leave in the total sample (F = 13.10; df = 9/457; p < 0.001), 27% in the subsample of Europeans (F = 6.23; df = 9/161; p < 0.001), and 19% in the Filipino subsample (F = 6.00; df = 9/234; p < 0.001).

Relationships between work factors and job satisfaction are displayed in Table 4. Overall, job satisfaction is positively associated with individual intention and motivation to follow safety regulation, laissez-faire leadership, and team cohe-

sion, and negatively related to management prioritisation of production over safety and quantitative job demands. With regard to cross-cultural differences, individual intention and motivation to follow safety regulation was associated with job satisfaction among European respondents, but not Filipino, whereas authentic leadership was associated with job satisfaction among Filipino respondents, but not Norwegian. The work factors explained 18% of the variance in the total sample (F = 10.81; df = 9/453; p < 0.001), 28% in the subsample of Europeans (F = 6.49; df = 9/162; p < 0.001), and 17% in the Filipino subsample (F = 4.96; df = 9/229; p < 0.001).

In order to further investigate the impact of cross-cultural differences on relationships between work factors and well-being, series of separate interaction analyses with ethnicity as the moderator variable was conducted for each work

Table 4. Relationships between work environment factors and job satisfaction (Multiple regression)
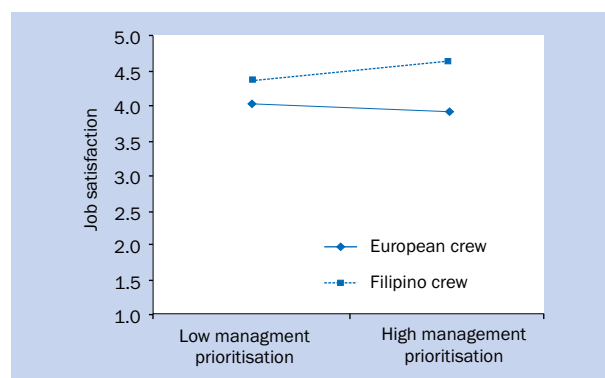
Work factors	Sample								
	Europeans (n = 192)			Filipinos (n = 272)			Overall (n = 464)		
	B	SEB	b	B	SEB	b	B	SEB	b
Age	0.01	0.00	0.11	0.00	0.00	0.02	0.00	0.00	0.07
Individual intention and motivation	0.31	0.11	0.24**	0.07	0.10	0.05	0.16	0.07	0.12*
Management prioritisation	–0.11	0.06	–0.13	0.00	0.05	0.00	–0.07	0.03	–0.11*
Safety routines	0.05	0.09	0.05	0.09	0.09	0.07	0.10	0.06	0.09
Laissez-faire leadership	0.18	0.12	0.12	0.14	0.08	0.14	0.16	0.06	0.13**
Authentic leadership	–0.02	0.11	–0.01	0.15	0.08	0.15*	0.10	0.06	0.09
Job demands	–0.18	0.07	–0.19*	–0.13	0.05	–0.17*	–0.15	0.04	–0.18**
Harassment	0.24	0.18	0.10	0.03	0.09	0.02	0.07	0.07	0.05
Team cohesion	0.23	0.08	0.22**	0.15	0.07	0.15*	0.14	0.05	0.14**

*$p < 0.05$; **$p < 0.01$

factor. With regard to job satisfaction, an interactive effect was established between management prioritisation and ethnicity (F = 3.28; df = 3/475; $p < 0.05$). As for the direct effects of the predictor variables, neither ethnicity (B = –0.00; se = 0.07; t = –0.06, p = 0.96), nor management prioritisation (B = –0.05; se = 0.04; t = –1.4, p = 0.16) were significantly related to job satisfaction. When adding the interaction term to the regression, the amount of explained variance increased significantly by 1.2% ($R^2 = 0.012$; $p < 0.05$). Furthermore, the interaction term made a significant contribution to the explained variance (B = 0.18; se = 0.07; t = 2.4; $p < 0.05$). Yet, the overall variance in job satisfaction explained by the predictor variables and the interaction term was low (2%). As graphically displayed in Figure 1, the nature of the interaction shows that high management prioritisation had a stronger relationship with job satisfaction among Filipino workers than among European workers. No other interaction effects were established between ethnicity and any of the other work factors with regard to job satisfaction or intent to leave.

DISCUSSION

The aim of the present study was to investigate relationships between physical and psychosocial work environment factors and well-being among seafarers, and to examine whether these relationships are influenced by cross-cultural differences. In brief, the findings show that physical and psychosocial work factors are important correlates of both intentions to leave and job satisfaction in the maritime industry, with safety perceptions, job demands, and team cohesion as the strongest and most consistent factors. As for cross-cultural differences, the findings show that the European and Filipino respondents differ with regard to both work environment factors and well-being. Summarised, the overall differences suggest

Figure 1. The interaction between ethnicity of workers and management's prioritisation of safety with regard to perceived job satisfaction

that Filipino crew members experience the work environment as more negative with higher levels of harassment, laissez-faire leadership, and poor safety. Still, Filipinos also experience stronger team-cohesion and their captains as more authentic. Although Filipinos report higher levels of intentions to leave their job, no difference between Europeans and Filipinos was found for job satisfaction. Interaction analyses showed that Filipino crew members reported higher job satisfaction compared to European crew members when the management's prioritisation of safety over production is high.

The finding that high levels of job demands are related to both higher intentions to leave and lower job satisfaction is in line with the previously described JD-R model and indicates that prolonged physical and mental efforts while working may have substantive negative after effects. Seeing poor levels of safety as a job-demand, the JD-R model is also supported by the associations between perceptions

of management's prioritisation of production over safety and well-being among crew members, which suggest that in cases where external conditions, such as pressure from customers and contractors to get the job done are prioritised on behalf of safety, worker well-being is reduced. Yet, in line with JD-R model, the findings of the current study also suggest that the negative effects of job demands seem to be counterbalanced by available job resources such as safety measures, team cohesion, and, at least for Filipino workers, ship management. These positive effects of safety perception on well-being are in line with previous research [14, 32, 33], and show the importance of building strong and coherent teams with strong focus on safety in the maritime industry.

Contradicting previous research findings on leadership and well-being [e.g. 34, 35], we found few associations between crew members well-being and their ratings of the captain's leadership style. This non-relationship may be due to specific characteristics of the occupation of the maritime industry. For instance, as crew members on vessels are qualified personnel with clearly defined roles with regard to working tasks, e.g. engineer, cook, bosun, and 2nd officer, it may be that the need for leadership is low and that the crew members therefore are relatively autonomous. Furthermore, as captains usually work shorter shift-periods compared to non-officers, crew members have to relate to more than one top officer during their stay at the vessels. Hence, the influence of the captain on well-being could be less constant than other work factors such as safety and team cohesion. Yet, although the direct relationship between leadership and well-being is limited, it could be that leadership has indirect effects on job satisfaction and intentions to leave. For instance, as authentic leadership is associated with social processes that foster change and growth, and thereby function as role models promoting a positive climate within the organisations, authentic leaders should be able to generate high levels of cohesion and identity within work groups [36]. Based on this reasoning, authentic leadership is related to high levels of well-being through maintaining a favourable climate within the group that is characterised by positive attitudes between its members and a care for conflict resolution. Furthermore, as leadership is considered as a key predictor for safety [37], it is also likely that leadership has indirect effects on well-being through enhancing followers safety perceptions. In order to establish whether such indirect effects exist, future research should examine the mediating role of team cohesion and safety.

Meta-analytical evidence have established strong associations between exposure to harassment and both job satisfaction and intentions to leave [38, 39]. Although similar associations were found in the bivariate correlation analyses in the current study, no relationships were established when adjusting for other work factors in the linear regression analysis. Following the JD-R model, a plausible explanation for this finding is that the negative effects of workplace harassment (as a job demand) are dependent on job resources. For instance, it is reasonable to assume that strong team cohesion protects group members from being exposed to workplace harassment as this kind of negative behaviour should not be tolerated in a coherent work group with high in-group orientation.

In line with previous research which have established cross-cultural differences in seafarers with regard to factors such as emotional intelligence [15] and involvement in accidents [40], the findings of the current study show that the European and Filipino seafarers differ in their perception and ratings of important work factors such as safety, leadership, exposure to harassment, and team cohesion. Although some of these differences may be explained by work characteristics such as the fact that Filipino crew members often have longer working periods, actual cross-cultural differences may also play a role. For instance, with regard to team cohesion, a main difference between the European and Asian cultures is that the former is individualistic, whereas the latter is collectivistic [41]. Collectivism is described as a set of meanings and practices that emphasise the relatedness of a person to his or her in-group and, more generally, to the world. Similarly, individualism is a set of meanings and practices that underline the individual as bounded, unique, and independent. Hence, the higher levels of team cohesion may be due to the strong collectivistic orientation among Filipinos.

With regard to methodological implications, a strength of this study is that it is based on a relatively large and randomly drawn sample with an adequate response rate, applying internationally recognised instruments with satisfactory psychometric properties, which strengthen the validity of the findings. Hence, the findings should be generalisable to the larger population, as well as research on work-environment and well-being in general. Still, some caution is needed when interpreting the results from this study. Firstly, the data is based on the self-reports, with common-method variance as a possible problem [42]. Secondly, the data was cross-sectional, which implies that one cannot draw conclusions about causal relationships. Hence, longitudinal studies should be conducted to attain more knowledge about the causality of the relationships between work factors, intentions to leave, and job satisfaction. Although the sample is randomly selected, a problem for the study is that the data are likely to be nested. That is, there are several respondents that are influenced by the same leader. This problem is usually solved by the use of hierarchical linear modeling. However, due to the issues of anonymity and confidentiality in the data collection, it was not possible to acquire the information about work units and their leaders that is needed for hierarchical linear modeling.

CONCLUSIONS

In conclusion, there are many demanding aspects of seafaring such as the inability of employees to leave the worksite, extreme weather conditions, long periods away from home, and motion of the workplace. Some of these are unchangeable and are a reflection of the nature of the domain, whereas others are possible to modify and adjust. Hence, the identification of important job demands and resources can be used as a basis for modifying, supplementing, and introducing new strategies or interventions to reduce the negative impact these factors have on the well-being of the individual seafarer [16]. In the present study, we have shown that job satisfaction and intentions to leave among seafarers are related to physical and psychosocial factors in the working environment, and especially, safety perceptions, job demands, and team cohesion. Hence, the findings support occupational stress models which emphasise the importance of situational factors in the understanding of well-being among the workers. Yet, following a social interactionist perspective, no comprehensive model of workplace well-being would be satisfactory without including also personality and individual differences among the employees. Consequently, a challenge for future studies is to examine the impact of individual stress resistance factors, such as personality traits, hardiness, and psychological capital. Furthermore, the established differences with regard to work environment factors and well-being between the European and Filipino seafarers suggest that cross-cultural differences should be taken into consideration in upcoming research in the maritime industry.

REFERENCES

1. Havold JI. Safety-culture in a Norwegian shipping company. J Safety Res 2005; 36: 441–458.
2. Elo AL. Health and stress of seafarers. Scand J Work Env Hea 1985; 11: 427–432.
3. Christensen JO, Knardahl S. Work and neck pain: a prospective study of psychological, social, and mechanical risk factors. Pain 2010; 151: 162–173.
4. Ljosa CH, Tyssen R, Lau B. Mental distress among shift workers in Norwegian offshore petroleum industry — relative influence of individual and psychosocial work factors. Scand J Work Env Hea 2011; 37: 551–555.
5. Nielsen MB, Tvedt SD, Matthiesen SB. Prevalence and occupational predictors of psychological distress in the offshore petroleum industry: a prospective study. Int Arch Occup Environ Health 2012 (Published online ahead of print).
6. Locke EA. The nature and causes of job satisfaction. In: Dunnette MD (ed.). Handbook of industrial and organizational psychology. Rand McNally, Chicago 1976.
7. Podsakoff NP, LePine JA, LePine MA. Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: a meta-analysis. J Appl Psychol 2007; 92: 438–454.
8. Barlow L, Iverson RD. Workplace safety. In: Barling J, Kelloway EK, Frone MR (eds). Handbook of work stress. Thousand Oaks., Sage 2005: 247–265.
9. Cooper CL, Watts J, Kelly M. Job-satisfaction, mental-health, and job stressors among general dental practitioners in the UK. Br Dent J 1987; 162: 77–81.
10. Kirk-Brown A, Wallace D. Predicting burnout and job satisfaction in workplace counselors: the influence of role stressors, job challenge, and organizational knowledge. J Employment Couns 2004; 41: 29–37.
11. Sullivan SE, Bhagat RS. Organizational stress, job-satisfaction and job-performance — where do we go from here. J Manage 1992; 18: 353–374.
12. Bakker AB, Demerouti E. The job demands-resources model: state of the art. J Manage Psychol 2006; 22: 309–328.
13. Bakker AB, Demerouti E, Euwema MC. Job resources buffer the impact of job demands on burnout. J Occup Health Psych 2005; 10: 170–180.
14. Nielsen MB, Mearns K, Matthiesen SB, Eid J. Using the Job Demands-Resources Model to Investigate Risk Perception, Safety Climate and Job Satisfaction in Safety Critical Organizations. Scand J Psychol 2011; 52: 465–475.
15. Johnsen BH, Meeus P, Meling J et al. Cultural differences in emotional intelligence among top officers on board merchant ships. Int Marit Health 2012; 63: 90–95.
16. Hetherington C, Flin R, Mearns K. Safety in shipping: the human element. J Safety Res 2006; 37: 401–411.
17. Norwegian Ministry of Trade and Industry, Steady as she goes. The government's strategy for environmental friendly growth in the maritime industry. Norwegian Ministry of Trade and Industry Oslo 2007.
18. Baruch Y, Holtom BC. Survey response rate levels and trends in organizational research. Hum Relat 2008; 61: 1139–1160.
19. Mearns K, Flin R, Gordon R et al. Measuring safety climate on offshore installations. Work Stress 1998; 12: 238–254.
20. Mearns K, Whitaker SM, Flin R. Benchmarking safety climate in hazardous environments: a longitudinal, interorganizational approach. Risk Anal 2001; 21: 771–786.
21. Brayfield AH, Rothe HF. An index of job satisfaction. J Appl Psychol 1951; 35: 307–311.
22. Nielsen MB et al. A brief safety climate inventory for petro-maritime organizations Safety Sci, 2013 (published online ahead of print).
23. Tharaldsen JE, Olsen E, Rundmo T. A longitudinal study of safety climate on the Norwegian continental shelf. Safety Sci 2008; 46: 427–439.
24. Hope S, Overland S, Braun W, Matthiesen SB. Associations between sleep, risk and safety climate: A study of offshore personnel on the Norwegian continental shelf. Safety Sci 2010; 48: 469–477.
25. Bass BM, Avolio BJ. Transformational leadership development: manual for the Multifactor Leadership Questionnaire. Consulting Psychologists Press, Palo Alto, CA 1994.
26. Bass BM, Avolio BJ. Transformational leadership development. Manual for the Multifactor Leadership Questionnaire. Consulting Psychologists Press Inc. Palo Alto 1990.
27. Walumbwa FO. Avolio BJ, Gardner WL, Wernsing TS, Peterson SJ Authentic leadership: Development and validation of a theory-based measure. J Manage 2008; 34: 89–126.
28. Einarsen S, Hoel H, Notelaers G. Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the Negative Acts Questionnaire-Revised. Work Stress 2009; 23: 24–44.
29. Siebold GL, Kelly DR. Development of the Platoon Cohesion Index. U.S. Army Research Institute for Behavioral and Social Sciences: Alexandria, VA 1988,
30. Hayes AF. Introduction to mediation, moderation, and conditional process analysis. A regression based approach. Guilford Press, New York 2013.

31. Cohen J. Statistical power analysis for the behavioral sciences. Lawrence Earlbaum Associates, Hillsdale, NJ 1988.

32. Bartone PT, Johnsen BH, Eid J, Brun W, Laberg JC. Factors influencing small-unit cohesion in Norwegian Navy officer cadets. Mil Psychol 2002; 14: 1–22.

33. Evans CR, Dion KL. Group cohesion and performance a meta-analysis. Small Gr Res 2012; 43: 690–701.

34. Kelloway EK, TurnerN, Barling J. Transformational leadership and employee psychological well-being: The mediating role of employee trust in leadership. Work Stress 2012; 26: 39–55.

35. Kalshoven K, Boon CT. Ethical leadership, employee well-being, and helping the moderating role of human resource management. J Pers Psychol 2012; 11: 60–68.

36. Nielsen MB. Workplace bullying in work groups: the impact of leadership. Scand J Psychol 2013; 54: 127–136.

37. Zohar D. The effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups. J Organ Behav 2002; 23: 75–92.

38. Nielsen MB, Einarsen S. Outcomes of workplace bullying: a meta-analytic review. Work Stress 2012; 26: 309–332.

39. Bowling NA, Beehr TA. Workplace harassment from the victim's perspective: a theoretical model and meta analysis. J Appl Psychol 2006; 91: 998–1012.

40. Grøn S, Knudsen F. Why do Filipinos have fewer reported work accidents than other nationals? Findings from literature. Int Marit Health 2012; 63: 96–101.

41. Hofstede GH. Culture's consequences. Comparing values, behaviors, institutions, and organizations across nations. 2 Ed. Sage, London 2001.

42. Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP. Common method biases in behavioral research: A critical review of the literature and recommended remedies. J Appl Psychol 2003; 88: 879–903.