

# Developments in Remote Health Care

## The Positive Psychology of Maritime Health

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### Abstract

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The remote, isolated, confined, and safety-critical environment of seafaring exposes seafarers to a very specific assortment of stressors. Research suggests that seafarers as a professional group are amongst those at high risk for stress and associated mental health conditions. This article explores positive psychology as an approach to supporting wellbeing at sea. Positive psychology may support health, positive attitudes and productive work behaviour; however it cannot and should not be employed as a means of inoculating seafarers against the negative consequences of fundamentally unreasonable work practices. Rather, positive psychology can help seafarers thrive in an overall context that recognises and enacts the benefits of a positive and reasonable work environment. Recommendations are made for future research regarding online or computer-based positive psychology interventions and training, and research on maritime health at the systems level.

**Keywords:** positive psychology, maritime health, seafarers, wellbeing, stress, organizational justice.

### The Positive Psychology of Maritime Health

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Seafarers work amidst a fusion of paradoxes; such as social exclusion and continuous social proximity; confinement in open spaces; and multiculturalism within the distinct organizational culture of a ship. Consistencies, including social isolation and confinement with shipmates, are apparent in on-board conditions from the very first seafarers to their modern contemporaries. However, more recently, considerable social changes are evident, such as the extensive introduction of multinational crews, a revolution in information and communication technologies, and quicker ship turnaround in ports<sup>[1]</sup>. Previously, seafarers often remained in a ship operating company for their seafaring career, experiencing continuity of employment, career progression, and loyalty to the company. However, due to the reorganization of shipping companies, more recently seafarers are employed as casual labour on a trip-by-trip basis usually through manning agencies; to which seafarers frequently direct their loyalty<sup>[2]</sup>.

Research indicates that mariners as a professional group are amongst those at the highest risk for stress<sup>[3]</sup> and associated mental health conditions<sup>[4]</sup>. Consequently, researchers are calling for the psychological health of seafarers to be more systematically explored and addressed<sup>[5, 6]</sup>. To date, positive psychology concepts, interventions and training have been applied to the maritime context to only a limited extent. This article aims to contribute to research and programmes addressing psychosocial challenges at sea by exploring positive psychology as an approach to maritime health.

### Stress at Sea and Associated Psychosocial Challenges

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While there are significant differences in living and working standards across national fleets, systematic

progress in the maritime work environment has been evident for some years; including increased comfort; reduction of exposure to harmful physical, chemical and biological hazards; and moderation of noise and vibration <sup>[7]</sup>. Even so, seafaring remains a profession with a multitude of mental, psychosocial, and physical stressors, including often authoritative leadership, heavy workloads, long working hours, lack of exercise, and frequently unhealthy diets <sup>[8]</sup>; separation from family, loneliness on board, fatigue, sleep deprivation, multi-nationalities, limited recreation opportunities <sup>[9]</sup>, and environmental stressors such as ship motion, noise and vibration <sup>[10,11]</sup>. Moreover, stress and obstacles experienced by seafarers may not subside with the completion of tour of duty on-board. Upon returning to family life onshore, the transition between ship and shore may be experienced as a difficult period as seafarers may struggle to adjust again to shore and family life, such as a sense of redundancy and displacement by seafarers amongst an already independently functioning family <sup>[12]</sup>.

The ship is an isolated, confined environment – involving the people, settings, jobs, amenities, and schedules experienced by seafarers for up to months at a time. Seafarers are amongst the most isolated occupational groups worldwide <sup>[11]</sup>, and are at the workplace both during working and non-working hours, 24 hours every day <sup>[13]</sup>. Opportunities for communication by seafarers with family and friends on shore are often quite restricted <sup>[14, 15]</sup>.

The ship is also a safety-critical organization. Seafaring is a practical and challenging profession necessitating fast and correct analyses of situations, and rapid decisive action <sup>[16]</sup>. Workers in similarly safety-critical environments, such as the offshore oil and gas industry, work in hazardous environments. A variety of technological, environmental, and human challenges are presented with a substantial potential for injuries, accidents, stress, and adverse health outcomes <sup>[17]</sup>. Almost all jobs at sea are safety-critical and so declines in performance due to any cause, including psychosocial ones, may put seafarers and their ship at substantial risk <sup>[18]</sup>.

Importantly, adequate safety management is diminished by bureaucratic processes putting pressure on crew <sup>[19]</sup>. As proposed by Rothblum <sup>[20]</sup>, while human errors are frequently blamed on lack of attention or mistakes on the part of operators, they are more often indicative of more complex technological, environmental and organizational problems in the entire maritime system that are incompatible with optimal human performance - which 'set up' individual operators to make mistakes. These include organizational factors such as work schedules that create fatigue by not providing sufficient rest time; company policies with regards to meeting schedules and working safely that directly impact risk-taking behaviour and operational safety; and strict hierarchical structures that constrain effective teamwork <sup>[20]</sup>. Crew resource management is a system that seeks to moderate hierarchical structures by reducing the authority gradient or 'power-distances' between officers and crew, whereby crews are encouraged to become actively involved in shipboard operations through advocacy or 'challenge and response', by speaking up if they notice problems or errors developing, although this varies considerably depending on the ship and company culture <sup>[21]</sup>.

Seafarers experience stress associated with their specific work conditions, responsibilities on-board and psychosocial factors; often creating significant health and psychological problems <sup>[4]</sup>. Although mortality studies have provided useful comparisons between the health of seafarers and the remainder of the population, these studies are often limited by virtue of their omission of mental health conditions; this is ironic as the most common form of ill-health at sea, on non-passenger vessels, are mental health issues <sup>[22]</sup>. Growing awareness of mental health problems at sea is however apparent, alongside a variety of practical initiatives to address such problems; for example, on ships and in docks, leaflets providing access to mental health information are increasingly made available <sup>[21]</sup>. Jezewska et al. <sup>[4]</sup> call for training in psychological skills for seafarers as a preventative measure for stress, for the purposes of developing interpersonal competence, particularly for the capacity of solving interpersonal conflicts on board, and providing and receiving support. As proposed by Carotenuto et al. <sup>[9]</sup>, suitable psychoeducation approaches could support seafarers to recognize occupational-specific stressors and to carry out appropriate coping techniques. While for example

there has been a sharp fall in the suicide rate of UK merchant seafarers in the past 40 years <sup>[23]</sup>, merchant seafaring has amongst the highest occupational suicide rates in Britain <sup>[24]</sup>. The incidence of seafarer deaths through suicide supports the idea that the mental health of seafarers may be very poor; resulting in a call to action to address this by those in the maritime shipping industry <sup>[25]</sup>. Due to seafarers'

heightened risk of depression and suicide, Carotenuto et al. <sup>[5]</sup> propose that the psychological health of seafarers be investigated and addressed in a variety of ways.

## Positive Psychology and Maritime Health

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Positive psychology, a novel and influential school of thought, spearheaded by Martin Seligman, predominantly focuses on the scientific study of human strengths, happiness, and elements that support well-being <sup>[26]</sup>. As suggested by Seligman <sup>[27]</sup>, well-being is founded on five pillars: positive emotion, engagement, relationships, meaning, and achievement. The burgeoning literature on positive psychology interventions indicates that such factors can indeed be strengthened <sup>[28]</sup>.

MacLachlan et al. <sup>[21]</sup> call for the application of positive psychology to the maritime sector to develop unique occupational health and performance programmes suitable for life on-board. We have argued that practitioners in the maritime industry could more effectively use the characteristics of maritime work to develop intervention programmes that support strengths, health and good performance of seafarers, while also addressing health challenges and their multi-level contributing factors. As proposed by organizational psychologists Gregory and Shanahan <sup>[29]</sup> in their influential maritime guide 'The Human Element: A Guide to Human Behaviour in the Shipping Industry', many practical things can be done so that people work to their strengths. The familiar adage of a *happy ship* suggests that job satisfaction may be an important factor in maritime organizations <sup>[30]</sup>. Nonetheless, to date the science of positive psychology has been applied to the maritime context only in a few instances; particularly in relation to resilience and "mindfulness" training.

For example, van Wijk and Waters <sup>[31]</sup> present a case study of the implementation of an interview model using concepts from resilience literature for the annual psychological assessment of a group of submariners. The interviews focused on factors relating to an individual's coping and environmental factors that impact on it; identified strengths and explored ways to maximise them; and addressed issues regarding lifestyle, health, support networks, and individual concerns. When compared to the traditional approach of purely medical diagnostic mental health assessments, a significant difference was found in relation to post-assessment referrals for counselling; suggesting that the positive psychology interview approach may have contributed to preventing later dysfunction or distress.

Several programmes seek to support mariners' resilience - a capacity central to positive psychology <sup>[32]</sup>. For example, the U.S. Navy Operational Stress Control Programme provides practical tools to assist in building resilience of sailors, families and command leaders <sup>[33]</sup>. In non-military seafaring contexts, resiliency programmes are also apparent. As suggested by Greenberg, "Equipping mariners with the right psychologically focused skills and regular psychological monitoring can be effective methods of improving psychological resilience, detecting problems at an early stage, ensuring timely support and where necessary signposting to evidence based ... interventions" <sup>[34]</sup>. For example, an on-board peer-to-peer resilience training programme was piloted by Shell Health <sup>[35]</sup>. Similarly, the SEAHORSE project <sup>[36]</sup> incorporates a consortium of 13 organizations from air and maritime transport sectors, with the overall aim of addressing "human factors and shipping safety". A principal goal of this project is to develop a multilevel resilience approach comprising individuals, teams, multi-teams and organisations to ensure that interventions to strengthen resilience at one level positively impact on resilience at other levels. While some of our own work has concerned resilience in the seafaring context <sup>[37]</sup>; we want to return to this idea of multi-level resilience later in this paper.

There has been research on the training of marines from the United States Marine Corps in relation to “mindfulness” – a moment-to-moment awareness of one’s experiences without judgment, which has been shown to increase one’s positive affect and decrease negative affect [38]. Mindfulness promotes human characteristics that are central to positive psychology, such as character strengths and virtues and psychological well-being [39]. In a study by Johnson et al. [40], Mindfulness-Based Mind Fitness Training (MMFT) showed beneficial effects for marines across a variety of domains indicating improved recovery from stress, including lower heart rate and breathing rate following stressful training, suggesting that responses to stress can be improved through training before exposure to stress. Similarly, Stanley et al. [41] reported that marines who participated more in MMFT practice showed improved self-reported mindfulness, which was associated with decreases in perceived stress. Such beneficial health effects of “mindfulness” training may conceivably also extend to seafarers in the non-military context.

Although its application to date to the maritime context is in its infancy, we believe that positive psychology may contribute to the development of occupational programmes on-board. Outlined in Table 1, we present a selection of interventions that have been used and shown to have benefits in other organisational contexts; and we indicate their potential relevance to the maritime context.

**Table 1: Examples of Positive Organizational Psychology Interventions and Relevance to Maritime Health**

Study	Intervention	Outcomes	Relevance to Maritime Health
1. [42]	<i>Mindfulness self-training</i> – Participants (n=64) were randomly assigned to a self-training mindfulness intervention group/control group. The sample consisted of a variety of job types, e.g. teachers, social workers and bankers.	Participants in the mindfulness intervention group experienced significantly more job satisfaction than participants in the control group.	Job satisfaction is considered to be a central element in maritime organizations [30]. Employees who are more satisfied with their work care about the quality and safety of their work, are more committed to the organization and more productive (see [43,44]).
2. [45]	<i>Developing psychological capital</i> – A highly focused, 2-hour Web-based training intervention to develop psychological capital, including self-efficacy, hope, optimism, and resilience. A heterogeneous sample was used of 364 working adults representing a wide cross section of industries such as manufacturing, service, sales and government.	The treatment group experienced a significant increase in psychological capital, while the control group that participated in a different but relevant intervention did not show a significant increase in their psychological capital.	Computer-based training for seafarers on-board may provide an effective approach for programmes aiming to enhance psychological capital and well-being of seafarers on a wider and cost-effective scale.
3. [46]	<i>Hope and gratitude intervention</i> – A longitudinal study of 308 white-collar U.S. employees to assess effects of feelings of hope and gratitude on self-reported concern for corporate social responsibility.	Employees with stronger hope and gratitude were found to have a greater sense of responsibility towards employee and societal issues, such as social justice.	Interventions for maritime workers to increase feelings of gratitude and hope may increase sense of responsibility toward employee and societal issues.
4. [47]	<i>Meditation practice</i> – A field experiment with working adults (n = 139), half of whom were randomly assigned to begin a practice of loving-kindness meditation.	The meditation practice produced increases over time in daily experiences of positive emotions, which produced increases in personal resources (e.g. purpose in life, social support, and decreased illness symptoms). These increases in personal resources predicted increased life satisfaction and reduced depressive symptoms.	The incidence of seafarer deaths through suicide suggests that the mental health of seafarers may be very poor [25]. Meditation training of seafarers could increase personal resources, such as purpose in life, which may generate increased life satisfaction and decreased depressive symptoms.
5. [48]	<i>Resilience-building programme</i> – A pilot of the Promoting Adult Resilience (PAR) program, a strengths-based resilience-building programme that integrates interpersonal and cognitive-behaviour therapy. Pre, post and follow-up measures on 20 PAR participants from a resource-sector company were compared with a non-intervention-matched comparison group.	The PAR group maintained significant post-test improvements in coping self-efficacy and lower levels of stress and depression. Process evaluations of the PAR program showed that skills were rated highly and widely used in everyday life at both post and follow-up measurement times.	People working at sea may experience a multitude of stressors. Strengths-based resilience-building programmes may enhance coping self-efficacy and decrease levels of stress and depression of maritime workers.  As mental health is an essential component of social cohesion [49], interventions to enhance psychological well-being of seafarers may also strengthen social cohesiveness of employees of maritime organizations.

As can be seen from Table 1, there are a range of interventions – mindfulness training, the development of psychological capital, hope and gratitude interventions, meditation practice, resilience programmes – that have been used in the organisational setting and could be adapted to the maritime context.

However, we recommend that positive psychology interventions to mitigate perceived stress and support seafarers' well-being recognize gender, age, cultural and ethnic aspects that may affect how stress and wellbeing may be differentially experienced, expressed and influenced on-board. For example, the dominance of men in the maritime industry, comprising an estimated 98% of the global maritime workforce <sup>[50]</sup>, necessitates consideration of the efficacy and acceptability for this cohort of positive psychology interventions delivered on-board. For example, findings from a study conducted by Thompson et al. <sup>[51]</sup> found that gender affected person activity fit across three positive psychology interventions: gratitude journal; acts of kindness; and savouring life's joys, with females reporting a higher fit than males. Further, in a study exploring gender differences regarding gratitude, Kashdan and colleagues <sup>[52]</sup> reported that men were less likely to feel and express gratitude, made more critical evaluations of gratitude, and derived fewer benefits.

By and large, positive psychology focuses on strengths, which may work well with men who may feel uncomfortable appearing vulnerable or being open with others <sup>[53]</sup>. One such approach is the positive psychology/positive masculinity framework <sup>[54]</sup> – a strengths-based approach to working with men, which also recognizes that traits are not universally positive due to a variety of contextual cultural factors that impact on what is deemed as positive <sup>[55]</sup>. The approach adopts a culturally embedded perspective on strengths-based work with men that includes culture and context, incorporating factors such as gender, sexual orientation, race, and ethnicity <sup>[55]</sup>.

## Discussion

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Due to the remote, isolated, confined, and safety-critical environment of the ship, seafarers are exposed to a very particular combination of stressors. Conversely, MacLachlan et al. <sup>[21]</sup> propose that this "containment" experienced on-board also offers opportunities to develop unique occupational health and performance programmes, and the science of positive psychology may contribute in this respect due to its focus on supporting health, positive attitudes and productive work behaviour. However, it is unrealistic to expect benefits from positive psychology interventions if the working environment retains elements of organisational injustice. For instance, another area of psychology, which has looked at the effects of pay disparities based on the origins of the worker, rather than their qualifications or performance (as is also found in some companies among seafarers), has demonstrated the negative effects of such a system, including perceptions of injustice and feelings of demotivation among workers (see <sup>[56,57]</sup>). Dual salaries – salaries based on country of origin – are just one of the factors that can contribute to perceptions of maritime workplaces being unjust.

Positive psychology cannot and should not be used as an ostensible solution to fundamental work injustices in the working conditions of mariners. Indeed, individualistic positive psychology interventions in the context of fundamentally unfair work practices may be seen as patronising and 'blaming the victim' <sup>[58]</sup>, and may result in very negative reactions from frustrated crew. A ship is a totally enveloping environment for those who live and work on it. No environment, or the risks in it, is interpreted similarly by all people <sup>[59]</sup>. Changes in the working environment of mariners – through, for example, reduction of pay and leave, decreased manning, uncertain employment prospects, and less enjoyable working environments – may reasonably be expected to be experienced as real challenges, which have, at least for some, eliminated many of the prior aspects of seafaring that were so attractive <sup>[60]</sup>.

## Rationale for Future Research in the Area

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Due to the remote nature of the maritime context, online or computer-based positive psychology interventions and training may be a valuable avenue of future research. Online positive psychology interventions can empower people to manage their own wellbeing, while being highly accessible, low-cost, and scalable, reaching a diversity of populations <sup>[61-63]</sup>. For example, while Layous and colleagues <sup>[64]</sup> found that a positive activity intervention significantly increased positive affect, no differences were

found between participants who completed the positive activity online versus in person. As suggested by Bergheim et al. [30], captains are a difficult group to include in traditional management training due to their lengthy time spent at sea so that on-board computer-based training programmes may be a valuable and cost-effective way to deliver training.

Another promising line of inquiry relates to maritime health at the systems level. Jensen et al. [65] call for integrated occupational healthcare for seafarers, including supplementary health promotion activities such as prevention of fatigue, stress and loneliness to positively impact on health, safety and wellbeing. MacLachlan et al. [6] advise that environmental, organizational, operational, safety, and cultural factors all impact on maritime health; accordingly, the authors recommend a systems-based approach to research to support the targeting and implementation of integrated maritime health care interventions. Comperatore and colleagues [8] propose that managing the complexity of shipboard stressors requires a systems approach that identifies individual factors in the complex system and determines how these factors individually and collectively impact on seafarers' endurance.

## Conclusion

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Robust research is required to establish the most effective ways in which a just, inclusive and supportive work environment can provide a good platform upon which more individually focused positive psychology interventions at sea can reap benefits. These benefits can be for both the individual seafarer and for their employer: through better work performance and greater work satisfaction constituting a virtuous reinforcing cycle. As good welfare on-board, salary, and corporate social responsibility may be vital to retaining seafarers, the balance between fulfilling a maritime organization's needs and those of seafarers is also essential regarding employee retention [66]. Positive psychology therefore has an important role to play in multi-level initiatives in the shipping industry.

## References

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- [1] Alderton T, Bloor M, Kahveci E, Lane T, Sampson H, Thomas M, et al. The global seafarer: living and working conditions in a globalized industry. Geneva: International Labour Office; Cardiff, UK: Seafarers International Research Centre; 2004.
- [2] Anderson P. Compliance requirements and their legal implications. In: Anderson P. The ISM code: a practical guide to the legal and insurance implications. 3rd ed. Oxon, U.K.: Informa Law from Routledge; 2015. p. 161-324.
- [3] Lipowski M, Lipowska M, Peplinska A, Jezewska M. Personality determinants of health behaviours of merchant navy officers. *Int Marit Health*. 2014; 65(3):158-165. doi: 10.5603/imh.2014.0030
- [4] Jezewska M, Leszczynska I, Jaremin B. Work-related stress at sea self estimation by maritime students and officers. *Int Marit Health*. 2006; 57(1-4):66-75.
- [5] Carotenuto A, Fasanaro AM, Molino I, Sibilio F, Saturnino A, Traini E, et al. The Psychological General Well-Being Index (PGWBI) for assessing stress of seafarers on board merchant ships. *Int Marit Health*. 2013; 64(4):215-20.
- [6] MacLachlan M, Kavanagh B, Kay A. Maritime health: a review with suggestions for research. *Int Marit Health*. 2012; 63(1):1-6.
- [7] Leszczynska I, Jaremin B, Jezewska M. Strategies towards health protection in maritime work environment involving the role of health promotion - invitation to join in discussion. *Int Marit Health*. 2007; 58(1-4):185-194.
- [8] Comperatore CA, Rivera PK, Kingsley L. Enduring the shipboard stressor complex: a systems approach. *Aviation, Space, and Environmental Medicine*. 2005; 76(6 Suppl): B108-18. [9] Carotenuto A, Molino I, Fasanaro AM, Amenta F. Psychological stress in seafarers: a review. *Int Marit Health*. 2012; 63(4):188-194.
- [10] MacLachlan M, (Ed) Maritime psychology. New York: Springer; 2017.
- [11] Oldenburg M, Baur X, Schlaich C. Occupational risks and challenges of seafaring. *J Occup Health*. 2010; 52(5):249-256.
- [12] Thomas M. Lost at sea and lost at home: the predicament of seafaring families. Cardiff, U.K.: Seafarers International Research Centre, Cardiff University; 2003. Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.706.648&rep=rep1&type=pdf>
- [13] Hult C. Swedish seafaring life in 2009-2010. In: Hult C, editor. Swedish seafarers and seafaring occupation 2010: a study of work-related attitudes during different stages of life at sea. Kalmar, Sweden: Kalmar Maritime Academy; 2012a. p. 9-22.
- [14] Kahveci E. Seafarers & communication. London, UK: ITF Seafarers' Trust; 2011.
- [15] Progoulaki M, Katradi A, Theotokas I. Developing and promoting seafarers' welfare under the Maritime Labour Convention: a research agenda. *SPOUDAI Journal of Economics and Business*. 2013; 63(3-4):75-82.
- [16] Gekara VO, Bloor M, Sampson H. Computer-based assessment in safety-critical industries: the case of shipping. *Journal of Vocational Education & Training*. 2011; 63(1):87-100. doi: 10.1080/13636820.2010.536850
- [17] Hystad SW, Bartone PT, Eid J. Positive organizational behavior and safety in the offshore oil industry: exploring the determinants of positive safety climate. *J Posit Psychol*. 2014; 9(1):42-53. doi: 10.1080/17439760.2013.831467
- [18] Carter T. Working at sea and psychosocial health problems: report of an International Maritime Health Association Workshop. *Travel Med Infect Dis*. 2005; 3(2):61-65. doi: 10.1016/j.tmaid.2004.09.005
- [19] Harvey C, Stanton N, Zheng P. Safety at sea: human factors aboard ship. Leicestershire, U.K.: Chartered Institute of Ergonomics & Human Factors; 2013. Available from: <http://www.ergonomics.org.uk/safety-at-sea-human-factors-aboard-ship/>
- [20] Rothblum A. Improving incident investigation through inclusion of human factors. In: Franklyn C, Holdsworth RD, Reason J, Smith C, Wreathall J, editors. 2nd International Workshop on Human Factors in Offshore Operations. Demystifying human factors: Practical solutions to reduce incidents and improve safety, quality and reliability; Texas, United States; 2002. Available from: <http://www.bsee.gov/Technology-and-Research/Technology-Assessment-Programs/Reports/400-499/401AA/>
- [21] MacLachlan M, Cromie S, Liston P, Kavanagh B, Kay A. Psychosocial and organisational aspects. In: Schreiner A, editor. Textbook of maritime medicine. 2nd ed. Bergen, Norway: Norwegian Centre for Maritime Medicine; Antwerp, Belgium: International Maritime Health Association; 2013. Available from: <http://textbook.ncmm.no/index.php/textbook-of-maritime-medicine>
- [22] Carter T. Mapping the knowledge base for maritime health: 3 illness and injury in seafarers. *Int Marit Health*. 2011; 62(4):224-240.

- [23] Roberts SE, Jaremin B, Chalasani P, Rodgers SE. Suicides among seafarers in UK merchant shipping, 1919-2005. *Occup Med (Lond)*. 2010; 60:54-61. doi: 10.1093/occmed/kqp133
- [24] Roberts SE, Jaremin B, Lloyd K. High-risk occupations for suicide. *Psychol Med*. 2013; 43:1231-40. doi: 10.1017/S0033291712002024
- [25] Iversen RT. The mental health of seafarers. *Int Marit Health*. 2012; 63(2):78-89.
- [26] Carr A. *Positive psychology: The science of happiness and human strengths*. 2nd ed. East Sussex, UK: Routledge; 2011.
- [27] Seligman MEP. *Flourish: a visionary new understanding of happiness and well-being*. New York: Free Press; 2011.
- [28] Seligman MEP. *Flourish: positive psychology and positive interventions (Tanner lectures on human values, delivered at the University of Michigan)*. Utah, United States: University of Utah; 2010. Available from: [http://tannerlectures.utah.edu/\\_documents/a-to-z/s/Seligman\\_10.pdf](http://tannerlectures.utah.edu/_documents/a-to-z/s/Seligman_10.pdf)
- [32] Donaldson SI, Ko L. Positive organizational psychology, behavior, and scholarship: a review of the emerging literature and evidence base. *J Posit Psychol*. 2010; 5(3):177-91. doi: 10.1080/17439761003790930
- [33] U.S. Navy (Chief of Naval Personnel, Public Affairs). *Navy releases updated Operational Stress Control Program*. Washington D.C.: United States Navy; 2015. Available from: [http://www.navy.mil/submit/display.asp?story\\_id=90483](http://www.navy.mil/submit/display.asp?story_id=90483)
- [34] *March on Stress*. *March on stress news: supporting occupational mental health in the shipping industry*. March on Stress; 2013. Available from: <http://www.marchonstress.com/index.php/news/article/73>
- [35] Jacobs K. (2013). Focus on 'resilience' to improve wellbeing, says Shell's health chief. *HR Magazine*. Available from: <http://www.hrmagazine.co.uk/hro/news/1140491/focus-resilience-improve-wellbeing-shells-health-chief>
- [36] SEAHORSE project. *SEAHORSE: The project*. Glasgow, U.K.: SEAHORSE Project; 2014. Available from: <http://www.seahorseproject.eu/TheProject/tabid/4193/Default.aspx>
- [37] Doyle N, MacLachlan M, Fraser A, Stilz R, Lismont K, Cox H, et al. Resilience and well-being amongst seafarers: cross-sectional study of crew across 51 ships. *Int Arch Occup Environ Health*. 2015; 89(2):199-209. doi: 10.1007/s00420-015-1063-9.
- [38] Davis DM, Hayes JA. What are the benefits of mindfulness? A practice review of psychotherapy-related research. *Psychotherapy*. 2011; 48(2):198-208. doi: 10.1037/a0022062
- [39] Baer RA, Lykins ELB. Mindfulness and positive psychological functioning. In: Sheldon KM, Kashdan TB, Steger MF, editors. *Designing positive psychology: taking stock and moving forward*. New York: Oxford University Press, Inc.; 2011. p. 335-48.
- [40] Johnson DC, Thom NJ, Stanley EA, Haase L, Simmons AN, Shih PB, et al. Modifying resilience mechanisms in at-risk individuals: a controlled study of mindfulness training in marines preparing for deployment. *American Journal of Psychiatry*. 2014; 171(8):844-853. doi: 10.1176/appi.ajp.2014.13040502
- [41] Stanley EA, Schaldach JM, Kiyonaga A, Jha AP. Mindfulness-based mind fitness training: a case study of a high-stress predeployment military cohort. *Cognitive and Behavioral Practice*. 2011; 18(4):566-576. doi: <http://dx.doi.org/10.1016/j.cbpra.2010.08.002>
- [42] Hulsheger UR, Alberts HJ, Feinholdt A, Lang JW. Benefits of mindfulness at work: the role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of Applied Psychology*. 2013; 98(2):310-25. doi: 10.1037/a0031313
- [43] Håvold JI. *From safety culture to safety orientation: developing a tool to measure safety in shipping [dissertation]*. [Trondheim, Norway]: Norwegian University of Science and Technology; 2007. Available from: <http://brage.bibsys.no/xmlui/handle/11250/265609>
- [44] Hult C. *Work, motivation, and commitment*. In: Hult C, editor. *Swedish seafarers and seafaring occupation 2010: a study of work-related attitudes during different stages of life at sea*. Kalmar, Sweden: Kalmar Maritime Academy; 2012b. p. 31-50.
- [45] Luthans F, Avey JB, Patera JL. Experimental analysis of a web-based training intervention to develop positive psychological capital. *Academy of Management Learning & Education*. 2008; 7(2):209-221. doi: 10.5465/AMLE.2008.32712618
- [46] Andersson L, Giacalone R, Jurkiewicz C. On the relationship of hope and gratitude to corporate social responsibility. *J Bus Ethics*. 2007; 70(4):401-409. doi: 10.1007/s10551-006-9118-1
- [47] Fredrickson BL, Cohn MA, Coffey KA, Pek J, Finkel SM. Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*. 2008; 95(5):1045-62. doi: 10.1037/a0013262



- [48] Millear P, Liossis P, Shochet IM, Biggs H, Donald M. Being on PAR: outcomes of a pilot trial to improve mental health and wellbeing in the workplace with the Promoting Adult Resilience (PAR) program. *Behaviour Change*. 2008; 25(4):215-228. doi: 10.1375/bech.25.4.215
- [49] WHO Europe. Mental health: facing the challenges, building solutions; report from the WHO European Ministerial Conference. Copenhagen, Denmark: World Health Organization, Regional Office for Europe; 2005. Available from: <http://www.euro.who.int/en/health-topics/noncommunicable-diseases/mental-health/publications/2005/mental-health-facing-the-challenges,-building-solutions>
- [50] ITF Seafarers. Women Seafarers. London, U.K.: International Transport Workers' Federation; 2016. Available from: <http://www.itfseafarers.org/ITI-women-seafarers.cfm>
- [51] Thompson RB, Peura C, Gayton WF. Gender differences in the person-activity fit for positive psychology interventions. *J Posit Psychol*. 2015; 10(2):179-83. doi: 10.1080/17439760.2014.927908
- [52] Kashdan TB, Mishra A, Breen WE, Froh JJ. Gender differences in gratitude: Examining appraisals, narratives, the willingness to express emotions, and changes in psychological needs. *J Pers*. 2009; 77(3):691-730. doi: 10.1111/j.1467-6494.2009.00562.x
- [53] American Psychological Association. Positive psychology with male clients. Washington D.C., United States: APA; 2016. Available from: <http://www.apa.org/pubs/videos/4310863.aspx>
- [54] Kiselica MS, Englar-Carlson M. Identifying, affirming, and building upon male strengths: the positive psychology/positive masculinity model of psychotherapy with boys and men. *Psychotherapy Theory, Research, Practice, Training*. 2010; 47(3):276-87. doi: 10.1037/a0021159
- [55] Englar-Carlson M, Kiselica MS. Affirming the strengths in men: a positive masculinity approach to assisting male clients. *J Couns Dev*. 2013; 91(4):399-409. doi: 10.1002/j.1556-6676.2013.00111.x
- [56] Carr SC, Chipande R, MacLachlan M. Expatriate aid salaries in Malawi: a doubly demotivating influence? *Int J Educ Dev*. 1998; 18(2):133-43. doi: 10.1016/S0738-0593(97)00040-0
- [57] Carr SC, McWha I, MacLachlan M, Furnham A. International-local remuneration differences across six countries: do they undermine poverty reduction work? *Int J Psychol*. 2010; 45(5):321-340. doi: 10.1080/00207594.2010.491990.
- [58] Janoff-Bulman R, Timko C, Carli LL. Cognitive biases in blaming the victim. *J Exp Soc Psychol*. 1985; 21(2):161-77. doi: 10.1016/0022-1031(85)90013-7
- [59] Walsh-Daneshmandi A, MacLachlan M. Environmental risk to the self: factor analysis and development of subscales for the environmental appraisal inventory (EAI) with an Irish sample. *Journal of Environmental Psychology*. 2000; 20(2):141-149. doi: 10.1006/jev.1999.0158
- [60] Hafez AAE. Seafarers' social life and its effect on maritime safety with respect to Egyptian seafarers (World Maritime University Dissertations, paper 46) [dissertation]. [Malmö, Sweden]: World Maritime University; 1999. Available from: [http://commons.wmu.se/cgi/viewcontent.cgi?article=1045&context=all\\_dissertations](http://commons.wmu.se/cgi/viewcontent.cgi?article=1045&context=all_dissertations)
- [61] Bolier L, Majo C, Smit F, Westerhof GJ, Haverman M, Walburg JA, et al. Cost-effectiveness of online positive psychology: randomized controlled trial. *J Posit Psychol*. 2014; 9(5):460-471. doi: 10.1080/17439760.2014.910829
- [62] Drozd F, Mork L, Nielsen B, Raeder S, Bjørkli CA. Better Days – a randomized controlled trial of an internet-based positive psychology intervention. *J Posit Psychol*. 2014; 9(5):377-388. doi: 10.1080/17439760.2014.910822
- [63] Redzic NM, Taylor K, Chang V, Trockel M, Shorter A, Taylor CB. An Internet-based positive psychology program: strategies to improve effectiveness and engagement. *J Posit Psychol*. 2014; 9(6):494-501. doi: 10.1080/17439760.2014.936966
- [64] Layous K, Nelson SK, Lyubomirsky S. What is the optimal way to deliver a positive activity intervention? The case of writing about one's best possible selves. *J Happiness Stud*. 2013; 14(2):635-654. doi: 10.1007/s10902-012-9346-2
- [65] Jensen OC, Lucero-Prisno DE, Canals ML. Integrated occupational health care for seafarers across the continuum of primary, secondary and tertiary prevention. *Int J Integr Care*. 2010; 10:e035.
- [66] Thai VV, Balasubramanyam L, Kai Lin Yeoh K, Norsofiana S. Revisiting the seafarer shortage problem: the case of Singapore. *Marit Pol Mgmt*. 2013; 40(1):80-94. DOI: 10.1080/03088839.2012.744480