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Moral stress and coping: relationship with long-term positive reactions and PTSD indication in military personnel

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ABSTRACT

This study investigates the relationship between moral stress reactions and resulting coping efforts in severely morally challenging situations. Long-term positive reactions and post-traumatic stress disorder (PTSD) indicators following morally challenging situations are also studied. The sample consisted of cadets and officers ($n = 332$) from Norway and Sweden. Long-term positive reactions were found to be associated with limited moral stress reactions during the challenging episode and frequent use of acceptance and positive reappraisal coping strategies. Long-term high scores on a PTSD indicator scale covaried with high scores on Openness, a strong moral stress reaction, and frequent use of instrumental coping strategies. The main conclusion is that the immediate moral stress reaction and coping strategies following morally challenging situations appear to be related to both positive long-term reactions and to indicators of PTSD.

Experiencing situations that are inconsistent with one's own deep moral convictions may cause potentially life-long rumination and lasting injuries on emotional, psychological, behavioral, spiritual and social levels (Borhani et al., 2014; Lazarus & Lazarus, 1994; Litz et al., 2009; Shay, 2014). Moral stress, moral distress, stress of conscience and moral injury are related concepts in this research area. Moral stress refers to painful reactions experienced by an individual who is conscious of the morally appropriate action a situation requires but may not carry it out due to formal laws and regulations or institutional obstacles, such as the lack of time, lack of leader support, and power relations. Moral stress may also be elicited when the individual acts according to their conscience but against, for example, organizational regulations and norms (Jameton, 1984). However, moral stress can also initiate a positive development (Diane et al., 2021; Tigard, 2019), resulting in improved moral resilience (Rushton, 2016).

Moral distress is a narrower concept than moral stress and includes negative reactions only (McCarthy & Deady, 2008; Zuzelo, 2007). Moral injury, in turn, represents the most severe and lasting reactions. Core symptomatic features are, according to Jinkerson (2016): "(a) guilt, (b) shame, (c) spiritual/existential conflict including subjective loss of meaning in life (or questioning the meaning in life), and (d) a loss of trust in self, others, and/or transcendental/ultimate beings." (p. 126; see also, Barnes et al., 2019; Braitman et al., 2018).

Events that may lead to moral stress reactions are henceforth labeled morally challenging situations. The corresponding term in the literature on moral injury is morally injurious events or morally injurious experiences (Barnes et al., 2019). A conceptual similarity between morally challenging

situations and morally injurious events lies in the emphasis on the subjective interpretation of the event (Barnes et al., 2019; Nilsson et al., 2015). This means that appraisal and coping processes play a significant role (Lazarus, 1991).

Military personnel run a considerable risk of having to face morally challenging episodes. Mission-related situations include battle episodes and dilemmas of modern warfare, where operations are executed close to civilian populations and may severely affect third parties. In addition, adversaries waging irregular warfare tend to conduct acts of aggression that are difficult to repel, and which frequently violates the law of war (Bowyer, 2009; Moten, 2010). Moral dilemmas may also occur in peacetime conditions. Typical situations include decision making in relation to personnel issues such as a commander's obligation to dismiss a long-term close friend and colleague for substance or alcohol abuse. A further example might concern demand-resource imbalance. This is where an individual may feel it necessary to overstep boundaries or transgress certain regulations to complete their mission or assigned task because superiors have not provided them with the necessary resources (Larsson & Berglund, 2019).

In general, the likelihood of military personnel having to encounter morally challenging situations means that high demands are placed upon this particular group in regards to self-management and emotion regulation. Emotion-focused coping concentrates on negative emotions that are associated with stress such as fear, anxiety, irritation and frustration. These processes are carried out parallel with problem-focused coping (processes of problem solving) as soon as an individual appraises a situation as stressful. Emotion-focused coping comprises, for example, positive thinking, tension reduction through exercise and relaxation, wishful thinking and distancing (see, Lazarus, 1991; Lazarus & Folkman, 1984). Emotion regulation, such as emotion-focused coping, denotes the regulation of one's own emotions with the aim of increasing, decreasing or neutralizing emotions in order to stay functional during stressful situations (Gross & Thompson, 2007).

Personality is an antecedent factor that tends to affect coping skills (Costa et al., 1996; Mattson et al., 2018). An emotionally unstable individual is, for example, more likely to have difficulties with emotion regulation in stressful situations. An example of an antecedent contextual framing factor is the prevailing organizational emotional culture or emotional regime (Finerman, 2008). This refers to unwritten rules that regulate the display of acceptable emotions in the organizational culture (Hochschield, 1983/2003). Traditionally, the military culture has been described as masculine and "hard," where one should not show signs of weakness (Barrett, 1996; Shields et al., 2017). Such cultural norms can obviously affect individual emotion-focused coping strategies.

Over the past decades, PTSD diagnostics and measurement tools have dominated in scientific journals in terms of the methodology/analytics of investigating negative reactions to the kind of acute, stressful situations that military personnel experience (see, e.g., Wright et al., 2013). A potential drawback of this emphasis is that other stress-related reactions extending beyond the well-defined symptom picture are at risk of being neglected. Moral stress reactions, the focus of this study, illustrate this neglect (Kälvemark-Sporrong et al., 2006).

Long-term positive effects of highly stressful situations have also been observed in previous studies, as research on post-traumatic growth shows (Mark et al., 2018; Tedeschi & Lawrence, 2004), the findings, however, are mixed (Jayawickreme & Blackie, 2014). In regard to the particular group of military veterans, for example, large-scale Norwegian (n = 22,275) and Swedish (n = 21,721) register studies have been conducted involving all veterans from 1978 to 1995 (Norwegian sample) and 1960 to 2013 (Swedish sample). Compared to age- and sex-matched samples from the general population, the veterans exhibited fewer psychiatric diagnoses, including depression, drug abuse, PTSD and suicide (Pethrus et al., 2017; Thoresen et al., 2003).

Two potential reasons for this favorable Norwegian and Swedish outcome have been suggested (Michel, 2014; Pethrus et al., 2017; Thoresen et al., 2003). The first concerns military selection requirements. To become a military officer in Sweden, you need at least a score of six on normally distributed 9-point scales measuring cognitive ability, leadership capacity and psychological functioning respectively. Thus, Swedish military officers are more psychologically resourceful than the average

civilian Swede. The requirement on soldiers are somewhat lower but no one with a score of three or lower on any of these psychological scales are accepted in the Swedish Armed Forces (most have 5′s or higher). The Norwegian system is fairly similar. The second potential reason is related to less severe exposure to the atrocities of war compared to, for example, many US officers and soldiers. The typical Norwegian and Swedish deployments generally do not extend longer than six months. Further, as small "plug-in" nations in major multinational operations, Norway and Sweden typically do not have to take on the most demanding combat zones (Ohlsson et al., 2014).

To sum, military personnel are likely to encounter morally challenging situations as part of their duty. These episodes may elicit moral stress reactions, which could have long-term negative health effects. Nevertheless, there is a lack of research documenting the importance of the initial moral stress reaction and coping efforts in relation to long-term outcomes. The coping processes in particular, are interesting since, partly at least, they can be consciously affected. The lack of research on the importance of these initial reactions and processes also concerns the impact of antecedent conditions such as personality and organizational emotional culture. Consequently, the present study aimed to explore the relationship between moral stress reactions during severely morally challenging situations and resultant coping efforts on the one hand, and long-term positive reactions and PTSD indication on the other, controlling for the antecedent conditions of personality and the emotional culture of the military organization.

Method

The present study uses a combination of established instruments and scales derived from previous qualitative studies of veterans (Nilsson et al., 2010, p. 2011). The newly constructed scales were tested in a previous study of Swedish veterans (*n* = 164, Nilsson et al., 2014). Explorative factor analyses (principal factoring with oblique rotation) were performed in each one of the areas emotional culture, coping and long-term positive reactions. The scales selected in the present study are those with the strongest psychometric properties.

Participants and procedure

The study population consisted of cadets at the Royal Norwegian Naval Academy and the Swedish Defense University, as well as officers attending command and staff courses at the Norwegian Defense University College and the Swedish Defense University. The data was collected in lecture room settings using paper-and-pencil questionnaires in 2014 (see below). The questionnaire was filled in voluntarily and anonymously. A total of 332 responses were obtained. No data detailing the number of drop-outs is available but all course teachers reported that virtually everybody present in the lecture rooms responded. Background characteristics of the study group are presented in Table 1.

Table 1 shows that both the Norwegian and Swedish subsamples are dominated by men. The Norwegian participants are younger, a fact that is also reflected in their grades. The Navy dominates among the Norwegian participants and the Army among the Swedes. The Swedish participants have participated in international military missions to a higher extent.

Measures

Antecedent conditions
Personality. The Big Five model (McCrae & Costa, 2008) was measured using the Single Item Measure of Personality (SIMP; Woods & Hampson, 2005). This instrument consists of five bipolar items (scale ranging from one to nine), presenting two dichotomous anchor statements for each of the dimensions. Despite the SIMP being a brief measurement scale, it has been shown to have both convergent and divergent validity (Woods & Hampson, 2005). Example Extraversion: "am reserved,

Table 1. Sample characteristics (n/%).

Variable	Norwegian sample (*n* = 114)	Swedish sample (*n* = 218)	Total (*N* = 332)
Gender			
Women	17/15%	25/12%	42/13%
Men	97/85%	192/88%	289/87%
Age			
≤ 30 years	90/79%	117/54%	207/62%
≥ 31 years	24/21%	100/46%	124/38%
Education			
High School	57/50%	79/37%	136/42%
University	57/50%	135/63%	191/58%
Military background			
Army	21/18%	112/52%	133/40%
Navy	86/76%	40/18%	126/38%
Air Force	7/6%	66/30%	73/22%
Participated in international missions			
Yes	30/26%	112/51%	142/43%
No	84/74%	106/49%	190/57%

like to be by myself, don't like to get other peoples' attention and can be shy in front of strangers" (1) and "like to talk, am outgoing, enjoy being with others, but can be loud and seek attention" (9).

Emotional Culture – "Hard.". The overall perception of the emotional culture of one's military unit was measured with 16 items, all reflecting a "hard" and instrumental atmosphere. The items were based on interview responses obtained in a qualitative study of veterans (Nilsson et al., 2010). Sample items: "Professionalism is about not showing emotions" and "You will be degraded or risk reprisals if you don't live up to expectations." The instruction read: "Mark the response choice you think best described the Norwegian/Swedish Defence organization." A 6-point response scale ranging from 1 (*do not agree at all*) to 6 (*fully agree*) was used. Alpha = 0.82.

The most morally challenging situation

The respondents were asked to respond to the following open-ended item, using their own words: "Describe the most morally challenging situation you have experienced when on military duty." The free-text item was followed by this question: "How long ago did this event happen?." The response choices were "< 1 year," "1–3 years" and "> 3 years."

Short-term reactions

Moral Stress during the Situation. Nilsson, Sjöberg, et al. (2011a) in a qualitative study of veterans identified the following four indicators of a moral stress reaction: "Insufficient," "Powerless," "Meaningless" and "Frustrated." The instruction read: "Mark the response choice which best describes how you felt in the most morally challenging situation you described before." A response scale ranging from 0 (*does not apply*) to 3 (*fully applies*) was used. Alpha = .0.72.

Coping – Instrumental Focus. Instrumental and emotional shut-down coping strategies used in connection with the morally challenging situation were assessed with 18 items derived from the above-mentioned qualitative study (Nilsson et al., 2010). Examples: "I had to be task-oriented and 'cold' and not show how I felt" and "I shut off and did not feel anything." The instruction read: "Respond to the questions below in relation to the most morally challenging situation you described before. I experienced that . . . ." Response scale: see Emotional Culture – "Hard" above. Alpha = 0.86.

Coping – Acceptance and Positive Reappraisal. Eight items formed a coping scale used in connection with the morally challenging situation focusing on acceptance and positive thinking. Items were derived from the interview study by Nilsson et al. (2010). Sample items: "I accepted the situation I found myself in" and "I controlled my emotions using positive thinking." Instruction: see Coping – Instrumental Focus above. Response scale: see Emotional Culture – "Hard" above. Alpha = 0.71.

Long – term reactions

Long-Term Positive Reaction. Long-term positive reaction was measured with six items derived from the afore-mentioned qualitative study (Nilsson et al., 2010). Examples: "I have mostly positive memories of the event" and "I feel proud." The instruction read: "Think about how you feel today in relation to the most morally challenging situation you described before." Response scale: see Emotional Culture – "Hard" above. Alpha = 0.64.

PTSD Indicator. The Impact of Event Scale – Revised version (IES-R; Weiss & Marmar, 1997) was used as indicator of present PTSD. The scale consisted of 22 items with a response scale ranging from 0 (*not at all*) to 4 (*very much*). Alpha = 0.94.

Analysis

The free text responses to the question where the participants were asked to describe the most morally challenging situation they had experienced when on military duty were thematically coded (Braun & Clarke, 2006; Miles & Huberman, 1984). Four categories of episodes emerged: "Leadership- and colleague-related" (n = 165), "Emotional culture-related" (n = 27), "Resource-related" (n =58) and "Risk- and violence-related" (n = 76).

SPSS Statistics version 25 was used in the statistical analyses. Summary indices were calculated for all the instruments mentioned, except the single item personality scales. This was done by adding the raw scores of the items belonging to a scale and dividing this sum by the number of items (on the PTSD indicator scale the raw sum score, which could range from 0 to 88, was used). Descriptive statistics and bivariate correlations (Pearson) were computed and subgroup comparisons were performed using chi-square tests, t-tests and one-way analysis-of-variance.

Hierarchical regression analyses were performed using Long-term positive reaction and the PTSD indicator scale respectively as dependent variables. The personality variables and the scale Emotional culture – "hard" were regarded as antecedent conditions and entered in step 1. The scales designed to measure moral stress reactions experienced during the morally challenging situation and the two coping scales were entered in step 2. Statistical significance was assumed at $p < .05$.

Ethics

The project was approved by the Swedish Regional Ethics Committee of Stockholm (Protokoll EPN 2013/53:52). All participants provided written informed consent.

Results

Descriptive statistics, correlation and regression analyses

Means, standard deviations and bivariate correlations are presented in Table 2.

Table 2 shows that there are statistically significant correlations mainly between the scale designed to measure a moral stress reaction experienced during the morally challenging situation, the short-term coping scales, the long-term positive reaction scale and the PTSD indicator scale. The personality scale Agreeableness is also associated with several scales. Focusing on long-term positive reactions, the correlations are positive with Agreeableness and Coping – acceptance and positive reappraisal, and

Table 2. Descriptive statistics and correlations (N = 332).

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Extraversion[a]	3.86	1.52	1										
2. Agreableness[a]	5.16	1.65	.04	1									
3. Emotional stability[a]	6.05	1.69	−.04	.13*	1								
4. Conscientiousness[a]	4.34	1.88	−.12*	.17**	.04	1							
5. Openness[a]	4.85	1.99	−.14*	.18***	.03	.29***	1						
6. Emotional culture -"hard"[n,b]	3.34	0.66	.04	−.12*	−.02	−.02	−.01	1					
7. Moral stress reaction during the situation[c]	1.35	0.79	−.04	−.05	−.09	−.06	−.00	.11*	1				
8. Coping – instrumental focus[b]	2.98	0.89	.03	.02	−.04	−.06	−.01	.22***	.16**	1			
9. Coping – acceptance and positive reappraisal[b]	3.78	0.86	−.07	.16**	−.09	.01	−.03	−.08	−.29***	.33***	1		
10. Long-term positive reaction[b]	4.02	1.17	.02	.16**	−.01	.05	−.05	−.09	−.37***	−.01	.44***	1	
11. PTSD indicator[d]	16.29	16.77	.04	−.02	−.09	−.11	.18**	.16**	.28***	.48***	.06	−.23***	1

[a]Scores could range from 1 (*lowest degree*) to 9 (*highest degree*). [b]Scores could range from 1 (*do not agree at all*) to 6 (*fully agree*). [c]Scores could range from 0 (*no moral stress reaction*) to 3 (*highest moral stress reaction*). [d]Scores could range from 0 (*lowest indication*) to 88 (*highest indication*).
*p < .05 ** p < .01 *** p < .001

negative with Moral stress reaction during the situation. Turning to the PTSD indicator scale, positive correlations are noted with Openness, Emotional culture – "hard" and Moral stress reaction during the situation. Negative associations are found between the PTSD indicator scale and the variable Long-term positive reaction.

Beginning with predictors of long-term positive reactions, Table 3 shows a moderately high adjusted R^2 value (.26). The Moral stress reaction during the situation scale and the Coping – instrumental focus scale contributed negatively to the prediction while scale Coping – acceptance and positive reappraisal showed a positive association. On the PTSD indicator scale an adjusted R^2 of .28 was obtained and Openness, Moral stress reaction during the situation and Coping-instrumental focus all contributed positively to the amount of explained variance.

Subgroup comparisons

Subgroup comparisons were made based on the background questions (chi-square tests, t-tests and one-way analyses-of-variance; not shown in any table). The two most notable comparisons were based on age and type of morally stressful situation. The older subgroup (31 years or older) had a significantly higher education level, higher military grades, and a higher level of experience from international military missions. This group scored higher on Openness and higher on Long-term positive reaction. Most differences between the Norwegian and Swedish samples disappeared when the comparison was based on the younger (≤ 30 years) participants only. Participants reporting a risk- and violence-related morally stressful episode scored significantly higher on Coping – acceptance and positive reappraisal and on the Long-term positive reactions scale.

The question on length since the chosen episode gave the following results: less than one year – 19%, one to three years – 36% and more than three years – 45%. One statistically significant difference was found between these three groups; participants responding "more than three years" scored higher on Long-term positive reaction.

Additional analyses based on the moral stress reaction

The moral stress reaction was related to the self-selected "most morally challenging situation you have experienced when on military duty" (see Measures above). In light of the study's method of analysis, some might be expected to have experienced severely morally challenging situations, while others would have encountered less challenging episodes. The moral stress reaction score is based on the mean of four items, each with a response scale ranging from 0 (*does not apply*) to 3 (*fully applies*). In order to explore the role of stronger moral stress reactions, the sum scale (which could range from 0 to 3) was recoded so that scores in the highest quartile (2.0 to 3) formed a higher moral stress reaction group ($n = 82$). The mean score of the higher moral stress reaction group was 2.39 ($SD = 0.32$) on the moral stress reaction scale and 24.74 ($SD = 19.32$) on the PTSD indicator scale. The higher moral stress

Table 3. Hierarchical regression analyses, final models (N = 332).

Predictors	Predictors of long-term positive reaction[a]					Predictors of PTSD indication[b]				
	b	SE B	Beta	F	p	b	SE B	Beta	F	p
Extraversion[c]	.02	.05	.03	.22	.677	.62	.63	.06	.99	.322
Agreableness[c]	.08	.04	.11	3.66	.057	−.08	.59	−.01	.02	.891
Emotional stability[c]	−.01	.04	−.01	.05	.822	−.76	.55	−.08	1.94	.165
Conscientiousness[c]	−.01	.04	−.02	.13	.721	−.69	.50	−.08	1.90	.169
Openness[c]	−.00	.04	−.01	.01	.932	1.84	.50	.22	14.25	**.000**
Emotional culture -"hard"[c]	−.04	.10	−.02	.17	.677	.90	1.39	.04	.42	.518
Moral stress reaction during the situation[d]	−.27	.09	−.18	8.43	**.004**	2.52	1.29	.14	4.02	**.049**
Coping – instrumental focus[d]	−.15	.08	−.12	3.34	.065	8.39	1.13	.46	54.84	**.000**
Coping – acceptance and positive reappraisal[d]	.59	.09	.43	44.10	**.000**	−.61	1.24	−.03	1.25	.621

[a]R^2 = .29, adjusted R^2 = .26. [b]R^2 = .31, adjusted R^2 = .28. [c]Entered in step 1. [d]Entered in step 2.

reaction group did not differ significantly from the rest of the sample on background questions, type of morally challenging situation and length of time since the chosen episode.

The same hierarchical regression analyses as presented above based on the whole sample, were repeated using the scores of the higher moral stress reaction group only. The following results were obtained in the analysis with Long-term positive reaction as dependent variable: $R^2 = 0.48$, adjusted $R^2 = 0.39$ and the following variable made a statistically significant contribution: Coping – acceptance and positive reappraisal (positive). The analysis with PTSD indication as dependent variable gave the following results: $R^2 = 0.41$, adjusted $R^2 = 0.29$ and the following variables made a significant contribution: Openness (positive) and Coping – instrumental focus (positive).

Discussion

The main result of the study is that long-term positive reactions following a severely morally challenging situation were associated with a low moral stress reaction during the episode and frequent use of coping efforts characterized by acceptance and positive reappraisal. Long-term high scores on the PTSD indicator scale covaried with high scores on Openness, a strong moral stress reaction during the situation and frequent use of instrumental-focused coping.

The contributions of the antecedent personality and contextual emotional culture scales were notably low.

The significant relationship between immediate moral stress reactions and long-term positive reactions (negative association) and PTSD indication (positive association), combined with the opposite results of the two identified short-term coping styles, constitute the main theoretical contribution of the study. In other words, long-term positive reactions seem to be enhanced by the absence of or limited short-term moral stress reaction and frequent use of acceptance and positive reappraisal coping efforts. Turning to long-term indication of PTSD, the combination of a high, immediate moral stress reaction and frequent use of instrumental-focused, emotional shut-off coping strategies appears to be a risk factor. A possible mechanism is that strong, immediate feelings of meaninglessness and of being insufficient, powerless and frustrated, combined with active, task-oriented and emotional shut-down coping, can result in an emotional lock-down that later on contributes to PTSD. The PTSD results are in line with findings from meta-analyses showing that psychological processes operating during a traumatic event had stronger PTSD predictive effects than pre-trauma factors (Brewin et al., 2000; Ozer et al., 2003; Philips et al., 2018). Further studies in different contexts are needed to substantiate both the positive and negative effects. This also applies to research on moral injury, which has traditionally focused on negative effects on mental health only (Tigard, 2019).

The statistically significant associations between the immediate moral stress reaction and the initial coping efforts on the one hand, and the positive and negative long-term reactions indicators on the other, are in line with a study on healthcare professionals (Larsson et al., 2017). In both studies, the measurement of these aspects was based on items generated from qualitative studies of similar kinds of morally stressful episodes (Nilsson, Sjöberg, et al., 2011b). This means that the item content was tailored to previously observed reactions. The more general works on emotion regulation (e.g., Carver, 1997; Lazarus & Folkman, 1984) are not equally fine-meshed.

The weak associations between the personality scales and the positive and negative long-term measures were unexpected. One possible reason for this result is the single item approach used to measure the Big Five dimensions. However, the significant contribution of Openness in the multiple regression analyses with the PTSD indicator scale as dependent variable is noteworthy. One may speculate that people scoring high on Openness may have difficulties setting up the necessary boundaries around themselves after experiencing severely challenging situations (Baranczuk, 2019). It should also be noted that the Agreeableness scale correlated negatively with the Emotional culture – "Hard" scale, and positively with Coping – acceptance and positive reappraisal, as well as with the Long-term positive reaction scale. We have no data on social support following the stressful episode,

but previous studies have shown a positive association between Agreeableness and the ability to seek and use social support (Bowling et al., 2005). This is a factor that may have contributed to the final result.

The older subgroup (31 years or older) scored higher on the Long-term positive reactions scale than the younger participants. This may reflect higher levels of experience and maturity. However, the selection hypothesis cannot be discounted. The older participants have passed more selection stages in their careers and represent a positive selection in terms of psychological variables, whereas the cadets include all that passed the initial selection stage.

Few differences were found when participants reporting different types of morally challenging situations were compared. This indicates that not only high-risk situations, but also less stressful events, will have an impact on coping strategies and health outcomes (cf., Barnes et al., 2019, who claim that moral injury is not fear-based). Still, the difference noted on the Coping – acceptance and positive reappraisal scale, and the Long-term positive reaction scale, indicates that risk- and violence-related episodes may have a deeper and more long-lasting impact (Mark et al., 2018).

The limited differences between the Norwegian and Swedish samples probably reflect similarities between the nations at large, including their respective military systems and cultures. The languages are also quite similar and in this case all participants responded to a questionnaire written in Swedish (a research colleague was present at the data collections in Norway and could clarify questions on single words or expressions).

Strengths of the study include the relatively large sample size representing two countries and the selection of measurement scales. The latter were either established instruments, or scales constructed from codes and categories developed in preceding qualitative studies with similar kinds of study participants (Nilsson et al., 2010, p. 2011).

One of the study's limitations is the lack of data on the exact drop-out rate. However, all data collection took place in classroom settings and, as mentioned previously, the course teachers reported the response rate as high.

A further shortcoming is that the study's results derive from self-assessments, collected at one point in time. Subsequently, there is a risk of artificially inflated relationships among variables, so called common method variance (Podsakoff et al., 2003). In particular, there is a risk of the participants' general mood level in the present study affecting their responses. Especially the personality scale Emotional stability, can be regarded as a proxy for general mood level (Clark & Watson, 2002). In this case the Emotional stability scale was unrelated to all scales related to the morally challenging situation and its outcome. This can be seen as an indicator of the limited impact of common method variance. Methodological weaknesses also include the duration of time passed between the military mission taking place and data collection. This could vary from less than one year to three years or more. Although no statistically significant differences were found related to the length of time since the chosen episode, a longer time lapse may increase the likelihood of memory lapses.

The main conclusion from this study is that the immediate moral stress reaction and coping strategies appear to be significantly related to positive long-term reactions and to scores on a PSTD indicator scale. Our main suggestion for future research is to continue to explore these findings in different military and civilian contexts.

Practical implications of the results include the need to introduce preparatory education and training programs for officers and soldiers. This training should aim to increase awareness of moral stress and coping. In addition, post-deployment interventions aimed at helping veterans to achieve a healthy, balanced life inside or outside the military are essential. From the perspective of the military organization, we suggest that the association between a "hard" military culture and strong, instrumental-focused coping efforts, should be noted as a risk factor and that both these phenomena were associated with higher scores on a PTSD indicator scale.

Disclosure statement

Funding

Data availability statement

The full questionnaire (in Swedish) and the data file (SPSS) can be obtained from the corresponding author.

References

Baranczuk, U. (2019). The five factor model of personality and social support: A meta-analysis. *Journal of Research in Personality*, *81*(1), 38–46. https://doi.org/10.1016/j.jrp.2019.05.002

Barnes, H. A., Hurley, R. A., & Taber, K. H. (2019). Moral injury and PTSD: Often co-occurring yet mechanistically different. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *31*(2), 2. https://doi.org/10.1176/appi.neuropsych.19020036

Barrett, F. J. (1996). The organizational construction of hegemonic masculinity: The case of the US Navy. *Gender, Work & Organization*, *3*(3), 129–142. https://dx.doi.org/10.1111/1468-0432.00011

Borhani, F., Abbaszadeh, A., Nakhaee, N., & Roshanzadeh, M. (2014). The relationship between moral distress, professional stress, and intent to stay in the nursing profession. *Journal of Medical Ethics and History of Medicine*, *7*(3), 2–8. PMC 4263391.

Bowling, N. A., Beehr, T. A., & Swader, W. M. (2005). Giving and receiving social support at work: The roles of personality and reciprocity. *Journal of Vocational Behavior*, *67*(3), 476–489. https://doi.org/10.1016/j.jvb.2004.08.004

Bowyer, D. (2009). The moral dimension of asymmetrical warfare: Accountability, culpability, and military effectiveness". In T. A. van Baarda & D. E. M. Verweij (Eds.), *The moral dimension of asymmetrical warfare: Counter-terrorism, democratic values and military ethics.* (pp. 279–311). Martinus Nijhoff Publishers.

Braitman, A. L., Battles, A. R., Kelley, M. L., Hamrick, H. C., Cramer, R. J., Ehlke, S., & Bravo, A. J. (2018). Psychometric properties of a modified moral injury questionnaire in a military population. *Traumatology*, *24*(4), 301–312. https://doi.org/10.1037/trm0000158

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Clinical and Consulting Psychology*, *68*(5), 748–766. https://doi.org/10.1037/0022-006X.68.5.748

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International Journal of Behavioral Medicine*, *4*(1), 92–100. https://doi.org/10.1207/s15327558ijbm0401_6

Clark, L. A., & Watson, D. (2002). Temperament An organizing paradigm for trait psychology. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 265–286). The Guilford Press.

Costa, P. T., Jr., Sommerfield, M. R., & McCrae, R. R. (1996). Personality and coping: A reconceptualization. In M. Zeidner & N. A. Endler (Eds.), *Handbook of coping: Theory, research, applications* (pp. 44–61). John Wiley & Sons, Inc.

Diane, S., Litam, A., & Balkin, R. S. (2021). Moral injury in health-care workers during COVID-19 pandemic. *Traumatology*, *27*(1), 14–19. https://doi.org/10.1037/trm0000290

Finerman, S. (2008). *The emotional organization: Passions and power*. Blackwell.

Gross, J. J., & Thompson, R. A. (2007). Emotional regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–26). Guilford.

Hochschield, A. R. (19832003). *The managed heart: Commercialization of human feeling*. University of California Press.

Jameton, A. (1984). *Nursing practice: The ethical issues*. Prentice hall.

Jayawickreme, E., & Blackie, L. E. R. (2014). Post-traumatic growth as positive personality change: Evidence, controversies and future directions. *European Journal of Personality*, *28*(4), 312–333. https://doi.org/10.1002/per.1963

Jinkerson, J. D. (2016). Defining and assessing moral injury: A syndrome perspective. *Traumatology*, *22*(2), 122–130. https://doi.org/10.1037/trm000069

Kälvemark-Sporrong, S., Höglund, A. T., & Arnetz, B. (2006). Measuring moral distress in pharmacy and clinical practice. *Nursing Ethics*, *13*(4), 416–427. https://doi.org/10.1191/0969733006ne880oa

Larsson, G., & Berglund, A. K. (2019). Mid-level leaders' containing ability: A key to organizational effectiveness. In J. A. Jaworski (Ed.), *Advances in sociology research* (pp. 93–114). Nova Science Publishers, Inc.

Larsson, G., Nilsson, S., Hyllengren, P., Ohlsson, A., Waaler, G., & Kallenberg, K. (2017). Stress reactions following acute situations involving moral challenges among health care professionals. *Scandinavian Journal of Psychology*, *59*(2), 177–185. https://doi.org/10.1111/sjop.12425

Lazarus, R. S. (1991). *Emotion and adaption*. Oxford University press.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.

Lazarus, R. S., & Lazarus, B. N. (1994). *Passion & reason: Making sense of our emotions*. Oxford University Press.

Litz, B. T., Stein, N., Delaney, E., Lebowitz, L., & Nash, W. P. (2009). Moral injury and moral repair in war veterans: A preliminary model and intervention strategy. *Clinical Psychology Review*, *29*(8), 695–706. https://doi.org/10.1016/j.cpr.2009.07.003

Mark, K. M., Stevelink, S. A. M., Choi, J., & Fear, N. T. (2018). Post-traumatic stress growth in the military: A systematic overview. *Occupational and Environmental Medicine*, *75*(6), 904–915. https://dx.doi.org/10.1136/oemed-2018-105166

Mattson, E., James, L., & Engdahl, B. (2018). Personality factors and their impact on PTSD and post-traumatic growth are mediated by coping style among OIF/OEF veterans. *Military Medicine*, *183*(9–10), e475–e480. https://doi.org/10.1093/milmed/usx201

McCarthy, J., & Deady, R. (2008). Moral distress reconsidered. *Nursing Ethics*, *15*(2), x–x. https://doi.org/10.1177/0969733007086023

McCrae, R. R., & Costa, P. T., Jr. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 159–181). Guilford Press.

Michel, P.-O. (2014). *Svensk veteranpolitik: Ett ansvar för hela samhället [Swedish veteran politics: A responsibility for the whole society]*. Bilaga 6 och 7. SOU 2014: 27. [Swedish parliament 2014:27].

Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. Sage.

Moten, M. (2010). *The Army officers' professional ethic: Past, present, and future*. SSI, ACPME: Professional Military Ethics Monograph Series.

Nilsson, S., Hyllengren, P., Ohlsson, A., Kallenberg, K., Waaler, G., & Larsson, G. (2015). Leadership and moral stress: Individual reaction patterns among first responders in acute situations that involve moral stressors in combination with cumulative stress. *Journal of Trauma and Treatment*, *4*(2), 261–270. https://doi.org/10.4172/2167-1222.S4-025

Nilsson, S., Ohlsson, A., Lundqvist, L.-M., Alvinius, A., Hyllengren, P., Waaler, G., Bandlitz Johansen, R., & Larsson, G. (2014). *Militärt ledarskap: Emotionskultur och emotionshantering i moraliskt påfrestande situationer [Military leadership: Emotion culture and emotion regulation in morally challenging situations]*. (ISSL/LC Serie I:93). Försvarshögskolan.

Nilsson, S., Sjöberg, M., Kallenberg, K., & Larsson, G. (2011a). Moral stress in international humanitarian aid and rescue operations: A grounded theory study. *Ethics and Behavior*, *21*(1), 49–68. https://doi.org/10.1080/10508422.2011.537570

Nilsson, S., Sjöberg, M., & Larsson, G. (2011b). *Moralisk stress vid internationella missioner: En enkätstudie [Moral stress in international missions: A questionnaire study]*. (Rapport Serie I:74). Försvarshögskolan, Institutionen för ledarskap och management.

Nilsson, S., Wallenius, C., Johansson, E., & Larsson, G. (2010). When the going gets tough, the tough get going: Stressors and challenges working in a military multinational environment. In P. Bartone, J. Eid, B.-H. Johnsen, J. M. Violanti, & J. C. Laberg (Eds.), *Enhancing human performance in security operations: International and law enforcement perspectives* (pp. 399–423). Thomas.

Ohlsson, A., Wallenius, C., & Larsson, G. (2014). The comprehensive approach: Doctrinal overview and Swedish leadership implications at the operative and tactical level. *International Peacekeeping*, *18*(2), 318–346. https://doi.org/10.1163/18754112-1804011

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, *129*(1), 52–73. https://doi.org/10.1037/0033-2909.129.1.52

Pethrus, C.-M., Johansson, K., Neovius, K., Reutfors, J., Sundström, J., & Neovius, M. (2017). Suicide and all-cause mortality in Swedish deployed military veterans: A population-based matched cohort study. *BMJ Open*, 7e014034. https://doi.org/10.1136/bmjopen-2016-014034

Philips, R. D., Wilson, S. M., Sun, D., & Morey, R. (2018). Posttraumatic stress disorder symptom network analysis in US military veterans: Examining the impact of combat exposure. *Frontiers in Psychiatry*, 9. https://doi.org/10.3389/fpsyt.2018.00608

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. B. (2003). Common biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9101.88.5.879

Rushton, C. H. (2016). Moral resilience: A capacity for navigating moral distress in critical care. *Ethics in Critical Care*, *27*(1), 111–119. https://doi.org/10.4037/aanacc2016275

Shay, J. (2014). Moral injury. *Psychoanalytic Psychology*, *31*(2), 182–191. https://doi.org/10.1037/a0036090

Shields, D. M., Kuhl, D., & Westwood, M. J. (2017). Abject masculinity and the military: Articulating a fulcrum of struggle and change. *Psychology of Men and Masculinity*, *18*(3), 215–225. https://psycnet.apa.org/doi/10.1037/men0000114

Swedish Regional Ethics Committee of Stockholm. (2013). Protokoll EPN 2013/53:32.

Tedeschi, R. G., & Lawrence, C. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquire*, *15*(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01

Thoresen, S., Mehlum, L., & Moller, B. (2003). Suicide in peacekeepers: A cohort study of mortality from suicide in 22,275 Norwegian veterans from international peacekeeping operations. *Social Psychiatry & Psychiatric Epidemiology*, *38*(11), 605–610. https://doi.org/10.1007/s00127-003-0687-3

Tigard, D. W. (2019). The positive value of moral distress. *Bioethics*, *33*(5), 601–608. https://doi.org/10.1111/bioe.12564

Weiss, D. S., & Marmar, C. R. (1997). The impact of event scale-revised. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 399–411). The Guilford Press.

Woods, S. A., & Hampson, S. E. (2005). Measuring the Big Five with single items using a bipolar response scale. *European Journal of Personality*, *19*(5), 373–390. https://doi.org/10.1002/per.542

Wright, B. K., Kelsall, H. L., Sim, M. R., Clark, D. M., & Creamer, M. C. (2013). Support mechanisms and vulnerabilities in relation to PTSD in veterans of the Gulf war, Iraq war and Afghanistan deployments: A systematic review. *Journal of Traumatic Stress*, *26*(3), 310–318. https://doi.org/10.1002/jts.21809

Zuzelo, P. R. (2007). Exploring the moral distress of registered nurses. *Nursing Ethics*, *14*(3), 344–359. https://doi.org/10.1177/0969733007075870