A Realist Review of Merchant Seafarers' Welfare (2006–2016):
Examining the changing context for directing charitable innovations

**A Report prepared by Southampton Solent University
for the Maritime Charities Group (MCG)**

1 August 2017

Dr Justin Jagosh,[1] Dr Kate Pike,[2]

Professor Steven Henderson[3] and Dr Marlene Calderón[4]

---

[1] University of Liverpool, [2,3,4] Southampton Solent University, with support from Matthew Francis during the initial stages of the project.

Contents

1.0 Introduction

This review was prepared in response to a request made by the Maritime Charities Group (MCG), to gather, review and collate studies that examine aspects of seafarer welfare in the changing context of seafaring in the period between 2006 and 2016. The review uses academic studies on seafarer welfare along with industry papers and opinion pieces.

The focus of this research is on working-age seafarers with a Merchant Navy background, while recognizing a broader literature that exists on the welfare of Royal Marines, Royal Fleet Auxiliary, ex-Royal Navy personnel, fishermen and former seafarers. The latter groups are not addressed directly but are discussed in the section on directions for future research. This review was undertaken at Southampton Solent University (SSU), and involved a methodology consultant (JJ) from the Centre for Advancement in Realist Evaluation and Synthesis (CARES) at the University of Liverpool. The review examines the challenging and changing context of seafaring through a specific approach, called 'RePAIR', which uses principles of 'realist methodology' (explained below). The approach was used to provide ideas and direction for developing new programmes to support merchant seafarers.
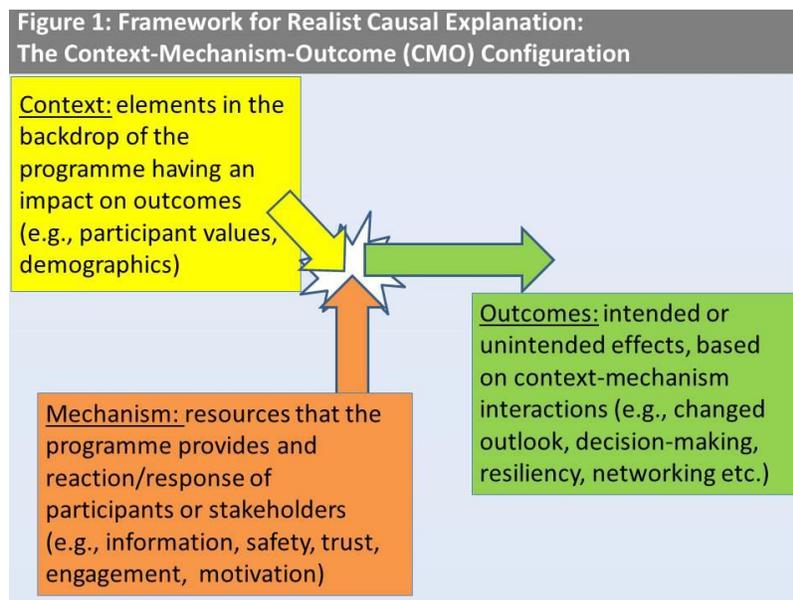
The overall aim of the study was to identify opportunities for charitable innovations in which such innovations would begin with the identification of problems and deficiencies in the context of seafaring, followed by programme recommendations to improve seafarer welfare.

Consequently, the operational objectives of the study were as follows:

1. To collect and review published academic literature to address the changing pattern of seafarer welfare in the decade 2006–2016.

2. To identify solutions to welfare issues, and to scope the opportunities and limitations of charitable innovations.

3. To anticipate the development of pilot interventions and evaluations by charities, seeking to reduce the welfare problems of seafarers.

2.0 Methodology

The methodology used for this review is called RePAIR – *Realist Programme Architecture Inventory Review.* The methodology was used to examine: (a) key deficits in the context of seafaring that could benefit from charitable support; (b) proposed or tested programmes from the literature to determine what is already in place and what is working; and (c) the creation of new programme ideas from a comprehensive understanding of the deficits and the resources that can be added to the seafaring environment for welfare improvement. The idea behind RePAIR is that all programmes have their particular architecture, which is an explanation of <u>how</u> they are structured to work. RePAIR is thus a collection or inventory of different programme architectures that are derived or inspired from the review and can be developed in the future. RePAIR is about reading the literature and thinking imaginatively about the kinds of solutions that can help to address simple, as well as complex, problems faced by seafarers. Figure 1 outlines the main building blocks of the 'realist' approach, which is called the 'context-mechanism-outcome' configuration, and is explained below as well as in Appendix 1:

Figure 1: Framework for Realist Causal Explanation: The Context-Mechanism-Outcome (CMO) Configuration

Context: elements in the backdrop of the programme having an impact on outcomes (e.g., participant values, demographics)

Mechanism: resources that the programme provides and reaction/response of participants or stakeholders (e.g., information, safety, trust, engagement, motivation)

Outcomes: intended or unintended effects, based on context-mechanism interactions (e.g., changed outlook, decision-making, resiliency, networking etc.)

This review is informed by the idea that charitable innovations have an overarching goal of improving the work and lives of seafarers. These are **outcomes** of interest. **Mechanisms** are about how seafarers respond or react to programme resources; and the **context** has to do with the backdrop or the background environment of the programme. The realist approach states that it is the interaction between the context and the mechanisms that create outcomes of interest. Here is an example:

Context: Seafaring work demands that seafarers spend many months at sea. As a consequence, when visiting a medical clinic while on land, they may get put on a waiting list for a medical procedure. By the time they are called in for the procedure they may be back at sea again, and thus miss their spot and get put back at the bottom of the list. This causes delays in receiving adequate medical attention, increased health risks, and possible frustration about the healthcare service. Seafarers are prone not to ask for help due to a culture of independence and self-reliance characteristic of their work experience.

Mechanism: Medical clinics put in place a new waitlist process that flags seafarers as a special group, allowing them to maintain their priority in the appointment queue (resource). This gives seafarers a feeling of being properly attended to, and a feeling of respect (response).

Outcome: Improved access to medical services, which in turn leads to improved health outcomes and better outlook on accessing healthcare by seafarers.

The RePAIR protocol is not simply about understanding programmes such as the one described in the above example, but is a comprehensive look at the entire 'architecture' of a programme, which means gaining an understanding of the important elements of the context in relation to new resources provided through the programme. This approach requires the reviewers to have some basic knowledge of different classes of interventions found in and across transdisciplinary literature bases. Through the analysis of papers using the RePAIR protocol, new classes of interventions to promote seafarer welfare are proposed (see Figure 2). However, a fine-tuning of these interventions means understanding how they could be customized to the specific needs of seafarers. This is an ambitious undertaking which requires an ongoing and sustained effort. The point here is that there are many classes of interventions in other health and social development fields that have been evolving in the past few decades that could serve the MCG's agenda for charitable innovations. One example would be resiliency training that is used in other workforce settings, such as the military, healthcare and policing fields. Such resiliency training may use techniques from the positive psychology literature, tailored to the specific professional field, which in turn could be tailored to the specific needs of merchant seafarers. Finally, the RePAIR analysis works optimally with a transdisciplinary mix of reviewers and in partnership with those who commission such reviews, such as funders.

2.1 Documents Retained for this Review

The research work started with a systematic search of eight bibliographic databases including the following: ABI/Inform, EBSCO Databases, Elsevier's Science Direct, Emerald Full-text, IEEE/IEE Electronic Library Online, ProQuest Science, Clarkson's Reports and Lloyd's List.

Articles published in the past decade (2006–2016) were captured using a combination of several keywords corresponding to seafarer welfare. These words included: 'seafarers welfare', 'fatigue', 'ship technologies', 'long distance training', 'shore based jobs', 'mental health risks', 'supporting rehabilitation', 'piracy', 'seafarers health' and 'seafarers criminalisation'.

A total of 83 published articles and reports were retrieved in two categories: (a) merchant seafarers sources (n=47); and (b) fishermen sources (n=34). For this review using realist methodology, a decision was made to focus solely on the merchant seafarer literature for two reasons. The first reason was because the 47 documents in this category presented a wide coverage of issues surrounding merchant seafarer welfare (see Figure 2) and the analysis of these documents matched the time and funding allocated to the current review. The second reason had to do with the requirements for realist methodology to study sets of papers with relatively similar contexts in order to conduct the context-sensitive analysis. It was determined that the retained articles on fishermen welfare constituted a separate context requiring a separate analysis. Forty-seven articles on seafarer welfare have been

retained in this review, and have been organized into the following folders. These are loosely organized categories which have overlapping content but serve to map the terrain of content for the retained set of papers:

(a) Older and Ex-Seafarer Needs (2 documents)
(b) Industry Projections, Workforce and Employment (14 documents)
(c) Seafarer Injury and Death (2 documents)
(d) Macro-context, Market Forces and International Law (8 documents)
(e) Seafarer Safety, Health and Risk (10 documents)
(f) Stress, Fatigue and Mental Health (10 documents)
(g) Support and Advice Needs (1 document)
(h) Other Supporting Literature.

Each of the 47 papers has been assigned a number (see reference list at the end of this document) and that number is used in referencing the documents in the main body of this report. The analysis using the RePAIR protocol was undertaken between April and July 2017. To facilitate the analysis, the papers were placed in a Dropbox folder and linked to a closed-group PBWiki website, which is an online platform that can store articles along with a working analysis. The PBWiki website is beneficial because the working analysis can be contributed to and viewed by all members of the review team from their computers. The PBWiki site will remain collectively available to members of the review team post-July 2017 in case a decision is made to continue the analysis in future phases, once the current report has been completed.

3.0 Findings

A main question raised through the commissioning of this review was as follows: Has the past decade been one of progress or lost opportunities for seafarer welfare?

The answer to this question is mixed. On average the retained literature demonstrates that the condition of seafaring is as complex and challenging in 2016 as it was in 2006, if not more complex, although there are a few points around this to bear in mind:

Many of the papers retained in the review do not reflect an analysis of changes over the past ten years. Rather, they cite problems that either have no time reference, or else describe problems that have been in existence going back decades if not centuries. The US World Trade Centre attacks of 11 September 2001 (9/11) have been cited across many papers as a major turning point in the security and customs policies and legislation for the shipping industry which has had a reverberating impact on the welfare of seafarers. This impact has to do with, among other issues, restrictions in the movement of seafarers during shore-based turnaround times, the movement of ports to remote areas outside city centres and the quick turnaround times in ports. Increased environmental legislation over the past decade has also had a significant impact on seafarer welfare, leaving the most vulnerable amongst seafaring crews to bear the brunt of regulatory violations. Although the literature on seafarer welfare during the period from 2006 to 2016 does not identify another significant watershed moment comparable to 9/11, it does describe a continuation and in some cases amplification of hardship due to legal, environmental, technological, industrial and workforce complexities that have evolved in recent decades.

In tandem with increasing complexities having to do with the rise of globalized trade, automation, heightened security regulations, use of flags of convenience, piracy[5] and other changes that increase the vulnerabilities for seafarers, there is also a growing awareness of the psychological impact of these changes on seafarers, and the psychosocial dimension to seafaring research will likely expand in the coming years. Article (40) states that:

> … increasingly, shipping regulators, owners, and trade unions alike are becoming aware that such conditions [workplace dangers], along with ship type, minimal manning, rapid turnaround, short sea passages and traffic conditions, may find seafarers working long hours without sufficient rest …[with] potentially disastrous consequences both for the individual in terms of reduced performance and poor health (e.g., ulcers, hypertension, and hearing loss as a result of excessively noisy machinery and vibration) and for the environment, if accidents occur as a result of lowered alertness (p. 1).

The point here is that the plight of seafarers, when reframed in terms of consequences for performance mistakes, injury and resultant economic and morale losses, is receiving greater and greater attention. Thus

---

[5] The ICC International Maritime Bureau (IMB) found that in the first six months of 2017, 63 vessels were boarded, 12 were fired upon, four were hijacked and attacks were attempted on another eight vessels. A total of 63 crew members have been taken hostage so far this year, while 41 have been kidnapped from their vessels, three injured and two killed. This suggests a small decline in incidents, although psychological issues have not been changed (ICC, 2015).

it is anticipated that the psychosocial perspective on seafaring will be given increasing attention in recognition of the fact that solutions to many of these entrenched problems lie in boosting the psychosocial resilience of seafarers and advocating for new systems, vessel architectures and technologies to mitigate problems.

A key point made in article (7) (Waypoint Digital 2017) is the prediction that advances in technology will permit ships at sea to have continuous satellite-based internet access at reasonable cost within the near future.[6] This would be a major development in the seafaring context that would create large-scale, potentially positive ripple effects on seafarer welfare. The effects would include reduced isolation from family, new innovations in navigational and training opportunities, and improved healthcare on board vessels. The ability to text, email and skype with spouses, children and other relatives and friends on an ongoing basis while at sea will alter the work experience, and the implications of this would need to be studied and theorized. A working hypothesis is that an ongoing connection with family and social connections at home while at sea would lessen the amount of time needed to engage in communication activities during port time (i.e., spending time at computer terminals for emailing and phoning while vessels are in port), which would free up time on land for sleep and other regenerating activities. Connection to family and other social supports may also create increased safety, particularly for female seafarers, who are vulnerable to sexual risk due to isolation from family and the need to bond with a male partner on vessel for protection (particularly in the cruise ship context – reference article 32).

Internet access while at sea may open up new possibilities for telemedicine consultations during time at sea, which may have a reverberating effect on seafarer injury and illness recovery by having direct access to medical advice and diagnosis. As a potential drawback, personal internet access may serve as a distraction from work activities and the social cohesion of fellow seamen on vessels. Throughout history, the nature of the seafaring experience has been one of isolation from one's land-based social networks and a special bonding with shipmates from the common and unique experience of seafaring. The introduction of continuous internet access on vessels will change the conditions and culture of seafaring for the first time in history, and this represents a promise for solutions building, but also increases the complex psychosocial experience that has defined the profession until now. Although full-scale internet connectivity is only now becoming available to formulate and test the hypothesis about the impact of internet technology on vessels, the MCG should be aware that this development is on the horizon and a thorough investigation of impact (positive and negative) could be undertaken in tandem with such technological advancements to optimize benefits and mitigate negative impacts.

A survey conducted in 2015, with the assistance of BIMCO, ISWAN, Intermanager, PTC and CrewToo, shows that access to the internet varies in accordance with the type of vessel (Crew Connectivity, 2015).

The availability of internet services is higher for the passenger (95%) and off-shore (55%) sectors, but lower for container, bulk and general cargo vessels (25%). Additionally, the level of crew communications services on board ships is regarded by the respondents as one of the most important aspects seafarers take into consideration when they have to make a decision about which employers they want to work for

---

[6] The Nautilus survey of 2,000 seafarers found that only 6% of seafarers have connectivity at sea.

(73%). Smartphones are the preferred device seafarers take on board (77%); they have largely replaced the use of laptops and ordinary cell phones.

Technology advance is also important for recruitment initiatives. During the 2015 IMO Symposium on maritime education and training, the importance of having the internet on board ships was stressed as a key factor to attracting, recruiting and retaining seafarers in the industry (IMO, 2015).

A white paper published by Nautilus International (2017) revealed that while the majority of seafarers who participated in the survey (88%) had personal access to the internet, they also experienced restrictions on its usage. For instance, many seafarers reported limited access to streaming (54%) and video calls (41%). Other restrictions included having access only to websites pre-approved by the employer (36%) and encountering time restrictions (20%), while others were required to pay for the service (17%). The report suggests that internet connectivity in private cabins is a 'basic requirement' and a 'moral obligation', especially today when the cost of providing the service is steadily declining not only due to advances in communications technology but also because more service providers are entering into the market. It is estimated that the cost of services are in the range of 0.2–0.3% of a vessel's operating costs. The white paper suggests that some seafarers are willing to agree to policies for responsible use because they consider that online access and communication with their families and friends can have a positive effect on their mental and social wellbeing. For instance, one seafarer, aged 36, is cited as saying: 'without internet access, I would probably have left the ship as there is no personal support system on board … my ability to focus on watch keeping deteriorates when I am under that sort of stress'.

Automation of vessels has been identified as another major force altering the experience and culture of seafaring (47). While the advent of internet technology opens up possibilities for new training, social connection to home and advanced healthcare on ship, automation has meant fewer staff, and 'increased mechanisation has meant that while the jobs were less physically demanding, they were also less physically beneficial' (p. 7, 3).

A number of conditions of significance to seafarer welfare have been repeated frequently in the literature. These are: (a) the impact of living in small confined spaces in combination with increasingly co-gendered, multicultural crews; (b) no boundaries between living and work space on vessels; (c) post-9/11 changes to marine security policies; (d) technology advancement leading to increased automation of activities and fewer staff on vessels; (e) shift work leading to sleep disruption; (f) ports moving out of city centres and into remote areas, leading to isolation while docked; (g) short turnaround times, leading to more land time taken up by inspectors, border officials, etc., and less opportunity for on-land sleep, less opportunity to rejuvenate in the port city; (h) increase in piracy worldwide leading to increased stress/anxiety of seafarers.

The Seafarers International Research Centre (SIRC) has recently released the findings of a second survey administered to seafarers by port chaplains in the UK, China and the Philippines. An estimated 1,500 respondents completed a questionnaire on various aspects of seafarers' health including: (i) sleep quality at sea; (ii) quality of life on board; (iii) health-related behaviours; and (iv) physical and mental health.

Compared to a similar first survey conducted in 2011, this second survey reveals a number of improvements, deteriorations and contradictions too (Sampson *et al.* 2017).

In relation to health-related behaviours, there has been a small improvement; seafarers have reduced smoking habits and alcohol consumption. Similarly, more seafarers now opt for healthy diets, eating more vegetables and less fried meals. Additionally, a higher number of seafarers report visiting the doctor during their leave time.

Despite the above, a comparison between the 2011 and 2016 responses indicates a deterioration of many seafarers' mental health; for example, the presence of a 'psychiatric disorder' has appreciably increased, from 28% in 2011 to 37% in 2016. In the same way, fatigue and sleep quality have worsened during the same period.

The ITF Seafarers' Trust has initiated several actions to aid understanding of the psychosocial and psychological problems of seafarers and it is currently supporting an ambitious programme whose main strategies include the establishment of an open library of resources on these issues as well as the promotion of a range of activities including awareness training, social media platforms, pro-social games, training for the trainers on 'mental health first aid', increased engagement with port chaplains and Telemedical Assistance Services for follow-up consultations and clinical help (ITF Seafarers' Trust, 2017).

3.1 RePAIR Analysis on Seafarer Welfare and MCG Charitable Innovations

The findings and RePAIR analysis are organized according to the themes presented in Figure 2. This diagram is a distillation of the most common themes found in the literature as they pertain to seafarer welfare. This is a working framework depicting the organization of the analysis. However, there may be new elements and details to be included upon closer inspection of the literature related to seafarer welfare. The inner ring of Figure 2 is a visual depiction of a host of challenges in the seafarer context, and the outer ring is a host of proposed types of intervention for addressing the problems. While the diagram does not capture every detail, it is meant to provide an overview of problems identified and solution areas proposed. What follows is a section by section description of the eight problem areas identified in Figure 2 and programme architecture sketches of proposed solutions.

Figure 2: Seafarer welfare problem areas and intervention classes proposed for mitigation
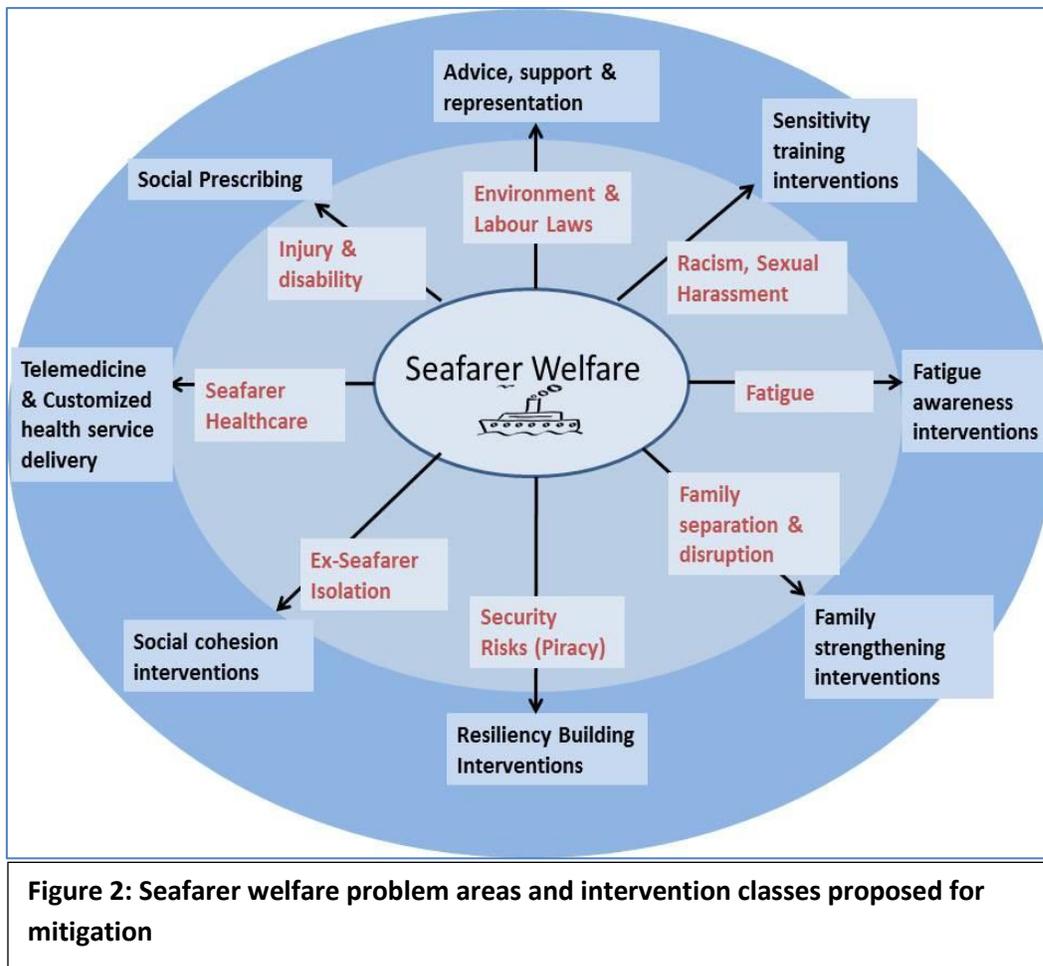
1. Sensitivity Training Interventions

Article (32) describes sexual risk for female workers on cruise ships. Cruise ships are a context of vulnerability for female employees due to multinational, mixed-gender staff working in close quarters. The authors of this article emphasize the idea that, although common notions around 'risks' infer that people 'take' risks, the specific context of the cruise ship creates conditions whereby female workers 'incur' risk. This insight places the burden of causation on the environment rather than the agency of female staff. The authors describe these conditions in terms of female workers: (a) being away from family for long periods; (b) living and working together in close quarters with male counterparts; (c) working in subordinate positions; (d) experiencing sexual harassment; and (e) taking a lover for protection.

'Seafarers are unusual in that they share a living space, as well as a workplace with their fellow workers' (p. 88 pa. 4).

'The cruise ship is arguably a "liminal space" (Turner 1967) where crew are physically and emotionally removed from the ties and constraints of their homes and families' (p. 88).

'Gendered power inequalities may be enhanced in isolated workplaces where female workers occupy largely subordinate positions' (p. 89 pa. 2).

'… women crew may find themselves engaging in sexual risk behavior as a result of local, strategic, gendered relations of power, unable to resist effectively the dominating gaze of male super-ordinates. The plight of these isolated women is a powerful demonstration of the essentially situated character of risk behavior' (p. 95 pa. 4).

Article (30) describes the impact of multinational crews on psychosocial stress levels:

> … multinational crews have been recognized as a stressor. Crews consist not only of many different nationalities but also of members from different religious and cultural backgrounds. Reflecting this, different needs, values and expectations exist (252, 8).
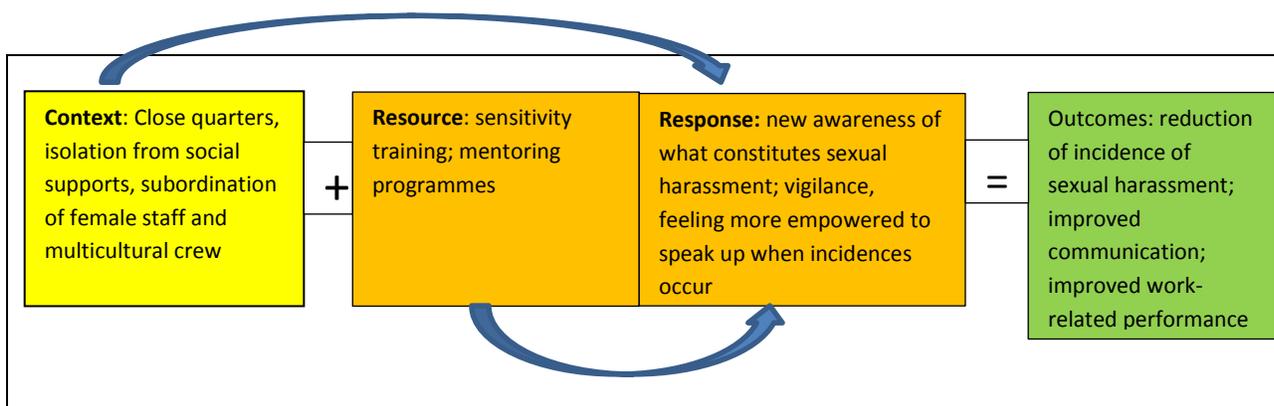
Solutions include:

> … high levels of fluency in the working language of the ship among both officers and ratings; policies encouraging stable crewing; promotion of social activities on board via masters and senior officers; minimize the circulation of materials reinforcing cultural and national stereotypes which can often be found onboard (253, 3).

RePAIR Analysis

The authors did not offer solutions to the problem. The issue is determined by factors which are very difficult to change: living in close quarters, subordination of female employees, safety and the need to take a lover for protection. The paper reports high condom use between male seafarers and sex trade workers, but low condom use in private sexual encounters on ships.

Programme Theory: Sensitivity training on sexual harassment brings awareness to the issue, sends a message to staff that ship owners take sexual harassment seriously and empowers those who are vulnerable. This may lead to improved welfare, communication and performance.

Context: Close quarters, isolation from social supports, subordination of female staff and multicultural crew	+	**Resource**: sensitivity training; mentoring programmes	**Response:** new awareness of what constitutes sexual harassment; vigilance, feeling more empowered to speak up when incidences occur	=	Outcomes: reduction of incidence of sexual harassment; improved communication; improved work-related performance

One of the recommendations of a recent study on gender issues at sea included mentoring as a way of providing a point of contact for an individual to speak to, raise problems with, be reassured by, or gain guidance from. This can work on many levels throughout the rank system on board, although it is generally associated with lower ranks and less experienced seafarers. Being assigned a mentor means that someone

else is looking out for you and will get to know about the problems you face, thus providing a potential deterrent to sexual abuse and other forms of harassment (Pike *et al.* 2016).

2. Fatigue and Fatigue/Stress Awareness Interventions

International Maritime Organization (IMO) statistics reveal that 80% of accidents on board cargo ships are caused by the human factor (31, 1). Article (37) describes the use of a subjective measurement scale – Piper Fatigue Scale and the 'Symptom checklist-90-r' – to detect fatigue on ship. The paper addresses specific reasons for fatigue, and offers this scale as a possible way to measure fatigue. The authors point out that when accidents happen, it is difficult to ascertain whether fatigue was a factor. The article does not go further to suggest that the scale should be adopted by ships to help identify when fatigue is occurring; however, the adaptation of fatigue scales may be a way to bring awareness to fatigue levels and increase fatigue self-appraisal by seafarers:

> Fatigue causes severe deterioration in the vigilance level of the seafarers, eventually making them perpetrate mistakes. Accident investigation reports are not often inclined to give more importance to human fatigue because measuring human fatigue is difficult and it is also more difficult to suggest that fatigue is a root cause of accident (p. 330 pa. 4).

> Seafarers also have to work in a shift system (shift-work) including the night hours. Shift workers face many physical and mental problems because of the disruption of work-rest cycle and routines and being out of the social life (p. 331 pa. 4).

> … advanced technology, like utilization of computer-controlled systems on-board, makes a ship technologically well-equipped but this advanced technology results in a reduction of the number of the seafarers on-board ships. In such an environment seafarers are forced to work harder and longer, which leads to fatigue and endangers lives and the vessels (p. 332 pa. 2).

Similarly article (46) cites 'role conflict as a major factor that produces stress in seafarers who have to work to professional standards but also operate the ship with reduced crew numbers and high speed, so as to satisfy the requirements for profitability' (p. 148, 1). Role conflict may also be exacerbated by multinational crews where there are cultural and linguistic barriers and racial differences and tensions. Article (47) states: 'non-UK seafarers … referred to bullying at work, which had affected their mental health' (p. 7).

Article (45) states: 'the most frequently considered psychosocial stressors at work at sea are: excessive or insufficient work responsibilities; monotony; lack of stimulation or perspective of development; biorhythm disturbances resulting from shift work; [and in] relation [to] migration: changing the environment, long separation from family, isolation. And [in relation to] managerial duties: conflict situations, great responsibility for the safety of the crew, and difficult decisions' (p. 68).

Article (41) states: 'reducing seafarers' fatigue requires external and company regulation and control as well as individual preventive intervention and human resilience. Fatigue mitigating factors include alertness management strategies of which proper work-rest scheduling and adequate sleep hygiene are of primary importance' (p. 112 pa. 8).

Article (42) makes a distinction between objective and subjective stress factors, defining objective factors as the structural elements such as noise and vibration, turn ship and long separation from families, and subjective factors as related to the 'intrinsic characteristics of [seafaring] subjects' (p. 216, 1) and his attitude to facing stressful situations.

Article (43) highlights that 'present reporting systems are inadequately designed to record factors relevant to fatigue; excessive working hours that contribute to crew fatigue are often hidden by falsified audit records and those who under-recorded their working hours were also found to report higher fatigue' (p. 2).

Fatigue was a central theme across many papers that spoke directly to the issue of seafarer welfare, which is demonstrated by Figure 3.
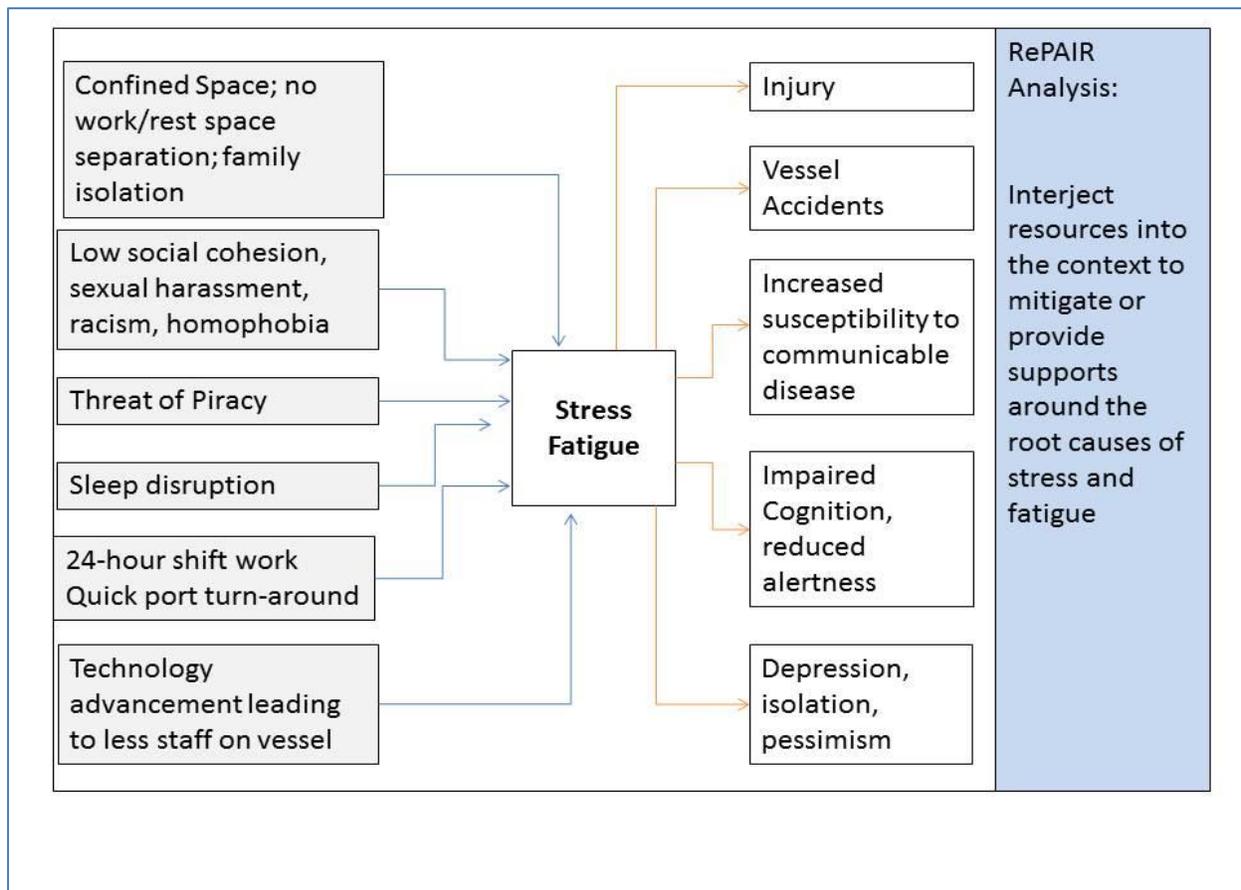

Figure 3: Causes and Results of Fatigue and Stress on Vessels

RePAIR Analysis

Article (43) recommends three levels of intervention to address problems related to fatigue: (a) information about the problem to increase awareness; (b) tools to allow proper audit of fatigue levels; and (c) guidance on the management of fatigue (p. 2, 1).

Some solutions were also offered in article (41).

> To cope with fatigue, learning experiences should be drawn from different maritime sectors as well as from other transport sectors that are prone to fatigue, notably the aviation industry, which has dealt significantly with this issue. Learning from best practices requires the collaborate efforts of all stakeholders such as the work force, regulators and academics (p. 133 pa. 4).

These 'learning experiences' could form the basis of a programme or intervention – with vignettes about fatigue and how the seafarer coped with it and mitigated impact. This is the idea that seafarers could be given a written resource or instructional DVD in which other seafarers talk about their experiences for the purpose of information sharing and bringing the issue of fatigue to the fore.

Article (41) makes a distinction between 'collective fatigue mitigation management' and 'individual fatigue mitigation management' which could be understood as structural and individual efforts.

Article (44) introduces an intervention (PsyCap) to 'capture an individual's psychological capacities [and] can be developed and utilized for performance improvements' (p. 1).

Programme theory: Adapting fatigue measurement scales, PsyCap and others for use by ship owners to track rates of fatigue on board could serve as interventions to bring awareness about fatigue and stress, break cultural taboos around admitting levels of fatigue and help to determine whether fatigue was a contributing factor in accidents. Increased fatigue and stress self-appraisal may increase mindfulness and reduce incidence of accidents and injury.

All of the factors identified as fatigue-inducing are aspects of the context which are not easily changeable: working in enclosed spaces; technology on vessels which has led to a reduction of staffing numbers, thus each staff member having to carry a heavier burden. One challenge is that the scales are subjective – which means that the seafarer has to be able and willing to report accurately their internal states. This may be confounded by (a) pressure to skew self-reported outcomes or (b) not being aware (or not wanting to be aware) of one's level of fatigue. For this reason, a self-administered fatigue scale should be about promoting self-appraisal and sending a message to staff that the ship owner takes fatigue seriously.

In terms of new programme ideas in this area, one concept is adapting a fatigue scale in a way that can be administered by vessel crew (as opposed to researchers), as a means not only to collect information about levels of fatigue but also to 'send a message' to crew that fatigue awareness is important. The paper does not discuss this idea – it keeps with the idea that the scale would be administered by researchers, but perhaps such a scale could be customized to seafarer experience and be administered locally. Ship captains could use this 'data' as a way to initiate a conversation about fatigue and ways to mitigate fatigue-related accidents.

3. Family Strengthening Interventions

Article (39) describes the stress for seafarers who need to integrate back into unstructured time with family and friends once on land: 'stressors include … adapting from time at sea to on-shore' and negotiating two identities, one 'as a working member of the crew and the other with unstructured time during leave with family and friends' (p. 62).

RePAIR Analysis

From an industry perspective, Thomas *et al*. consider that a more formal commitment from companies to support the families of seafarers during the time they spent at sea can significantly improve seafarers' retention in the industry. A number of initiatives can be adopted by companies in order to reduce the feelings of isolation and depression that seafarers experience while separated from their families. These include, among others, paid leave of a comparable duration to sea time, increased contact between employers and seafarers' partners during voyages, and where possible opportunities for partners or children to sail (Thomas *et al.* 2013).

Family strengthening interventions are a class of intervention designed to increase the social cohesion between members of families and is currently being tested in contexts of political conflict, strife and displacement. The programmes are designed to help parents learn how to connect with their children after periods of separation through a psychotherapeutic approach. This has relevance to seafarers, particularly those with families, where stressful situations may occur when the seafarers return home. Stress can be attributed to a feeling of social dislocation, because in the absence of the seafaring member, the family adapts to function without the seafaring member present.

Family strengthening interventions, such as those used for repairing family relations due to war, famine, poverty and separation, may be adapted to the seafaring context. These interventions employ a range of techniques including psychotherapeutic approaches, positive psychology and cognitive behavioural therapy.

4. Piracy and Resiliency Promoting Interventions

The Maritime Piracy Humanitarian Response Programme (MPHRP) was launched in 2011 with the aim of assisting seafarers and their families who have been victims of piracy and other forms of maritime crime. This is a large alliance composed of ship owners, unions, manning agents, managers, insurers and welfare organizations. The programme has developed guidelines, training activities and helpline support pre-, during and post-incident. In 2015, the responsibility for the MPHRP was delegated to the International Seafarers Welfare and Assistance Network, a charity that promotes seafarers' welfare worldwide (Swift, n.d.).

In addition, the UK Maritime Trade Operations has elaborated a booklet of industry best management practices that aims to provide guidance on measures that can be taken to prevent a ship from falling victim to piracy in high-risk areas bounded by Suez and the Strait of Hormuz. The booklet, published in 2011, takes the experience and data gathered by military and naval organizations (BMP4, 2011).

In article 33, the authors discuss security challenges in high-risk areas, with specific attention paid to the issue of piracy. They were 'shocked to learn that in a study of psychological impact of piracy on seafarers, the results showed that almost all of the interviewed seafarers felt that they have not received adequate mental preparation for traversing known zones of piracy' (Garfinkle *et al.* 2012 – in 34 p. 209). The authors discuss the impact of piracy victimization as well as the psychological impact of the threat of piracy when vessels travel through piracy-prone waters. The latter impact means that even in the absence of a hostile attack on vessels, the threat of piracy requires improved navigation systems to support peripheral cues (i.e., the extended ability to be aware of one's surroundings) and emboldened psychological resiliency. This is because negative ruminations, fear and anxiety diminish peripheral vision and impair essential decision-making, which in turn can lead to critical mistakes and injury:

> … it is important that the ship operator acknowledges that well-learned skills and well-rehearsed tasks require less attentional control, thus performance of these tasks are less affected by stress (209, 1).

> Moreover, well-designed systems that offer peripheral cues to operators will enhance the performance of a given task. Hence it is important to involve the users and to ensure education and training of all safety and security critical systems on a regular basis and especially when implementing new safety and security measures (209, 1).

What this suggests is that the threat of piracy creates an emotional state that has an impact on the seafarer's cognitive resiliency. When cognition is impaired, the chance of human error increases. Therefore the authors suggest that improved navigation systems help to counter the negative emotional and cognitive impact of the threat of piracy, as well as regular training so that operations become increasingly second nature. When ships are well designed for navigation in dangerous waters, and crews are not just trained once, but have ongoing training sessions, this increases their confidence, which serves as a counter-balance to fear and anxiety which can erode competencies.

RePAIR Analysis

Programme theory: Resiliency training reinforces and improves competencies that serve to mitigate fear and anxiety about the threat of piracy, leading to improved security and performance:
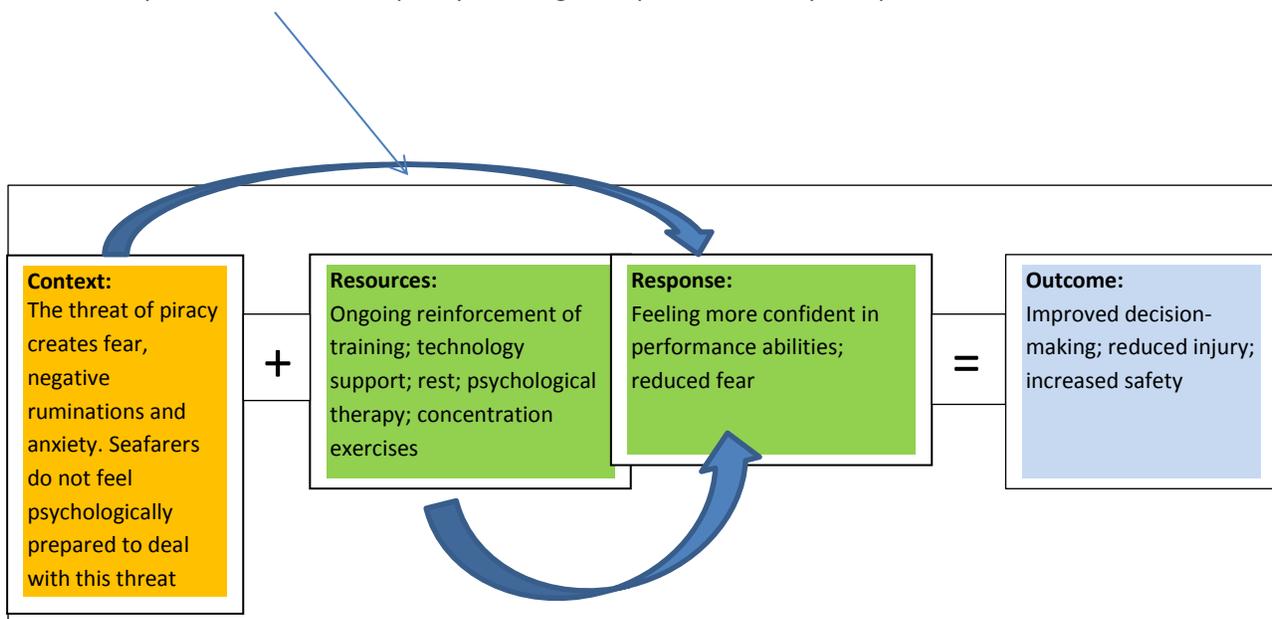
5. Seafarer and Ex-Seafarer Isolation and Psychosocial Burden

Papers report that seafarers who have retired and return to land-based living experience difficult transitions and isolation due to the fact of the unique life experience of seafaring and the strong social bonds created through their work-life experience. Article (35) expands this line of argument to suggest that:

> Put simply, working at sea involves a relatively small number of people in an occupation that differs significantly from many others. The small size of the industry and its distinctive features create a separate identity and camaraderie that are important reasons for choosing a maritime career and a key element in the enjoyment of seafaring work and lifestyles. But this reinforces isolation. Former seafarers seek out people who share their work experiences and working seafarers miss their working lives while ashore (p. 12).

> Across the seafaring community people feel that their lives and lifestyles are not understood by others and that this lack of awareness makes some general services unsuitable for them (p. 13).

Article (47) suggests, when coming up to a transition to shore-based life, 'that often it is not possible to plan for a new shore-based life and that the changes consequent upon this impose real challenges for seafarers. Life on shore has different rhythms and demands and seafarers often spoke of having experienced real difficulties in adjusting' (p. 7).

Seafaring is further accompanied by a culture of self-reliance, which is a product of conditions at sea and the demands of the work involved:

> Self-reliance is one of the attractions of a maritime career. But it can also feed the isolation and separation that seafarers, and their dependants and families, experience. Among seafarers, sharing problems or seeking help to resolve them is unusual, and information sources are often limited to colleagues and family. Seafarers have low levels of awareness and use of general voluntary or public services, and informal networks of colleagues and family are generally used to help resolve problems. This approach may prevent seafarers and their families from accessing appropriate resources, and leave problems unresolved (p. 13/14).

Article (46) states that strict no alcohol policies on ships had a downside, as 'the closure of ship bars reduced opportunities for socialising, leading to isolation and mental health problems' (p. 7).

Article (39) states: 'Seafarers feel different from other workers because of the pattern of their work and life which has been equated with the regulated restricted and secluded world of the prison or asylum by some investigators' (p. 62 pa. 2); and 'at sea, the concept of sick-leave is invalid' (p. 62 pa. 6). The culture of self-reliance and the lack of opportunity to take sick-leave while at sea create a psychology of self-reliance and resistance to reaching out for help from others. This mindset may extend into retirement when ex-seafarers are in stages of life when medical attention is increasingly required.

RePAIR Analysis

Article 39 states: 'provision of facilities for mental, social, and physical stimulation on board in order to ameliorate the passivating effects of institutional living has been found to be effective' (p. 63 pa. 4).

The paper emphasizes 'adequate crew levels, well designed cycles of work and rest and perceived equity' (p. 63). These are contextual issues that are difficult to change. However, in addition they recommend 'the right paradigm for prevention and intervention is also needed. ... The medical model used for assessing seafarer fitness, based on diagnosed illness and an assumption of fitness in the absence of such a diagnosis, is not a sound basis for considering psychosocial load and its adverse effects. This points to a broad paradigm shift so that the psycho-social dimension of seafarer welfare is given importance in tandem with physical fitness and physical disease'.

Programmes to promote awareness about mental health are needed, as is understanding of the connection between work stress and mental health, anxiety and depression,.[7] There is evidence of programmes being instituted to respond to the psychological burden brought on by conditions of seafarer work life. For example, HELM courses (HELM stands for Human Element, Leadership and Management and was brought in as part of the Manila Amendments to the STCW Code, also known as STCW2010[8]).

Furthermore, both the Maritime Labour Convention (MLC) and Standards of Training, Certification and Watchkeeping (STCW) Convention allow for a minimum of ten hours of rest in any 24-hour period. Both of them also provide for those hours of rest to be divided into no more than two periods, one of which should be at least six hours. A project commissioned by the UK Maritime and Coastguard Agency (MCA) investigated the impact of six-hour rest and six-hour work (6/6) on factors related to seafarer fatigue, cognitive and physical performance, health, wellbeing and maritime safety. The study concluded that the 6/6 system is worse, in the studied cases, than the 8/8 watchkeeping regime in terms of quality and quantity of sleep obtained (WMA/SRI, 2016). The study has brought again the issue of watchkeeping and fatigue management to the IMO Agenda, and more specifically the update and revision of the guidelines on fatigue by its Subcommittee on Human Element, Training and Watchkeeping.

For ex-seafarers, to address issues of social dislocation and isolation, social cohesion programmes can be studied as a class of interventions designed to increase social capital, networking and friendship amongst groups with a common experience but dispersed across a geographical area. These interventions can include such components as pen pals, community forums, social events and mixers, 'big brother' and mentoring systems, internet chat forums, and new apps such as WhatsApp – all of which can increase the connectivity amongst ex-seafarers and seafarers who are missing their working lives while on shore.

---

[7] The industry has already begun to move on this. For example, the first in a series on Steps to Positive Mental Health, Seafarers Health Information Programme, 2017, show that such interventions are being developed.
[8] More information about STCW2010 can be found at:
http://www.warsashsuperyachtacademy.com/faqs/faqs/helm-training.aspx

Context: Seafarers have a unique experience of work and life that creates a sense of isolation on shore and after retirement. In addition, many seafarers do not marry or have children due to the nature of career work that precludes the formation of spousal partnerships and family planning. Thus some ex-seafarers may experience exacerbated bouts of isolation and corresponding mental health burdens due to being removed from the seafaring experience.
Mechanism: Social cohesion interventions offer friendship, peer support and mentoring opportunities (resources) leading to feelings of belonging, social connectedness and experiencing meaningful social engagement (response).
Outcome: Reduced isolation, learning how to ask for help when in need, increased support, improved mental health and quality of life.

6. Seafarer Healthcare and Telehealth Interventions

Seafarers face unique health challenges and barriers to accessing healthcare services, both at sea and on land. Infectious disease risk (article 28) is heightened due to worldwide sourcing of crews and vulnerability to the spread of infections from globalized contacts. According to article (30):

> … apart from accidents and work-related injuries acute cardiovascular disease (CVD) is the main cause of death – both at sea and on land (30, 251).

> Treatment options for CVD occurring at sea are impaired owing to the nature of the rescue team onboard, limitations of treatment onboard as well as the problems of evacuation ashore … the most important practical measures available to decrease CVD risks among seafarers are training cooks in low-fat diets, offering smoking cessation programs and treatment of elevated blood pressure …(251).

> The high smoking consumption of seafarers needs to be paid more attention through anti-smoking campaigns. Seafarers should learn how to prevent and manage stress, for instance by making use of relaxation techniques (251).

Telehealth interventions, whereby ships are equipped with remote internet access and connected to healthcare services such as Dreadnought (specialized healthcare for seafarers in the UK), could help to mitigate the impact of isolation from healthcare access while at sea.

Article (31) discusses the need for seafarer priority access to customized healthcare services. On page vi the authors make a number of recommendations for improving access including issues around location, provision of priority service and difficulties in setting up appointments. One issue flagged is the need for specialized appointment and waitlist services:

> there are some perceived difficulties with using local NHS services particularly in relation to losing places on waiting lists when work schedules interfere with attendance at appointments. In particular … some seafarers note that if they are on a waiting list for treatment with their local

NHS, they can find themselves moved back to the bottom of the waiting list if they are at sea and unable to make an appointment (v, 1).

RePAIR Analysis

Since at present maritime administrations keep databases about certification and training of seafarers, it would be useful for a new system to be put into place to monitor and follow aspects related to occupational diseases. At the moment, databases are rich in information related to accidents but limited with regard to seafarers' health aspects. The MLC contains some provisions on this area but their application is mostly voluntary. The mobile nature of the job presents some challenges. However, those challenges can be overcome with the progress achieved nowadays with information and communication technologies.

> **Context**: The nature of seafaring work means seafarers are away from shore for long periods during an annual cycle. NHS waitlist systems are not customized to accommodate for this work-life pattern and as such seafarers have disadvantaged access to healthcare in comparison to the general population.
> **Mechanism:** The introduction of sensitive and customized waitlist systems to allow seafarers to maintain their position in a waitlist queue despite being at sea (resource) will create increased awareness within the NHS of the need to tailor their services (response) and foster a feeling amongst seafarers that they are being heard and respected (response).
> **Outcome**: This customized access to healthcare for seafarers will improve the health service experience, enhance medical care and possibly lead to improved self-efficacy (i.e., seafarers feeling motivated to take better care of their health and better manage illnesses).

7. Injury and Social Prescribing Interventions

Social prescribing is non-medical referral options that GPs can offer their patients as a way of linking patients in primary care with sources of support within the community. It can operate alongside existing treatments to improve health and wellbeing. For seafarers who are land-based due to injury, interventions involving occupational therapy, craft or arts-based programming can bring them together through creating and developing craftsmanship (e.g., woodworking, glassblowing, art and other activities). Focusing on producing craft or art can help to build confidence and allow seafarers to socialize while developing skills in spite of injury.

Such interventions may provide physical and psychological relief from pre-existing conditions that force seafarers off the job and into isolating circumstances.

Context: Seafarers who have retired or are forced to remain on land due to injury may experience social dislocation, isolation, depression and anxiety.
Mechanism: Social prescribing offers programmes to seafarers based around occupational, craft or arts-based programming (resource) that helps to rebuild social networks, offers a purpose and rebuilds confidence in the absence of meaningful work (response).
Outcome: Possible expedited recovery from injury; improved outlook and optimism; improved social cohesion and networking amongst seafarers in similar situations.

8. Environment, Border Security and Labour Laws

A number of papers describe a complex array of environmental, border security and labour regulations that are increasing the complexity of the seafarer work experience. The number of environmental regulations has increased substantially over the last several decades. Advice and representation services can help to support seafarers in navigating this complex terrain. Article (29) describes some of this complexity and has a cautionary message for charities in their intervening for the welfare of seafarers during port visits:

> In some of the more difficult situations there may be a need to provide long term practical support – particularly when seafarers appear to have been abandoned. The level of help needed will often be down to individual seafarers' needs. There may, however, be a need to find practical support for the entire crew. For example if a ship is under arrest in a Scottish port and the Procurator Fiscal has not been instructed, by the creditor, to look after the ship and its crew, then it is likely to be necessary to set up a welfare fund to provide for their everyday basic needs. This humanitarian response will usually fall on those societies to organise. Voluntary society representatives need to exercise care to ensure nothing is done to inflame the situation. For example UKBA Immigration department may legitimately have refused to allow a crew member shore leave. Any person aiding and abetting him or her to come ashore may find themselves liable of an offence. Equally when asked for advice, they should always refer on any questions which are outside their expertise. In giving wrong advice they, or their organisation, could be liable (p. 16).

Article (34) discusses the increase in 'structural violence' against seafarers traced back to the 1970s oil crisis and the surplus in shipping, which forced owners to 'cut operational costs to the bone' (p. 10). This was done through:

> … shifting registries offshore to Flags of Convenience allow[ing] owners to slash crew costs by hiring in a free, unregulated, global labor market where many workers competed for fewer jobs. Convenient registration in countries such as Liberia, Panama, and, more recently Cyprus, Bermuda, and the Marshall Islands, and numerous others, bought owners considerable economic relief. But at considerable social costs (p. 11).

The article discusses how this has created new conditions for 'neo-slavery', in which 'seafarers live lives of continual alienation. They are constant strangers; strangers on multi-cultural and multi-ethnic vessels,

and strangers in the ports at which they call. And this generates considerable indifference and poor oversight' (p. 11).

Article (39) states that:

> … increasingly systems of management and audit introduced from on-shore have to be followed by officers, and any incidents or damage are seen as their personal responsibility irrespective of whether the imposed workload is a tolerable one. This may pose an identity crisis such that a person, whose pride is in their seamanship sees themselves as a floating clerk and scapegoat (p. 62 pa. 5).

Similarly, article (19) explores the extent to which shipping companies apply corporate social responsibility (CSR) and identify a number of gaps in international labour legislation, namely the MLC. Being aware of the various complexities of the sector, the authors support the need to establish a better link between both regulatory (MLC) and voluntary/self-regulatory (CSR) approaches, in order to raise the current standards of seafarers' welfare. Two main recommendations are made: the first is to amend the MLC and make mandatory some standards of shipboard accommodation; secondly, multinationals are to initiate a more formalised approach to improving the welfare of seafarers as this is at the moment the less visible or less developed aspect applied by them within the context of CSR exercise. In the authors' view, CSR should not replace but go beyond labour regulations.

Article (25) also considers that the rigorous interpretation and implementation of security measures following 9/11 have contributed to the 'objectification' of seafarers, allowing Port States to deny seafarers the basic and customary human right to shore leave during the vessel's stay in ports and marine terminals.

The author suggests that the adoption of the International Ship and Port Facility Security (ISPS) Code has had a significant negative impact on the welfare of seafarers. Many seafarers have experienced delays in joining and leaving their vessels in ports. The denial of shore leave to seafarers has been an unfortunate trend after 9/11 and has contributed to increased feelings of isolation among seafarers. For some seafarers, it may be a matter of life or death due to the long periods of time seafarers have to spend at sea before calling at ports. Seafarers who come from developing countries are the most affected, particularly because not many countries are able to issue biometric chip passports or have ratified Convention 185, which was adopted by the International Labour Organization (ILO) to speed up the process and procedures for the issuance of seafarers' identity documents (SID).

Article (20) provides a historical review of several legal cases with the aim of understanding the shipmaster's exposure to criminal liability and recommending an alternative approach which requires a compromise solution between the players involved but mainly the master, Flag State and Port State.

The author argues that, while on one hand the master's authority on board a ship, also referred to as 'Master Under God', has remained unchanged over several decades, on the other hand, duties and responsibilities have extensively increased without necessarily improving his right to fair treatment.

Masters and seafarers, on vessels which have been involved in marine pollution accidents, are often the primary target for criminal accountability. The adoption of the International Safety Management (ISM) Code by IMO has contributed by placing part of the responsibility on the ship managers on shore. However, there have been many cases where the ship owners have been able to distance themselves from the master and legal prosecution when wrongful decisions have been made. This has been the case during the Exxon Valdez accident (1989) when the master was fined 50,000 USD and sentenced to 1,000 hours of community service, while nobody from Exxon faced criminal charges.

Another aspect widely discussed in article (20) is compulsory pilotage as imposed by Port States. Despite the pilot having control of the navigation of the vessel along compulsory pilotage areas, both the master and ship owner have the duty to operate with care and can be liable for any loss or damage caused by the navigation of the vessel. Finally, other issues not very extensively discussed in this study are related to piracy and drug smuggling where masters might be at risk of remaining in custody in some foreign jurisdictions in cases where they are unable to prove that they have acted in self-defence or are unaware of illicit acts.

Article (21) states that key legislation – drafted and adopted by ILO – to ensure the protection of seafarers' human rights hardly comes into force as several countries do not have much interest in ratifying it. This state of affairs is mainly attributed to the stronger lobby from the shipping industry on governments. Regrettably, ILO as well as IMO lack enforcement powers or do not have in place effective means to verify the uniform implementation of key legislation by ratifying countries. States – including Flag of Convenience registries – which have ratified the legislation have too much freedom to interpret and enact it. There have been many cases of violation of seafarers' human rights reported in the media. The most significant ones refer to: (i) criminalization of seafarers in the aftermath of marine pollution incidents; (ii) abandonment of seafarers in the event of ship owners' insolvency; and (iii) refusal of shore leave rights. All this contributes to create a bad image of the industry which as a result leads to the current decline in the number of merchant seafarers.

Article (22) reviews whether the implementation of environmental regulations affects the occupational health and wellbeing of seafarers on board ships. The conclusion is that environmental compliance has a negative effect on the health of seafarers and the authors identified five factors that mainly contribute to that. These are: (i) task design; (ii) management style; (iii) interpersonal relationships; (iv) career concerns; and (v) physical conditions.

While in the past, a reactive approach was adopted to draft international and national regulations to protect the environment, this meant the application of the 'polluter pays' principle. Today, the situation has substantially changed as the precautionary principle, together with the adoption of risk management strategies and the use of scenario planning, is being strongly promoted. All that has had an impact not only on seafarers' education and training programmes but also on the tasks and type of equipment they are required to perform and handle respectively on board.

In article (23) the author found that seafarers can experience confusion, anxiety and uncertainty about what, on one hand, the company promulgates through websites, posters and slogans, and, on the other

hand, what it actually encourages crews to accomplish concerning the protection of the marine environment. In addition, since many environmental regulations are adopted without the availability in the market of the most efficient marine technologies, some ship owners have to acquire technology which has not been sufficiently tested and therefore is not yet 100% effective in dealing with issues such as ballast water management and reduction of GHG emissions. All this can, in many instances, increase the time seafarers need to devote to their duties.

A related challenge has been the lack of port reception facilities in certain ports. On the contrary, while some ports can provide these facilities, the fees that have to be paid are high. Some seafarers declared that there have been cases when they have been ordered to dump garbage or oil mixtures that are prohibited by Coastal States or international law. This puts pressure on seafarers who face the dilemma of obeying and keeping their jobs, with the added risk of being caught and incarcerated. Document forging to hide these illegal practices has been reported by some seafarers who said this leaves a feeling of stigma on them.

Repair Analysis

New approaches and solutions are suggested in source (20). They include the following:

- Rely on international obligations between states, through the adoption of a Memorandum of Understanding for Port and Flag States and the promotion of the International Tribunal for the Law of the Sea (ITLOS).
- Alternative dispute resolution (ADR) or mediation – this has been extensively applied with success in the US and UK for civil cases.
- A new international court such as the International Criminal Court which has already been tried and tested within the scope of crimes against humanity, aggression and war crimes.
- A new Clear Statement Rule as part of UNCLOS but with a Model Code for Sentencing.

The author of article (21) also proposes a number of interventions, including the following:

- To elevate some guidelines and recommendations which have been adopted by ILO or IMO to the same status as the Conventions.
- To amend the MLC so that it can incorporate the IMO Guidelines on Fair Treatment of Seafarers in the event of maritime accident. This means adding a provision of financial security in case of abandonment of seafarers, so that ship owners can cover their contractual obligations in case of bankruptcy. The latter can take the form of a bank guarantee, social security, insurance or national fund.
- To create an international body or tribunal that deals with cases involving the violation of seafarers' rights.
- To favour, in Asia, the establishment of a bloc with similar characteristics to those of the European Union, so that Asian countries which are the main suppliers of maritime labour can cooperate and have a unified voice in matters related to the human rights of seafarers.
- To lobby or campaign among countries which have not yet ratified ILO Convention 185 (Seafarers' Identity Documents) to persuade them to do so.

The adoption of the MLC in 2006, and its entry into force in 2013, prompted a new era for promoting seafarers' rights in various important matters including decent working and living conditions, health protection, medical care, welfare services and social protection.

The MLC contains some provisions on this area but their application is mostly voluntary. This is why ILO is committed to improving the terms of the Convention. The 2014 amendments, for example, introduced new provisions into the Convention. These provisions related to the financial security of crews in case of abandonment, as well as contractual claims for compensation in the event of a seafarer's death or long-term disability due to an operational injury, illness or hazard. These amendments, which entered into force in January 2017, require ship operators to provide a certificate or other documentary evidence of financial security (ILO, 2014).

On the other hand, the implementation of the MLC has allowed Port States to detain vessels which do not comply with its mandatory requirements. It is not a surprise that the number of MLC-related deficiencies reported by Port State Control (PSC) inspections has notoriously increased since the entry into force of the Convention. Although this is the result of the increase in the number of countries which have ratified the Convention, it also brings more evidence of the restricted working and living conditions for seafarers. As an example, the 2015 Annual Report published by the Paris Memorandum of Understanding (Paris MOU, 2015) shows that the top five MLC deficiencies are attributed to:

- o health, safety and accident prevention (41%)
- o food and catering (16%)
- o hours of work or rest (11%)
- o accommodation (9%)
- o employment agreements (6%).

However, this remains a very complex issue in which seafarers working on Flag of Convenience ships are not protected by their home countries. This is accompanied by advancements in systems of management and audit measures which may end up increasing seafarer burden and mistreatment. This is because, when things go wrong, the blame may be passed down the line to the crew which has the least amount of power or protection. There is also the issue of sparse regulatory enforcement. It is not evident from the papers (or from current understanding) how charitable innovations can redress this – in which case providing supports around an entrenched problem is needed, offering legal advice and psychosocial support interventions to victimized seafarers.

4.0 Discussion and Suggestions for Future Research

The evidence from this review suggests that seafaring remains a desirable and rewarding career for many seafarers in the UK and internationally. However, recent decades have been met with changes in the social, environmental, political and legislative contexts for seafaring that need to be examined in order for charitable organizations to be able to respond to support seafarer welfare. This review examined these changes for merchant seafarers across 47 academic articles and industry papers. These articles contained descriptions of problems and challenges facing seafarers which were analysed in this report. Some of those challenges are inevitably linked to the nature of the work (e.g., noise, motion and vibration) and have persisted over decades, if not centuries. Other challenges are more recent. Regardless of how recent or rooted the problems are, there appears to be new research and attention paid to the psychosocial aspects of seafaring in terms of understanding how the physical, political and social environments affect stress levels and psychological resilience, and how in turn these affect recruitment, retention and performance, as well as mental and physical health.

From the literature, key aspects of seafaring culture have been noted: seafarers are independent and uphold self-reliance as a virtue; they often do not reach out for help when they need it or actively seek out specialized services for their health and welfare; seafarers experience isolation while on shore, due to the unique experience of seafaring that defines who they are, and the sacrifices made to a home-based lifestyle (e.g., commonly a lack of family, marriage and children). Once retired, the contrast between the seafaring work-life and a land-based life means they may suffer from a lack of purpose in daily life and social isolation from other seafarers with whom they share a distinct common experience. International security changes, along with the globalization of the industry, have introduced new complexities to the seafaring experience whereby multinational vessels often have a multinational crew with linguistic and cultural differences, leading to complex social patterns, power relations and communication issues. What this suggests is that the unique features of the work and lives of seafarers, in addition to the changes within the field in the past ten years, require a clear understanding of the psychosocial impact on seafarers and the kinds of interventions that can improve psychological resiliency. This improvement can have effects across all aspects of the seafaring experience, from stress on vessels to land-based adaptations. As article (37) suggests: 'the influence of psychosocial factors is very significant and often understated. All of those indicators have an enormous impact on the seafarers' quality of work at sea and on their life satisfaction' (p. 169, 1).

This review used a new methodology called RePAIR (Realist Programme Architecture Inventory Review). The purpose of using this approach was to begin a course of analysis that first investigates deficits, problems and challenges in the seafaring context and then pushes the reviewers to imagine the kinds of programmes that can work to solve problems or provide supports around entrenched or insolvable problems. The underlying assumption with RePAIR is that solutions to complex problems may not always be easily located in existing evidence. This was the case for the documents retained in this review in which problems within the seafaring context were described at length but few solutions offered. In addition, there are efforts across many sectors now seeking to develop and test interventions to mitigate the impact of complex problems. What reviews typically miss is a cross-disciplinary, inter-sectoral research approach that examines diverse intervention activities across many sectors to arrive at new and innovative

solutions. For this area, intervention ideas may be borrowed from other sectors that have similarities to the seafaring context (e.g., military, police, health care) and then tailored to the seafaring context. Figure 2 provided a summary of these ideas. While importing a host of interventions was beyond the remit of this current commissioning, this report leaves open the possibility of picking up this work in the future. Resiliency training programmes, for example, could be studied in terms of how they have been developed and researched in other fields, as the basic architecture of such programmes, using techniques like positive psychology, cognitive behavioural therapy and other mind-strengthening exercises, may serve well in the seafaring context. In future reviews of this sort, working with an academic librarian may be beneficial to optimize literature capture through cross-disciplinary database searches.

4.1 Directions for Future Research

A few areas for future research are recommended. The specific context for fishermen, as well as other seafaring groups such as the Royal Navy and Marines, should be investigated to determine how interventions for seafarer welfare should be tailored to these groups. The next phase of the RePAIR approach would be to search the literature from the recommended areas defined in Figure 2 and examine what kinds of interventions have been developed and tested across sectors. This would include examples of sensitivity training interventions, resiliency and family strengthening, advice and support interventions along with the others described in Figure 2.

Key sectors that share commonalities with the seafarers' context should be searched first. For example, seafarers share a common experience with military personnel in that long-term deployment in areas away from home may create similar kinds of family disruption and social dislocation. Therefore interventions developed and tested for re-integrating ex-military back into home life may readily translate to the seafaring context. Similarly, resiliency training for police and hospital emergency room staff, whereby operations are conducted under high levels of stress, may lend itself to being developed into similar kinds of programmes for seafarers who enter into dangerous waters. Directing future research along these lines is about seeking out evidence of effectiveness of interventions while also keeping open a creative thinking space about how to best develop charitable innovations to support seafarer welfare. Ultimately the RePAIR protocol should be used with the idea that problems in seafaring create deficits in the context, to which the protocol offers reparative solutions.

Finally, an important area that is missing from the literature retained in this review has to do with the impact of climate change on seafarer welfare. In addition to multiple environmental and regulatory pressures, seafarers are one of the groups most vulnerable to climate change, such as increased unpredictability of weather patterns and changes in coastal regions affecting navigation and port developments. Studying the impact of climate change in tandem with advancements in vessel-based technology would be a worthy pursuit to understand how this will affect seafarer welfare and the response from the charitable sector.

Reference List

Older and Ex-Seafarer Needs

(1) Frisk, M.J., 2012. *Better Health for Ex-Seafarers Project.* Insight Social Research Ltd. October 2012.

(2) Pettit, S.J., B.M. Gardner, P.B. Marlow, M.M. Naim and R. Nair, 2005. Ex-seafarers shore based employment: the current UK situation. *Marine Policy*, 29, 521–531.

Industry Projections, Workforce and Employment

(3) Mitroussi, K., 2008. Employment of seafarers in the UK context: challenges and opportunities. *Marine Policy*, 32, 1043–1049.

(4) Department for Transport, 2015. *The Maritime Growth Study: Keeping the UK Competitive in a Global Market.* Department of Transport, September 2015.

(5) Ng, A.K.Y., A.C. Koo and W.C. Jarrod Ho, 2009. The motivations and added values of embarking on postgraduate professional education: evidences from the maritime industry. *Transport Policy,* 16, 251–258.

(6) Marine Society, Maritime London, Merchant Navy Training Board, Nautilus and Trinity House, 2016. *Project Ulysses – Ship to Shore – A Synopsis*.

(7) Future Nautics, 2017. *Digital Infrastructure, Investment, Initiatives and Transformation in the Shipping and Maritime Industry.* Way Point Digital, Research White Paper.

(8) Caesar, L.D., S. Cahoon and J. Fei, 2015. Exploring the range of retention issues for seafarers in global shipping: opportunities for further research. *WMU Journal, Maritime Affairs*, 14, 141–157.

(9) Department for Transport, 2017a. *UK Seafarer Projections: 2016–2026.* Department for Transport, 25 January 2017.

(10) Department for Transport, 2017b. *Seafarer Statistics, 2016.* Statistical release. Department for Transport, 25 January 2017.

(11) Sellberg, C., 2016. Simulators in bridge operations training and assessment: a systematic review and qualitative synthesis. *WMU Journal, Maritime Affairs*, 16, 114–118.

(12) Sampson, H., 2015. *Maritime Futures: Jobs and Training for UK Ratings.* Seafarers International Research Centre (SIRC), January 2015.

(13) Deloitte and Oxford Economics, 2011. *An Independent Review of the Economic Requirement for Trained Seafarers in the UK.* December 2011.

(14) Oxford Economics, 2016. *UK Seafarer Projections.* November 2016.

(15) Institute of Public Care (IPC), 2015. *UK Seafarers' Demographic Profile.* Oxford Brookes University, February 2015.

(16) Hogg, T. and S. Ghosh, 2016. Autonomous merchant vessels: examination of factors that impact the effective implementation of unmanned ships. *Australian Journal of Maritime and Ocean Affairs*, (8) 3, 206–222.

(c) Seafarer Injury and Death

(17) Marine Accident and Investigation Branch (MAIB), 2008. *MAIB Safety Bulletin 2/2008: Fatalities in Enclosed Spaces.* MAIB.

(18) Roberts, S.E., D. Nielsen, A. Kotlowski and B. Jaremin, 2014. Fatal accidents and injuries among merchant seafarers worldwide. *Occupational Medicine*, 64, 259–266.

(d) Macro-context, Market Forces and International Law

(19) Sampson, H. and N. Ellis, 2015. Elusive corporate social responsibility (CSR) in global shipping. *Journal of Global Responsibility*, (6) 1, 80–98.

(20) Daniels, S., 2012. *The Criminalisation of the Ship's Master: A New Approach for the New Millennium.* PhD thesis, Southampton Solent University.

(21) Hubilla, M.R.S.B., 2009. *An Analytical Review of the Treatment of Seafarers under the Current Milieu of the International Law Relating to Maritime Labour and Human Rights.* World Maritime University Dissertations.

(22) Akamangwa, N., 2015. Working for the environment and against safety: how compliance affects health and safety on board ships. *Safety Science*, 87, 131–143.

(23) Abou-Elkawam, M., 2015. *Seafarers and Growing Environmental Concerns: Risk, Trust, Regulation and Workplace Culture and Practice.* Social Issues Research Centre (SIRC), PhD dissertation.

(24) Green, J., 2016. Welfare of seafarers is important to security. *Financial Times*, Letters to the Editor. London. 12 February 2016, p. 8.

(25) Graham, C., 2009. Maritime security and seafarer's welfare: towards harmonisation. *WMU Journal of Maritime Affairs*, (8) 1, 71–87.

(26) Goss, R., 2008. Social responsibility in shipping. *Marine Policy*, 32, 142–146.

(e) Seafarer Safety, Health and Risk

(27) Merchant Navy Welfare Board (MNWB), 2014. *Arrested and Detained Vessels and Abandoned Seafarers: A Guide to Who Does What.* MNWB, 1 July 2014.

(28) Carter, T., 2013. Seafarers and infectious disease: directions for future research. *Travel Medicine and Infectious Disease*, 11, 259–260.

(29) ITF Seafarers' Trust, 2016. *The ITF Seafarers' Trust Port-based Welfare Services 2016 Survey.* Prepared by Alex Mellbye and Henry Norman.

(30) Oldenburg, M., X. Baur and C. Schliach, 2010. Occupational risks and challenges of seafaring. *Journal of Occupational Health*, 52, 249–256.

(31) MacCalman L., A. Shafrir, H. Cowie, J. Crawford and P. Ritchie, 2011. *Seafarers' Health Care: Health Care Needs and Access to Health Care among Merchant Seafarers and Fishermen of Working Age Based in the UK.* Institute of Occupational Medicine, 2011.

(32) Thomas, M., M. Bloor and K. Little, 2013. Sexual risk amongst female workers on cruise ships. *WMU Journal, Maritime Affairs*, 12, 87–97.

(33) Liwang, H., K. Sorenson and C. Osterman, 2015. Ship security challenges in high risk areas: manageable or insurmountable? *WMU Journal, Maritime Affairs*, 14, 201–217.

(34) Matyok, T.G., n.d. *Constructing Counter Narrative: A Key to Challenging Neo Slavery in the De-Nationalized World of Globalization – the Shipping Industry and the Case of the M/V Agios Minas.* PhD Dissertation, University of North Carolina at Greensboro.

(35) Maritime Charity Funding Group, 2007. *Supporting Seafarers and their Families: Challenges for the Future.* The report of the Maritime Charity Funding Group research programme on the needs of the UK seafaring community, May 2007.

(36) George, R., V.A. Mouchtouri, C. Schlaich, T. Riemer, C.V. Martinez, G. Nichols, C.L.R. Bartlett, J. Kremastinou and C. Hadjichristodoulou, the SHIPSAN partnership, 2010. Occupational health legislation and practices related to seafarers on passenger ships focused on communicable diseases: results from a European cross-sectional study (EU SHIPSAN PROJECT). *Journal of Occupational Medicine and Toxicology*, (5) 1.

(f) Stress, Fatigue and Mental Health

(37) BeşİkÇİ, B.L., L. Tavac, and O. Arslan, 2016. The subjective measurement of seafarers' fatigue levels and mental symptoms. *Maritime Policy & Management*, (43) 3, 329–343.

(38) Jezewska, R.T.B., M. Iversen and I. Leszczynska, 2013. *Report of the MENHOB Working Group Workshop on Mental Health on Board*. MENHOB — Mental Health on Board 12th International Symposium on Maritime Health, Brest, France, 6 June 2013.

(39) Carter, T., 2005. Working at sea and psychosocial health problems: report of an International Maritime Health Association workshop. *Travel Medicine and Infectious Disease*, 3, 61–65.

(40) McNamara, R., A. Collins and V. Matthews, 2008. *A Review of Research into Fatigue in Offshore Shipping.* Centre for Occupational and Health Psychology at Cardiff University.

(41) Jepsen, J., Z. Zhao and W.M.A. Van Leeuwen, 2015. Seafarer fatigue: a review of risk factors, consequences for seafarers' health and safety and options for mitigation. *International Maritime Health*, (66) 2, 106–117.

(42) Carotenuto, A., A. M. Fasanaro, I. Molino, F. Sibilio, A. Saturnino, E. Traini and F. Amenta, 2013. The Psychological General Well-Being Index (PGWBI) for assessing stress of seafarers on board merchant ships. *International Maritime Health*, (64) 4, 215–220.

(43) Smith, P., 2015. *Influencing International Legislation, Policy and Management Strategy to Improve Maritime Safety by Reducing Seafarers' Fatigue.* Cardiff University.

(44) Hystad, S.W. and J. Eid, 2016. Sleep and fatigue among seafarers: the role of environmental stressors, duration at sea and psychological capital. *Safety and Health at Work*, 7, 363–371.

(45) Jezewska, M., I. Leszczynska and B. Jaremin, 2006. Work-related stress at sea self-estimation by maritime students and officers. *International Maritime Health*, 57, 1–4.

(46) Kingdom, S.E. and A.P. Smith, 2011. Work-related stress in Her Majesty's Coastguard. *International Maritime Health*, (62) 2, 148–154.

(g) Support and Advice Needs

(47) McKay, S. and T. Wright, 2007. *Seafarers in a Global World: The Changing Needs of Seafarers for Advice, Support and Representation.* Working Lives Research Institute, London Metropolitan University.

(h) Other Supporting Literature

BMP4, 2011. *Suggested Planning and Operational Practices for Ship Operators and Masters of Ships Transiting the High Risk Area*. Report.

Crew Connectivity, 2015. *Crew Connectivity 2015 Survey Report.* Online. Available from: www.futurenautics.com/crewconn15 [accessed 28/07/17].

Garfinkle, M.S., C.L. Katz and J. Saratchandra, 2012. *The Psychological Impact of Piracy on Seafarers.* Department of Psychiatry, University of Arizona.

ICC International Maritime Bureau, 2015. *Report on Piracy and Armed Robbery against Ships*. 30 September 2015.

ILO, 2014. *Amendments of 2014 to the Maritime Labour Convention, 2006, Approved by the Conference at its One Hundred and Third Session.* Geneva, 11 June 2014.

IMO, 2015. Internet on ships a key to recruiting and retaining seafarers, IMO symposium told. IMO Briefing: 40, 25/09/2015.

ITF Seafarers' Trust, 2017. *Social Isolation, Depression and Suicide among Seafarers.* ITF Seafarers' Trust Report, June 2017.

Nautilus International, 2017. *An Investigation into Connectivity at Sea: Wherever You Are, So Are We.* Online. Available from: nautilusint.org/media/1674641/Connectivity_at_sea_Nautilus_white paper.pdf [accessed 10/07/17].

Paris MOU, 2015. Online. Available from: https://www.parismou.org/sites/default/files/Annual%20 Report%202015%20published.pdf [accessed 01/07/2017].

Pike, K., *et al.*, 2016. *The Gender Empowerment and Multi-Cultural Crew (GEM) Project Summary*. A report for the ITF Seafarers' Trust.

Sampson, H., N. Ellis, I. Acejo and N. Turgo, 2017. *Changes in Seafarers' Health 2011–16: A Summary Report.* Seafarers International Research Centre (SIRC), Cardiff University.

Swift, P., nd. *The Maritime Piracy Humanitarian Response Programme.* Steering Group Chairman of MHPR, London, GB.

Thomas, M., H. Sampson and M. Zhao, 2010. Finding a balance: companies, seafarers and family life. *Maritime Policy and Management*, (30) 1, 59–76.

Wingrove, M., 2017. IMO reviews fatigue guidelines following key study. *Marine Electronics and Communications*. 6 February 2017.

WMA/SRI, 2016. *A Final Report to the UK Maritime and Coastguard Agency: Investigation of the 8-Hours On/8-Hours Off Seafarer Watch Keeping System*. WMA/SRI.

Appendix 1: The Nature of Realist Evaluation

The Problem

In medicine, trial drugs are evaluated by contrasting those taking the drug with those who do not. In this way, it is possible to distinguish between those drugs that have a beneficial effect and those that do not in a scientific, controlled way. It is not necessary to understand and explain why and how the drug works; it is sufficient that the evaluation method demonstrates that it does. What works is answer enough.

Social projects – such as those aimed at improving seafarer welfare – are seldom so straightforward and so different evaluation strategies are necessary. The first important realist evaluation looked at the effect of closed circuit television (CCTV) on crime in car parks. When introduced, CCTV sometimes has a profound effect in reducing crimes, sometimes it has no effect and sometimes it has a perverse effect. What is more, introducing CCTV in one car park can cause increases in crime in car parks without CCTV as criminals switch location – making it impractical to set up the control group. The approach used in a drug trial seldom gives simple 'works or does not work' answers when applied to social projects.

The Realist Solution

Realist evaluators try to overcome the problems by developing *explanations* about how projects change the lives of participants. These explanations generally have a standard format:

Context includes all the variables that might impact, such as the number of CCTV and non-CCTV car parks in an area, the times of day the car park is used, the kinds of cars parked there and so on. These and many other contexts you might think of will influence the effectiveness of CCTV in reducing car park crime.

Mechanism describes the reasoning and emotions of participants, and how this might lead to changes in behaviour. For example, CCTV in car parks may cause anxiety about identification and arrest for vandals who will desist from committing such acts in car parks. On the other hand, CCTV may increase car owner confidence about leaving valuable cars in the car park for longer periods – thereby increasing the incentive for professional car thieves to operate there.

Outcome is the result of context and mechanism. Introducing CCTV in a car park changes context, and therefore causes different mechanisms to fire for car owner and criminal alike. Depending upon these mechanisms, car park crime could rise, fall, change its nature and so on.

Programme theory is the explanation of contexts, mechanisms and outcomes together. It may take the form of a statement: vandalism in car parks will reduce (outcome) when all car parks in an area have adequate CCTV and law enforcement processes (context) as vandals will be deterred by fear of prosecution (mechanism). However, it may not have this outcome under different contexts and mechanisms, as these need their own programme theory.

The point is to move beyond questions of what works (yes or no) to answer questions of what works, for whom and why.