

Hardiness and mental health during naval deployment:

The relation is mediated by social processes and not by self-regulatory processes

Titre= Résilience et santé mentale pendant le déploiement naval:

La relation est médiatisée par des processus sociaux et non par des processus d'autorégulation

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Key words: Navy, Hardiness, Cohesion, Operational self-efficacy, mediation

French key words: Marine, Résilience, Cohésion, Auto-efficacité opérationnelle, Médiation

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Abstract

Introduction: The aim of the present study was to investigate the mediating effects of cohesion and self-efficacy on the relation between hardiness and symptoms of anxiety and depression during naval international operations.

Objective/Method: It was hypothesized that an indirect effect of both cohesion and operational self-efficacy would emerge even when controlling for pre-deployment measures of symptoms.

Results: The results revealed a strong indirect effect of cohesion on the relationship between hardiness and scores on Hopkins symptom checklist –25 items. The effect was evident for the total score and the dimensions of anxiety as well as depression. No effect was found for operational self-efficacy.

Conclusion: It was concluded that the social process of cohesion outperforms the self-regulatory process of operational self-efficacy as a mediator between hardiness and mental health. Greater focus on developing crew cohesion may thus be important for maintaining mental health under stressful conditions.

Résumé

Introduction : Le but de la présente étude était d'étudier les effets médiateurs de la cohésion et de l'auto-efficacité sur la relation entre la résilience et les symptômes d'anxiété et de dépression pendant les opérations navales internationales.

Objectif/Méthode : Il a été émis l'hypothèse qu'un effet indirect de la cohésion et de l'auto-efficacité opérationnelle émergerait également après contrôle des mesures de symptômes avant le déploiement.

Résultats : Les résultats ont révélé un effet indirect de la cohésion sur la relation entre la résilience et les scores sur la liste de contrôle des symptômes de Hopkins –25 éléments. L'effet était évident pour le score total et les dimensions de l'anxiété ainsi que de la dépression. Aucun effet n'a été trouvé pour l'auto-efficacité opérationnelle.

Résumé : Il a été conclu que les processus sociaux surpassaient les processus d'autorégulation en tant que médiateurs entre la rusticité (hardiness) et les symptômes de santé mentale, et cela était dû au succès de la mise en place d'un équipage cohésive à bord du navire de la Marine.

Introduction

The Royal Norwegian Navy has for the last decade increased its commitment to international naval operations and standing NATO maritime groups. Because of this increased involvement, there is a growing demand for knowledge of the impact of international operations on sailors' mental health and well-being. The Norwegian Armed Forces is based on mandatory military service for both men and women, and the crew onboard Norwegian naval vessels thus consists both of professional soldiers, mainly officers and NCOs, as well as lower rank mandatory conscripts. There are few studies within the naval domain that have explored the impact of international operations in Navies based on mandatory service. Furthermore, Macera et al. (2014), in a study of US Navy personnel, stated that very little is known about Navy personnel deployed to combat zones.

In general, several factors have been related to increased vulnerability for reduced mental well-being. The subjective feeling of fulfillment of social belongingness needs (Verhagen et al., 2018), lack of workplace boredom (Game, 2006) and a perception of being in control over life events (Stolz et al., 2020) are all crucial factors for psychological well-being, and it can be argued that these factors are distinctly important for deployed naval crews. Naval personnel deployed in international operations are separated from their significant others like family and loved ones for six to eight months, with little stimulation outside their professional environment. Moreover, a major part of their daily activities is controlled by decision makers in higher echelons. These social processes related to increased vulnerability closely resemble keys components of the concept of personality hardiness. Hardiness is described as consisting of the interrelated dimensions of commitment, control, and challenge (Kobasa, 1979). Commitment involves a

generalized sense of purpose and engagement in life. A person high in commitment views interacting with people as exciting and is deeply involved in the task and the individual at hand. The control dimension entails a belief in personal power and influence over life events. Challenge is characterized by a general attitude towards viewing change as interesting. Challenging situations are something not to be avoided since they represent opportunities for growth and development. These three interrelated hardiness components are believed to influence the individual's perception and evaluation of stressful events (Bartone, 1999). The personality characteristics associated with hardiness are believed to protect the individual by decreasing the negative impact of stress through a combination of underlying cognitive, physiological, and behavioral factors. (Bartone et al., 1989; Kobasa, 1979; Maddi, 2002). Hardiness has been found to buffer effects of strain during international operations and to increase psychological well-being in deployed personnel (Bartone et al., 2015; 2012; 2017).

Cohesion is another factor found to influence psychological well-being (Abdulla et al., 2015) and cohesion could be viewed as an ongoing social integration process (Siebold, 2007). Thus, military units strive to develop high cohesion among their operators. Several studies have reported positive effects of cohesion on mental health among military personnel (Armistead-Jehle et al., 2011; Brailey et al., 2007; Du Preez et al., 2012; Jones et al., 2012; Mulligan et al., 2010). Thomassen et al. (2015) found an interaction of hardiness and cohesion on anxiety symptoms in Norwegian army personnel deployed to Kosovo. They concluded that soldiers high on hardiness showed lower symptom load regardless of their reported cohesion level. For personnel low on hardiness, symptom reporting was dependent of their evaluation of cohesion levels. Soldiers experiencing high degree of cohesion showed less anxiety symptoms compared to personnel scoring low on cohesion. Despite the findings of Thomassen et al. (2015), a relationship between hardiness and cohesion is rooted in hardiness theory (Kobasa, 1982, p.6). Kobasa states that

hardiness is associated with an ability to “involve oneself fully in many situations of life including work, family, interpersonal relations, and social institutions.” This involvement could lead to behavior that generates and maintains the perception of cohesion. There is some existing evidence for a relationship between hardiness and cohesion. Bartone, Johnsen, Eid, Brun and Laberg (2002) reported that hardiness influenced small unit cohesion during a military exercise in Norwegian naval cadets. Cadets ranking high on hardiness showed the largest increase in cohesion scores as a result of a strenuous maneuver.

Internal control beliefs are also reported to shape well-being and mental health (Stolz et al., 2020; Sheeran et al., 2016). One key control-belief involved in self-regulatory behavior is self-efficacy (Bandura, 1997). According to social cognitive theory, self-efficacy represents the subject’s perceived ability to perform actions. Thus, it represents the cognized motivation for achieving goals through self-adjustment. Motivation, self-regulation and achievement of valued goals are central to mental and physical health (Dupere, et al., 2012; Hennessy et al., 2020; Parker, 2017), and poor mental health is reported to be associated with worrying about one’s own self-efficacy (McKerrow et al., 2020). A positive association between hardiness and self-efficacy has been reported, in that hardiness has been shown to predict proactive coping and that this effect was mediated by self-efficacy beliefs (Delahaij et al., 2010). Furthermore, Johnsen et al. (2017) found that hardiness operated as a moderator in the association between operational self-efficacy and performance satisfaction during police training. For police officers high in hardiness, self-efficacy had a positive effect on performance satisfaction, while for officers low on hardiness, self-efficacy had a negative effect. Thus, a link between hardiness and self-efficacy has been established.

Social cognitive theory advocates an interaction of cognitive and social factors in self-regulatory processes. In his proposed system of self-regulation, Bandura (1999) presents external performance determinants, referential factors like norms, social and collective comparisons, as well as personal determinants of motivation for action. Since cohesion is viewed as a social integration process it could be argued that it heavily relies on norms and social processes as well as collective standards. This argument is also supported empirically by studies that have found an association between cohesion and self-efficacy. Lent et al. (2006), for example, found that cohesion was an independent predictor for collective efficacy beliefs which in turn was a predictor for teamwork. However, cohesion showed only a small correlation to individual self-efficacy. In contrast, Wachs et al. (2018) found an effect for cohesion predicting self-efficacy and an indirect effect of self-efficacy on the association between classroom cohesion and willingness to intervene in bullying.

Although a relation between hardiness, cohesion and self-efficacy on mental health and well-being have been established, the mechanisms involved could be further analyzed. According to Hayes (2018) the natural next step from establishing a relationship between variables is conducting mediation analyses in order to investigate mechanisms involved. This is also in line with Rucker et al. (2011) who called for mediation analyses investigating psychological factors in the social domain. Thus, the present study investigates the relation between hardiness and psychological symptoms on navy crews deployed in international and standing NATO deployments. The study aims to separate the indirect effects of hardiness through social processes, represented by cohesion, from the indirect effects through self-regulatory factors like self-efficacy, as well as compare these two mediational processes.

As early as 2009, LeardMann, et al. commented that most studies on the mental health of military cohorts were conducted using cross-sectional designs or retrospective data, an observation later echoed by Thomassen and colleagues (2015). The low number of studies using prospective designs that includes baseline measures of mental health is surprising, since pre-measures of symptoms is a potent predictor of post-measure symptoms (Bonanno et al., 2012; Thomassen, et al., 2018). Therefore, the present study includes a baseline measure of symptoms as a covariate variable.

We predicted a direct effect of hardiness on symptom scores (H1) as well as an indirect effect through both cohesion (H2) and operational self-efficacy (H3). The indirect effect of hardiness flowing through cohesion and further through self-efficacy on symptoms was also explored.

Insert Fig. 1 about here

Method

Subjects

A total of 364 crewmembers from four crews of Norwegian frigates deployed in standing NATO naval forces or in anti-piracy operation in the Gulf of Aden participated in the study. The

standing NATO force is a high readiness naval force under the command of the Allied Maritime Command, Northwood, and is characterized by a very short notice-to-move in order to intervene in operational missions. Theoretically, these missions could involve the whole spectrum from peacetime diplomatic and show-of-force to naval warfare operations. Both the standing NATO and anti-piracy mission involved maritime patrols. The Rules of Engagement for the anti-piracy deployment also involved escort of civilian vessels, inspections, disarmament, and arrests of persons suspected of criminal behavior (piracy, trafficking etc.) as well as opposed and non-opposed boarding operations. The deployment length of both types of operations was six months. No specific questions aimed at age or gender were asked. However, crews manning the frigates usually consist of members with a range of 19 to 45 years. The bulk of the crew is males and officers constitute a majority, followed by enlisted sailors and drafted privates. The duration of the operations was six to eight months.

Procedure

The data-source was based on the standard screening procedure in the Royal Norwegian Navy (see Sanden et al., 2014 for an overview of the procedures), which includes pre-deployment screening as well mid and post-deployment evaluation. The data presented in the present study are drawn from the pre-deployment screening conducted two to four weeks before departure of the vessel and the post-evaluation of the crew effectuated during transit to home base. Hardiness and pre-deployment recordings of psychological symptoms were measured before departure of the vessel. Cohesion, operational self-efficacy, and post-deployment psychological symptoms were recorded in transit home to base after the deployment. As noted, cohesion is a continuous integration process and operational self-efficacy develops as a result of learning. These factors can be viewed as developed throughout the mission and therefore act as mediating variables.

Questionnaires

Hardiness. Hardiness was measured using a Norwegian version of the Dispositional Resiliency Scale -15 items (DRS-15; Hystad et al., 2010). The scale includes both positively and negatively keyed items, and covers the three intercorrelated hardiness dimensions of commitment, control and challenge. The items are scored on a four-point Likert scale (from 0 = *Not true* to 3 = *Completely true*). Previous studies on military samples have revealed Cronbach's alpha values ranging from .62 to .79 (Hystad, et al., 2010; Bartone et al., 2008). The present study showed an acceptable alpha value on the total DRS-15 scale of .77. Sample items are: "By working hard you can nearly always succeed in reaching your goals" and "Change in routines are interesting."

Cohesion. Cohesion was measured by means of two items, both scored from 0 = *Very low* to 5 = *Very high*. One item recorded a general evaluation of cohesion on board the vessel. The second item was related to the concept of "happy ship" and asked for the sailor's evaluation of the degree of emotional well-being (Norwegian: "trivsel") on board. The concept of "trivsel" is not easily translated directly to English, but includes emotional well-being, contentment and satisfaction related to the social arena. The correlation between the two items was $r = .63, p < .00$.

Operational self-efficacy. This scale was a shortened eight-item version (Johnsen et al., 2017) of the Military skills and Abilities scale (Fossum & Moldjord 1999; Solberg et al. 1999; 2005). The sum-score of the eight items was used as a measure of operational self-efficacy. Example items are "My ability to act although afraid/feeling threatened is..." and "My skills in decision making during difficult situations are ...". All items are scored from 1 = *Very weak* to 5 = *Very good*. Since the items in the scale reflect the subjective evaluation of their ability to act in a stressful

situation, and a six to eight month deployment is clearly stressful, it could be argued that the scale involves self-regulatory efficacy (Bandura, 1997) or “barrier self-efficacy” (Blanchard et al., 2007). A previous study on operational police personnel using the reduced scale (Johnsen et al., 2017) reported an alpha value of .71. The present study showed an acceptable alpha of .76.

Psychological Symptoms. The Hopkins Symptom Check List – 25 items (HSCL-25) is a screening tool designed to detect symptoms of anxiety and depression (Derogatis et al., 1974). The scale consists of 10 items representing anxiety symptoms and 15 items intended to measure depressive symptoms. Respondents are asked to indicate the degree (1 = *not at all*; 4 = *very much*) to which 25 symptoms have been troubling or concerning them during the last two weeks. The total HSCL-25 showed a Cronbach’s alpha of .85 in the present study. Example items are “Suddenly scared for no reason” and “Spells of terror or panic.” All items of the HSCL-25 were combined to form a total distress score and the scale was also separated into an anxiety and depression subscale for separate analyses.

Statistics

The PROCESS procedure for SPSS (Hayes, 2018) was applied in our analyses to estimate indirect effects. The PROCESS procedure uses an ordinary least squares (OLS) regression-based path-analytic framework for estimating indirect effects. In our analyses, 5000 bootstrap resamples were used to estimate the 95% bootstrap confidence intervals for the indirect effects. If the confidence interval differs from zero, this supports the conclusion that an indirect effect exists (Hayes, 2018).

Figure one presents the hypothesized model with hardiness (X) measured two to four weeks pre-deployment as the predictor variable, post-measure of HSCL-25 and its dimensions of anxiety and depression (Y) as dependent variables and cohesion (M₁) and operational self-

efficacy (M_2) as mediating variables. Since previous research has reported an effect of cohesion on self-efficacy (Wachs, et al., 2018), our model also defines a path between the mediators flowing from cohesion to self-efficacy. In order to control for pre-deployment symptoms, scores on HSCL-25 measured two to four weeks before departure of the vessels were introduced as covariate. Identical statistical procedures were conducted on the anxiety and depression subscale of the HSCL-25. To control for pre-deployment symptoms in these analyses, the anxiety and depression dimensions of the HSCL-25 measured before departure were used as covariate in their respective analyses. All regression weights are presented as both unstandardized and standardized coefficients. Pearson product-moment correlation was performed using listwise deletion. To increase the homogeneity of the variance, all data were square root transformed.

Results

Descriptive statistics and intercorrelations are presented in Table 1. The correlational analyses showed positive associations between hardiness measured before deployment and cohesion and operational self-efficacy measured at the end of deployment. Negative correlations were found between hardiness measured before deployment and both pre- and post-deployment measures of HSCL-25 and its dimensions of anxiety and depression. The highest correlations between pre- and post-deployment measures were found for the HSCL-25 and its sub-dimensions. The descriptive data revealed a high degree of hardiness in the sample and a low degree of anxiety and depressive symptoms measured by the HSCL-25.

Insert table one about here

Predicting Scores on The Total HSCL-25 Scale

As can be seen from table two, the results showed an overall statistically significant total effect of hardiness on psychological symptoms ($p = .03$). The results further showed a positive relationship (a_1 -path) between hardiness and cohesion measured at post-deployment ($p < .005$), as well as a negative relationship (b_1 -path) between cohesion and scores on the HSCL-25 ($p < .000$). The indirect negative effect of hardiness on the HSCL-25 through cohesion (a_1b_1 -path) was found to be different from zero (see table two). No significant direct effect of hardiness on the symptom scale (c' -path) was revealed. The covariate variable of symptoms measured before deployment had a significant negative influence on cohesion ($p > .007$) as well as a positive effect on post-deployment scores on HSCL-25 ($p < .000$)

The results further showed a positive relation between hardiness measured at pre-deployment and self-efficacy measured at the end of deployment (a_2 -path; $p < .004$). However, neither the association between self-efficacy and post-deployment scores on HSCL-25 (b_2 -path), nor the indirect association between hardiness and symptoms through self-efficacy (a_2b_2 -path) reached statistical significance. A comparison between the two indirect effects using a contrast ($a_1b_1 - a_2b_2$) further confirmed that the indirect effect of hardiness through cohesion was stronger than the indirect effect through self-efficacy ($b = -0.06$, bootstrap 95% CI = $-0.11; -0.01$).

Finally, the serial indirect effect flowing from hardiness to cohesion, and from cohesion to self-efficacy onto the total score on HSCL-25 ($a_1d_2b_2$ -path), did not reach statistical significance since zero was within the 95% bootstrap CI (see table two).

Insert table two about here

Predicting Scores on The Anxiety and Depression Dimensions

Identical analyses were performed separately for the anxiety and depression dimensions of the HSCL-25. Both analyses replicated the relations established in the first analyses. The similar results included the lack of a direct effect of hardiness, the presence of an indirect effect through cohesion, and non-significant effects for both the indirect effect through operational self-efficacy and the serial indirect effect involving both cohesion and self-efficacy (see table three and four).

Insert table three, four and five about here

Discussion

The main findings in the present study revealed that cohesion, but not self-efficacy, mediated the effect of hardiness on HSCL-25 measured at the end of the deployment. This was present even after controlling for pre-deployment symptom-levels. No effect, neither indirect nor direct, was found for self-efficacy as a mediator. Significant correlations were found for hardiness and cohesion on all other variables. No significant correlation coefficients were found for operational self-efficacy on any variable except for pre-deployment recordings of HSCL-25.

A relation between hardiness and psychological symptoms such as anxiety and depression found in the present study is hardly new. Previous studies have also reported effects of hardiness on symptoms among Norwegian military personnel deployed in international operations. For instance, Nordmo et al. (2017) reported lower symptoms of insomnia in high hardy naval personnel compared to their lower hardy colleagues. Thomassen et al. (2018) examined the relationship between hardiness and PTSD symptoms among veterans from deployments to Afghanistan and found that hardiness affected symptoms through the reduced use of avoidance focused coping. The total effect of hardiness found in the present study is comparable to the findings of both the Nordmo et al., (2017) and Thomassen et al. (2018) studies.

However, our finding of cohesion as a possible mechanism in the hardiness-health relationship adds to the knowledge on how hardiness influences mental symptoms and psychological well-being. This could be explained theoretically. Hardy personnel are thought of as being efficient and selective in their use of social support in order to handle stressful conditions (Kobasa & Puccetti, 1983). Furthermore, hardy subjects are characterized by

engagement and enjoyment of the social aspect of their environment, as well as a perception of control in social activities (Bartone, 2006). This pro-active approach to social interactions could result in an increased use of beneficial social processes like cohesion, resulting in better adaptation to lasting stressful events. Indeed, a positive effect of hardiness on cohesion was found in our study. The results further revealed a negative relation between cohesion and symptoms. Such a result has substantial support in the literature (Armistead-Jehle et al., 2011; Brailey et al., 2007; Du Preez et al., 2012; Jones et al., 2012; Mulligan et al., 2010). Furthermore, structural equation modeling has shown that the strength of social bonds was one of the key predictors of physical and mental health (Vaughan et al., 1985) and others have reported that social capital, which is linked to one dimension of cohesion, was associated with psychological well-being (Jones et al., 2014).

Hardiness was related to operational self-efficacy, which is in line with a previous study from our research group (Johnsen et al., 2017) on perceived success and strain in operational training of frontline police officers. However, neither the path from self-efficacy to psychological symptoms nor the indirect effect of hardiness on symptom reporting through operational self-efficacy reached significance levels. This was contrary to our predictions and surprising since several studies have shown an effect of self-efficacy on psychological symptoms and well-being (McKerrow et al., 2020; Stoltz et al., 2020; Dupere et al., 2012). In addition, there was no predictive power of cohesion on self-efficacy. This is contrary to previous findings on studies of physical activities, where both self-efficacy and outcome expectancies predicts self-concordance. Self-concordance includes satisfaction of needs like autonomy, competence and relatedness (Petzold, et al., Lent, 2017).

The main finding in the present study was that when using both cohesion and operational self-efficacy as mediators in the same analysis, the only relation predicting symptoms was a path flowing from hardiness through cohesion and further on to symptoms of anxiety and depression. A direct comparison of the two simple indirect effects also showed that this path was larger and significantly different from the indirect path flowing from hardiness through self-efficacy. Combined with the significant total effect of hardiness on psychological symptoms and the non-significant remaining direct effect, these results indicate that in our analyses, the effect of hardiness was mediated through the social process of cohesion.

One way to approach an explanation for why social but not self-regulatory processes show a mediating effect is to examine the characteristics of cohesion in naval units. In a literature review, Shiefer and van der Noll (2017) concluded that the use of the term cohesion in research varied along six distinguishable dimensions that they termed social relations, identification, orientation towards the common good, shared values, quality of life and (in)equality. *Social relation* was viewed as the most prominent factor and includes attraction/bonds to members of a group. Previous studies have shown that that the strength of social bonds is one of the key predictors of physical and mental health (e.g., Vaughan et al., 1985). Furthermore, the social relation dimension includes trust between people as well as towards institutions. Bonding between personnel is continuously stimulated on board naval vessels, together with the notion that they are defending the nation. Being separated from civilian significant others increases the bonding process between crewmembers since the competition for attachment through daily activities is not present during operations. Implicit in these cohesive processes is the fostering of trust between sailors and towards the Navy.

Identification includes a feeling of attachment or identification with the social entity.

According to Shiefer and van der Noll (2017), there is a strong conceptual overlap between this dimension and that of social relations. However, they argue that identification with a social unit is qualitatively different from relations between individuals of a group. Identification is strongly emphasized on board ships, and badges and patches are worn by all sailors symbolizing their identification with the vessel, the crew and the operation conducted. Furthermore, caps, T-shirts and other commodities indicating their connection to the vessel are used to further enhance the identification process. The third dimension of cohesion was *orientation toward a common good*. Key characteristics is an orientation towards the acceptance of the social order and the compliance to social rules and norms. It is obvious that in a hierarchical military organization, acceptance of social rules is vital and unapproved behavior is sanctioned. Naval vessels in particular are oriented towards this since they are historically autonomous, and traditions are highly respected. The dimension of *quality of life* as part of cohesion is debated and some include well-being and quality of life as a component of cohesion while others view cohesion as a predictor of well-being. In the present study we lean on the latter approach. *(In)equality* describes the degree of opportunities for societal members. Although there are differences in opportunities on board for promotion depending on experience and education, there exists an opportunity for the leadership to promote sailors based on their attitudes and performance. This is in line with the autonomous nature of naval vessels. The last dimension according to Schiefer and van der Noll (2017) is *shared values*. Building shared values and a shared understanding is a goal for all leadership in all Navies. Shared understanding and shared values are established by means of shared behavioral codes (Botterman et al. 2012; Kearns & Forrest 2000). The importance of this manifests itself through uniforms, standing orders on board, military terms, symbols, standard operational procedures, and leadership through stated intentions.

With this discussion in mind, the current finding that hardiness works through social processes like cohesion rather than through self-regulatory processes like self-efficacy can therefore be explained by the importance put on social processes on board naval vessels. The amount of shaping that takes place through the social dimensions explained above can compete with self-regulatory processes to such a degree that it renders self-efficacy without an effect. As noted, high hardy individuals are committed, engaged, and have a sense of control towards their social environment and will easily pick up socially beneficial processes. Thus, the use of cohesion in this environment is instrumental in order to increase well-being.

Some limitations should be noted. Military units deployed in international operations represent highly selected samples that exclude subjects with high symptom loads and adjustment problems. This could result in problems generalizing the results to a civilian population. At the same time, these selection processes exclude problems of outliers due to grave psychopathology. Using naval vessels also increases the general control over third variables that can influence the result. The crew lives together, receives the same food and is to a certain degree exposed to the same external events. Another limitation of the study is the lack of follow-up data. Recovery processes after stressful events are important in adaptation. Anecdotal evidence suggests that discharge from units with strong cohesion can result in feelings of emotional loss, hindering adaptation to new social environments. A third limitation pertains to the measure of self-efficacy. It could be argued that our measure is a subjective evaluation of general stress-tolerance rather than operational self-efficacy. However, the introduction to the questionnaire stated specifically that the participant should rate their responses with regard to a sharp naval situation. Further, the questions were all related to important abilities to have in this situation, including the ability to

tolerate stress, to motivate others, to take charge of a situation and to make decisions. Thus, the items represent essential similarities to the definition of self-efficacy.

To sum up, the present study expands previous knowledge by comparing self-regulatory processes with social processes in the same analysis. Most other studies using cohesion and self-efficacy as predictors of symptoms are performed using separate analyses. In the present study, the social process of cohesion outperforms the self-regulatory process of operational self-efficacy, a finding that has not been previously reported. The results also provide empirical support for the importance of both hardiness and cohesion in naval military units. As a consequence, it could be suggested that leaders, through their leadership behavior, planning, development of personnel, daily routine, and training programs, should be seeking to increase hardiness levels in ship crews before and even during deployments. Furthermore, the use of activities and symbols to enhance emotional bonding often seen in military units is also justified. Fostering social relations, extensive use of techniques aimed at identification to the unit and emphasizing shared goals and values would increase unit cohesion and deployed personnel's coping with the stressors of long-term missions away from home base. It could be speculated that the focus on and success of stimulating cohesion on board Navy vessels can also be transferred to civilian occupations. Long-term engagement involving deployment of employees is not uncommon for civilian companies. A focus on hardiness- and cohesion development, in addition to psychological screening for symptoms, could prevent repatriation of deployed civilian personnel and thus reduce the psychological and monetary cost for the individual as well as the company.

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