# ESTABLISHING THE MOST SUITABLE PROCESSES IN THE RECRUITMENT AND RETENTION OF DECK CADETS INTO THE UK MERCHANT NAVY

By

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This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for examination which has led to the award of a degree.



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## Abstract

There has been under recruitment of deck cadets into the UK Merchant Navy for many years, and even with increased funding and support to increase the numbers being recruited, there are still not enough cadets progressing to Officer of the Watch each year, to support the needs of the industry in the future. The factors to consider in this are the numbers being recruited and the retention rates of those on the training programmes.

This research looks at both issues and evaluates the contributing factors, including the different levels of control in place through national and international input on standards, against the requirements of those employing cadets through training to officer of the watch. The research then assesses the training programmes in place and considers retention at different stages of these programmes, particularly after the initial sea phase which is the most likely point for leaving the training programme.

The research then combines these elements and considers if alternative selection techniques can be used that can improve retention rates. The research discovers those traits that predominate in the profile of UK personnel who continue in a career at sea, then provides the test to be used to identify similar traits at recruitment stage, to ensure that those being offered cadetships have a higher likelihood of continuing in the profession.

The research also assesses the possibility of using this method to identify those recruited that may need better support during training to reduce attrition. Current policies are also discussed to establish the most suitable way forward in the structure of deck cadet programmes, and in the selection processes.

It was found that personnel who stay at sea in the role of deck officer generally demonstrated higher than median scores in conscientiousness and lower than median scores in extraversion, though the female participants demonstrated higher than median scores in extraversion.

The test was then refined against those currently in use in this area, and tested against a group of first phase cadets to see if it could be used as a diagnostic for those needing support to better prepare them for their first sea phase.

It was concluded that a personality test focussed on conscientiousness and

extraversion, can aid in decision making at recruitment stage of deck cadets, can be an aid to identification of the sector of employment most suited to an individual recruit, or as a diagnostic to identify where more preparation is needed to ensure that expectations are managed against the realities of the first sea phase.

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## List of Abbreviations

| | |
|---|---|
| BIMCO | Baltic and International Maritime Council |
| BMA | Britannia Maritime Aid |
| CoC | Certificate of Competence |
| CTC | Company Training Commitment |
| Dft | Department for Transport |
| FFM | Five-Factor Model |
| IAMI | International Association of Maritime Institutions |
| ICS | International Chamber of Shipping |
| ILO | International Labour Organisation |
| IMO | International Maritime Organisation |
| ITF | International Transport Workers' Federation |
| MBTI | Myers-Briggs Type Indicator |
| MCA | Maritime and Coastguard Agency |
| MEF | Maritime Educational Foundation |
| MET | Maritime Education and Training |
| MLC | Maritime Labour Convention |
| MMPI | Minnesota Multiphasic Personality Inventory |
| MNTB | Merchant Navy Training Board |
| MTT | Maritime Training Trust |
| NEO-FFI | NEO Five-Factor Indicator |
| NEO-PI-R | NEO Personality Inventory Revised |
| NI | Nautical Institute |
| PILOT | Payment In Lieu Of Training |
| RYA | Royal Yachting Association |

| | |
|---|---|
| SIMP | Single-Item Measures of Personality |
| SIRC | Seafarers International Research Centre |
| SMarT | Support for Maritime Training |
| STCW | Standards of Training, Certification and Watchkeeping |
| TRB | Training Record Book |

# 1.0 Introduction

## 1.1 Background

Within the UK system, ships' officers have traditionally been trained through programmes that have phases in College/University and phases at sea. These cadetships require students to complete many additional activities and assessments compared to students progressing on similar level programmes ashore.

Cadets are recruited by shipping/training companies using interviewing, with selection for interview being dependant on academic qualification and any other personal indicators of applicants being able to cope with all of the additional elements that will require the cadet to spend long periods in a harsh training environment at sea.

A continuing discussion point across the industry in recent years has been the recruitment of sufficient numbers of cadets to meet the requirements of the sector and ensuring that those recruited are suited to the tasks required.

A research report on seafarer supply in the UK stated that:

*'Our model suggests that the UK shipping industry's requirement for deck and engine officers could be greater than the available supply throughout the forecast period …The gap between demand and supply (or 'excess demand') peaks at 4,400 officers in 2023, before easing back to 3,800 by the end of the forecast period.' (Forecast period for the report was through to 2026)*

(Oxford Economics 2016).

This broadly agreed with an earlier International report that stated:

*'the results indicate that the industry will most probably face a continuing tight labour market, with recurrent shortages for some officers, ……It is important to stress that the industry requires well qualified and high calibre seafarers capable of adapting to change and handling the wide range of tasks now required of them. Any training programme provided must ensure quality is not compromised in the quest for increasing quantity.'* (BIMCO/ISF 2010)

The estimated supply and demand figures for seafarers globally is given in figure 1.1.

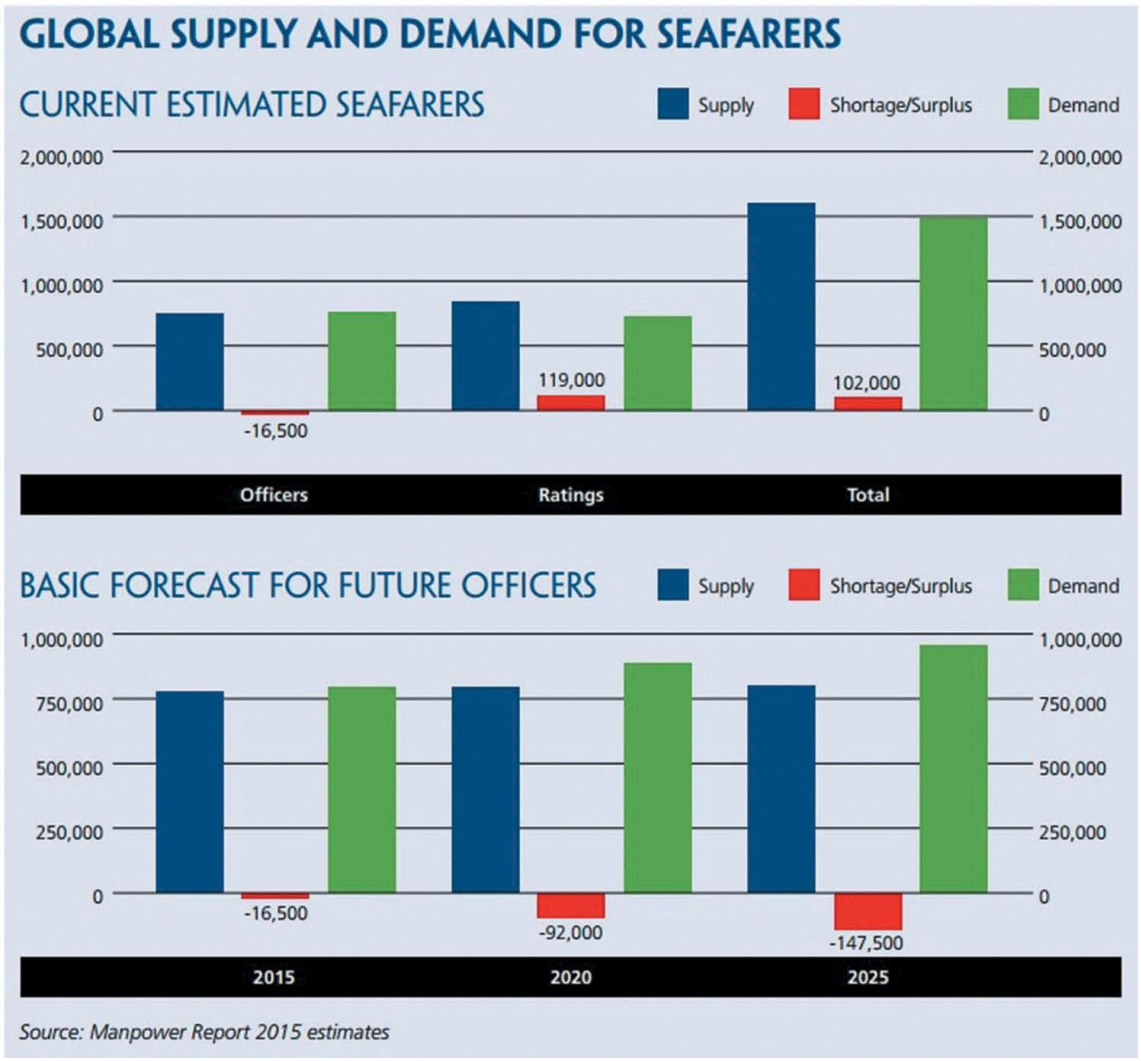



**Figure 1.1 Seafarer supply and demand**

BIMCO/ICS (2015) cited in Caesar et al (2021)

There is a clear indication that there will not be sufficient qualified seafarers to crew vessels, and that recruitment and retention must increase to meet this demand. One aspect of this is increased recruitment of cadets onto training programmes.

Figures from the Department for Transport (DfT) indicate that recruitment into the UK Merchant Navy has continued to increase, supported by Government funding, but the figures for 2016 indicated a slight downward trend and comments from shipping/training companies indicate that they cannot find suitable candidates to fill the places available.

In an Independent Review for the Department for Transport completed by Deloitte and Oxford Economics (2011) the findings were that:

'*Based on certain assumptions, a gap is forecast to develop between demand for, and supply of, trained UK seafarers, peaking in the 2016-2019 period. By 2021 this*

*gap will have reduced slightly to c. 3,500 in the case of deck and engine officers at sea and over 1,600 in the case of ex-seafarers (mainly ex-officers) in the maritime cluster. Those shortfalls are equivalent to 10 per cent and 9 per cent, respectively, of total projected demand in those sectors*.'

In developing policies to deal with this shortfall, the UK Government has looked at several potential solutions to increase recruitment and retention of cadets. In outlining potential policy development against the recommendations of the 2011 Independent Review, the DfT provided one suggestion that:

'*The panel also considered that, for coherence with other Government initiatives, part of this funding might be delivered by way of 'outcome' payments where a proportion of the funding is retained by the Department until such time as there is documented approval of the completion of the course of training. For deck and engineer officers this might be post their professional qualification as authorised, by the MCA*.' (Dft 2011)

This clearly indicates the consideration being given to attrition and the need to consider options for ensuring retention figures are improved.

The Department for Transport figures for December 2019 show:

**Table 1.1 UK officer cadets under SMarT1 scheme, 1999 to 2019**

| Officer cadets | 1998/99 | 1999/00 | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 |
|---|---|---|---|---|---|---|---|
| Total officer cadets in training | 780 | 980 | 1,020 | 1,010 | 1,000 | 1,030 | 1,050 |
| of which SMarT1 new entrants | 490 | 510 | 470 | 450 | 560 | 660 | 560 |

| Officer cadets | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 |
|---|---|---|---|---|---|---|---|
| Total officer cadets in training | 1,110 | 1,430 | 1,700 | 1,800 | 1,830 | 1,840 | 1,900 |
| of which SMarT1 new entrants | 570 | 690 | 850 | 930 | 750 | 850 | 900 |

| Officer cadets | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 |
|---|---|---|---|---|---|---|---|
| Total officer cadets in training | 1,990 | 1,940 | 1,920 | 1,860 | 1,830 | 1,760 | 1,670 |
| of which SMarT1 new entrants | 780 | 790 | 820 | 750 | 740 | 750 | 800 |

Department for Transport (2020)

Following the many reports produced across the 2010/2011 period, the numbers of cadets in training reached a peak in 2012/13 but has been on a steady decline since, even though the number of entrants has been reasonably steady throughout these years. There is a clear need to address retention on these programmes, and

research is needed to identify the reasons for the high levels of attrition to better support policy changes in this sector.

Financial support for training is available through a scheme called Support for Maritime Training (SMarT). This is provided by the government to ensure a continuing supply of UK seafarers. In 2018, the government recognised the need to attract more trainees and announced:

*'the Government's financial support for maritime training would be doubling from £15 million to £30 million through the new SMarT Plus initiative. SMarT Plus will see SMarT funding doubled, over a 7-year period. The aim of the new scheme is to increase the annual intake of cadets from 750 to 1,200 to meet the nation's economic and strategic requirements. It also aims to further support companies with the cost of training these cadets to meet the requirements of gaining their second Certificate of Competency*'. (MIN 567, 2018)

All indications in research reports and from industry figures are that there are not enough deck cadets being recruited and that retention levels are insufficient to support the future needs of the industry. There is a need to recruit additional numbers, but the difficulties found in attracting these numbers into the industry and in then retaining them through the training period and into a career at sea has not been addressed. There is a need for research in this area to identify changes that can be made in recruitment practices and in training programmes to provide qualified deck officers meeting the needs of the maritime sector. There needs to be research into ensuring that those that are recruited, are suited to a career at sea.

### 1.2 Aim

To develop a testing method to allow the evaluation of personality characteristics most suitable in those being recruited as deck officers into the UK Merchant Navy to promote retention in a continued career at sea.

The following objectives will allow the aim to be achieved:

- To examine the current selection criteria including educational profile, personal characteristics and social factors that lead to recruitment into a career as a deck officer in the UK Merchant Navy.

- To evaluate current selection processes used in recruitment to this role in the UK Merchant Navy and their suitability to attracting trainees who will continue in a career at sea.
- To assess the current training provision for UK deck cadets, and its suitability to retain cadets through to officer status, and to prepare them for a career at sea.
- To develop a testing method for use in the recruitment of deck cadets that allows those with suitable personality traits to be identified within the selection process and for use as a diagnostic test to allow development of these skills in trainees.

### 1.3 Outcomes

The following will be the deliverables on completion of the study:

- The personality traits of UK seafarers continuing in a career at sea will be evaluated.
- A test will be verified as appropriate for use in the selection of the most suitable candidates from any group of applicants for a career as a Deck Officer in the UK Merchant Navy, and which trade sector they would be most suited to.
- A test will be verified as appropriate in allowing diagnostic assessment of trainees to identify those at risk when proceeding to their sea phase.

### 1.4 Scope and Limitations

The study will be limited to the recruitment of deck cadets within the UK Merchant Navy as a study involving other cadet programmes would be too extensive to allow completion within the limits of this study. There are also different skills required for different roles on board vessels so any tool developed would need to consider different criteria and this would require a far broader study. In order to achieve the required depth within a study of this length the work is restricted to UK practices, though International studies will be reviewed in order to look for evidence of good practice within the recruitment and retention of deck officers.

### 1.5 Structure of work

The work will consist of ten chapters, and below is a brief description of the content of each.

Chapter 1 Introduction: This chapter offers some background on the subject undertaken and provides the clear aim and objectives that will be achieved and what outcomes will be produced.

Chapter 2 Literature Review: A comprehensive literature review will be presented covering studies completed in the UK and internationally. Areas covered will include the recruitment and retention of cadets into the Merchant Navy in the UK and in other countries, and the use of testing in recruitment.

Chapter 3 Methodology: This chapter will discuss the methods appropriate in research of this nature and the separate elements of primary data that will be generated throughout the work.

Chapter 4 Factors relating to selection and retention in seafaring: This chapter will assess the current practices and regulations associated with deck cadet training programmes in the UK and the current recruitment practices. This will allow all elements of the data collected to be put into the wider context of recruitment and retention within this sector.

Chapter 5 Stakeholder opinion: This chapter will summarise the interviews completed with all of the stakeholders, excluding cadets, in this sector and provide for current commentary from all bodies associated with selection of cadets and in their training programmes.

Chapter 6 Perception of Cadets of their Sea Phase: The sixth chapter will look at the cadets' perspective and introduce primary qualitative data to establish the view of the cadet, to the sea phase.

Chapter 7 Main questionnaire results and analysis: The seventh chapter will then provide the main primary data for the work with results and analysis.

Chapter 8 Discussion: In this chapter, all of the primary data collected will be discussed against the context of current practices, procedures and regulations.

Chapter 9 Conclusions: In this chapter the conclusion will be drawn.

Chapter 10 Recommendations: Further study will be suggested in this section.

# 2.0 Literature Review

## 2.1 Introduction

The aim of this literature review is to investigate the current trends and previous research into the employment, recruitment and retention of seafarers and to identify themes relevant to seafarer training. Research completed in the area of seafarer retention both nationally and internationally will be reviewed to evaluate the most identified causal factors associated with positive and negative recruitment practice across the seagoing sector of the shipping industry. The work herein will also look at the factors that influence retention of trainees on the sea going training programmes including educational aspects and social influences and look to identify areas of research which focus on specific issues within these broad topics such as isolation or support provided.

## 2.2 Retention

In general retention theory, the general definition of retention is given as ‘holding, maintaining, continuation and preventing from leaving……securing employees in a company’. (Yamamoto 2013) There are many factors that can be considered in why people leave organisations and in why they stay. Table 2.1 includes the results of a study that reviewed literature over the past 50 years related to factors that influence employees’ decisions on remaining in their employment. An emphasis is placed on testing the relative frequency with which various retention factors emerge when analysing employees’ open-ended explanations for why they stay. The table provides the names and definitions of the 12 retention factors examined in this study.

**Table 2.1 Description and definition of retention factors**

| Retention Factor | Definition |
|---|---|
| Advancement opportunities | The amount of potential for movement to higher levels within the organization |
| Constituent attachments | The degree of attachment to individuals associated with the organization, such as supervisor, coworkers, or customers |
| Extrinsic rewards | The amount of pay, benefits, or equivalents distributed in return for service. |
| Flexible work arrangements | The nature of the work schedule or hours |
| Investments | Perceptions about the length of service to the organization |
| Job satisfaction | The degree to which individuals like their jobs |
| Lack of alternatives | Beliefs about the unavailability of jobs outside the organization |
| Location | The proximity of the workplace relative to one's home |
| Non-work influences | The existence of responsibilities and commitments outside the organization |
| Organizational commitment | The degree to which individuals identify with and are involved in the organization |
| Organizational justice | Perceptions about the fairness of reward allocations, policies, and procedures and interpersonal treatment |
| Organizational prestige | The degree to which the organization is perceived to be reputable and well regarded |

Hausknecht et al. (2009)

In looking at factors related to the current work, in a paper by Allen et, al. (2010) they find that:

- Pay level and pay satisfaction are relatively weak predictors of individual turnover decisions
- Recruitment, selection, and socialisation practices during organisational entry affect subsequent retention

In looking at HR management strategies for reducing turnover they state:

- Providing a realistic job preview during recruitment improves retention

- Employees hired through employee referrals tend to have better retention than those hired through other recruitment sources
- Assessing fit with the organisation and job during selection improves subsequent retention
- Organisations concerned about losing employees by making them more marketable should consider job-specific training and linking developmental opportunities to advancement
- Promote justice and fairness in pay and reward decisions
- Explicitly link rewards to retention

Although all of the above points are significant to the current work, the realistic job preview finding will be developed further given the unique aspect of a career at sea, as will the aspect of employee referral as this is highly relevant in the recruitment of cadets.

### *2.2.1 Seafarer Retention*

The structure of employment through training and onto a career at sea can present many other challenges to those evident in employment ashore. There are also many factors highlighted in the studies above that cannot be applied to seagoing employment and so the general theory needs to be refined to be applied to retention at sea.

A study on understanding attrition in UK maritime education and training (MET) by Gekara (2009) identified many factors influencing students' decisions to complete training. The initial focus of the study is on general issues influencing attrition on these programmes and the internal and external factors contributing to attrition generally within Higher and Further Education (H&FE) establishments. It argues that cadet training cannot be compared to many other programmes as many of the usual factors such as self-funding do not apply. The study used appropriate methodology of interviews and cross-industry consultation, but there were only fifteen ex-cadets interviewed. An interesting argument developed within the study was on the globalisation of employment within this sector. It states that "arguments about attrition - ... transcend the locale and span a much wider international social-economic context involving highly mobile global capital operating within a highly deregulated environment with regard to the exploitation of resources."

Findings from this study were that 75% of companies employing cadets had no real interest in their retention as there was no intention to employ them immediately following training. This attitude then informed decisions by trainees to move to areas of study were employment is more likely to result. This presents a strong conclusion on the level of support offered to trainees while in the phase of the training controlled by the companies, i.e. on board the ship. The study identified that the main attrition occurred when the students went on their sea phases and there were questions raised about the suitability of that environment and the support available, but also in the suitability of the cadet to deal with these situations and in their preparedness.

In the main conclusions to the study, the link between employment and training is developed and the role of the employer in training and its integration with other elements of training is highlighted as a major contributor to attrition rates and possible solutions are suggested such as government support for initial employment post training or the reintroduction of protectionist policies on board ships to ensure employment of UK junior officers. These solutions would only deal with one aspect of retention and the research is not extensive so the findings rely very much on opinions from industry.

Similar results were obtained in a study by Lobrigo and Pawlik (2012) in research carried out within the Brazilian Seafaring sector. It found that more than 50% of trainees do not intend to remain active seafarers after ten years, and 16% of the respondents do not see themselves working at sea after five years.

This was a more extensive research project, with more respondents, and looked at factors that contribute to attrition in this area. Most of the factors identified translate across to the UK training schemes but some are more closely related to the Brazilian system.

There is less theoretical underpinning in this study, but the questionnaire is extensive and produces some interesting results again looking at recruitment practices and the suitability and expectations of those entering the seafaring profession. One issue that is looked at that is not often included in other studies is in the gender split in question responses. An interesting result for further discussion was that female respondents in the Brazilian sample had different aspirations to male respondents and very few saw themselves still working at sea after twelve

years, although the study overall found that 50% of all respondents did not see themselves at sea after ten years.

In research produced by De Silva, Stanton and Stanton (2011) the focus was on the seafarer once in employment on board ship. While expanding on some of the general themes relating to recruitment and retention; poor industry image, lack of commitment to training, lack of career opportunities, job security and poor wages the research then looks at current research related to becoming an 'employer of choice' (EOC). This looks at shipping companies who are trying to offer better employment conditions to ensure that the best candidates continue in their employment and gain Intellectual Capital that will improve the competitive advantage of the ship owner as their asset is controlled by personnel with more investment in their employment. This reflects the general retention theory as outlined above.

The research is focussed on employees from the Indian sub-continent where there is a consistent use of third party management companies in the employment of ship's crews. It based the questionnaire on the sections outlined in the table below.

**Table 2.2 Recruitment and retention dimensions.**

| **Reward system** | **Organizational environment and processes** | **Relationship management** |
|---|---|---|
| Recognition | Recruitment process | Relationship with shore-staff |
| Remuneration | Training and development | Relationship with seafarers |
| Long-term career prospects | Organizational culture | Relationship with authority |
| | Organizational structure | Valued by the company |
| | IT | |
| | Knowledge management | |
| | Ethics | |

De Silva et al. (2011)

The criteria above were tested with experienced seafarers to establish if they could be positively associated with seafarer retention. The most significant relationship identified by the results was that of 'employee friendly organisational culture' followed by enhanced long-term career prospects. This research is focussed on a

very specific employment area, but it is interesting to see that the most significant link to retention in their findings was not remuneration.

A similar study was carried out by Thai et al. (2013), but using Singapore as its main focus. The theory of EOC was confirmed, but their research expanded to the concept of Industry of Choice (IOC) and to the benefits of all stakeholders combining their efforts to make the overall industry more attractive and improve recruitment figures. This is very carefully written up with a proviso that the industry should not misrepresent itself as retention is reduced where expectations do not match the experiences of the recruit.

The study itself targeted new recruits in Singapore and so the results are not as reliable as the previous study as these respondents being new recruits, have very little knowledge of working at sea and very little variance in their employment history.

The findings were similar in identifying conditions on board and training as being as important as remuneration, though the questions were not as well organised for use in comparison. One interesting discussion point that was developed was the issue of where all of the employers start to offer the same remuneration and conditions, what then makes them an EOC. The results indicated that Corporate and Social Responsibility (CSR) then becomes the deciding factor in attracting a higher calibre workforce.

In a small Canadian study by Albert, Dodeler and Guy (2016) the same indicator of around ten to fifteen years at sea is discussed and again there is a difference highlighted between men and women. The focus of the study was on the Management of interwoven sea and shore careers *'Our discussion enabled us to propose the development of new career models for future deck officers. These models need some changes. Employers should anticipate employees' wish to change career paths. To do this, they must learn about their deck officers' lives, aspirations, projects, and so on, and accept a type of management that includes ambivalence.'*

The outcome of the study aligns closely with changing attitudes towards barrier less workplaces.

In all of the above studies qualitative data has been tested using statistical tests such as Cronbach's Alpha, $Chi^2$, and t-tests for comparisons of groups. There is no evidence of modelling in seafarer specific literature.

There has been some piloting and refinement of questionnaires in some research, but the main area to question across papers related to seafarers is in the sampling used in order to distribute the questionnaires. Although the sample sizes are a reasonable proportion of seafarers within training schemes in the individual countries, there is little work evidenced in the papers, of work done outside of these groups. There are also limitations in the range of seafarers questioned and the stage of their training programme.

In a large Australian study by Caesar et al. (2021) the issues of recruitment and retention of seafarers is addressed. The study included one hundred and seventy-eight responses and used factor analysis to order issues as most important reasons for moving to a shore career. The study found that factors to be given attention are:

- Conflicts exist between work and family commitments causing stress and negatively impacting job satisfaction
- Health implications for seafarers from stress caused by noise and heat, so good working conditions reduce attrition
- The discerning employer should not only provide training opportunities to stave off the urge to depart to landside jobs but need to dexterously manage training to avoid losing ship officers too early to the competition
- Shipping industry employers could use their member associations as platforms to share knowledge on industry labour dynamics and how to tackle specific labour problems.

The study goes on to suggest further work is done to explore gender dynamics. The study only had two responses from females.

Apart from the extent of the study and methodology used, there are little significant new findings from this study. The study does focus down to the factors above and this does allow for an opportunity for further work specifically related to these.

### 2.2.2 Seafarer Sea Phase

In a paper by Ghosh and Bowles (2013) attention was given to the lack of 'blue sea' berths available for trainees in order to complete the required seatime for their

OOW certificate. The research is based on the current Australian system for MET and concludes that there should be a much broader strategic plan to allow for other forms of sea service to be accepted and even to allow simulated training to contribute to competence measurement. The arguments in this work are well founded and look at current structures that limit the co-operation between sea service providers because of commercial limitations. Some of these arguments could be applied to the current structure in UK MET and will be developed in the main body as there is evidence to suggest that retention figures decrease during the sea phase and one reason could be the amount of pressures on berths and subsequent quality issues associated with this.

In a paper by Magramo & Gellada (2013) presented at The TransNav 2013 Symposium held at the Gdynia Maritime University, Poland in June 2013, some interesting comments from cadets on their first sea phase were collected and the paper concluded that cadets experience homesickness when they are first away from home and that parent and teachers should support, comfort and console cadets through this phase. The results are as would be expected given the questions asked, but this does strengthen the argument for diagnostic testing to allow this support to be focussed on those cadets most at risk in this phase. Areas highlighted include weather changes and continuing through this, also long hours, and always having to complete work as you never leave the workplace. Communication with home and the support from loved ones provided the contextualisation of everything to strengthen resolve and provide much needed self-esteem.

In a paper by Arsenie et al. (2014), on what keeps individuals in a career at sea, they concluded that '*recruitment is the first step for retention of a seafarer and the possibility to develop a career as part of a shipping company. For this reason, during recruitment, it is most important for the shipping company to know the seafarer's expectations and future plans and for the seafarer to know what the company is looking for and what perspectives that will give to him'.*

In a summary paper on this, produced by the World Maritime University in 2015, the following are the reasons given for poor retention of seafarers:

**Table 2.3 Seafarer retention**

| Reasons for poor retention | Relation to the current work |
|---|---|
| Poor HR practices | Companies limit advancement based on nationality This is not relevant to the current work as UK nationals are favoured in this structure |
| Generational issues | Younger seafarers have different expectations of a career and mobility during that career |
| Increased demand for landside | Large demand for skills of seafarers in shore-side employment with the offer of high remuneration |
| Peculiar nature of Seafaring career | Separation from family, loneliness and depression. Stress and fatigue, high workload and extensive paperwork alongside reduced crew levels |
| Lack of support in training | Cadets have negative experiences with superiors and difficulties in learning |
| Poor human resource practices | Lack of shore leave, poor standard of food, lack of communications with home |
| Criminalisation of seafarers | Acts of unintentional marine pollution or safety question have led to imprisonment of ships' officers without the support of their employers to facilitate their release |
| Industry regulations versus seafarer welfare | Increased regulations such as the maritime security regulations increase isolation for seafarers and make it difficult for them to take sure leave. There has also been an increase in the volume of administrative work onboard to comply with requirements of the regulations and this results in an increase in workload for officers. |
| Shipboard technology and reduced crew size | Increased technology has allowed crew sizes to be reduced and increases isolation. The technology has also made the job more mundane with a loss of job satisfaction. |
| Workplace health and safety issues onboard ship | Ships remain highly dangerous workplaces. Conditions onboard and working patterns, reduce the ability to rest and increase fatigue with associated health ramifications. |
| Piracy | Health risk to seafarers continues to be high from piracy instances and crew taken for ransom. |

| | |
|---|---|
| Cadets specific issues | Physical confinement, restricted diet, distanced from family and unsupportive attitudes and hostility from mentors on board. Much of this is in direct opposition to their expectations. |

Adapted from WMU (2015)

In suggesting measures to improve retention of seafarers the report suggests that '*to attract young people into the maritime industry, there is a need for improvement in working conditions onboard ships in order to meet the expectations of the current generation of jobseekers'.*

The following list are the specific recommendations:

- Reducing long periods at sea and proportionately matching it with vacation periods without resorting to reduced salary
- Improving internet access
- Improving accommodation on board
- Encouraging and increasing female presence onboard ships
- Enhancing job security through improved social security initiatives

One conclusion of the paper that is very relevant to the current work is that expectations need to be managed and employers need to know the kind of people they are recruiting in order to effectively manage their expectations. (WMU 2015)

### 2.3 Recruitment

International efforts have been made by the International Maritime Organisation (IMO) to increase recruitment of seafarers, incorporating all of the main maritime organisations participating in a 'Go To Sea' campaign in 2008. In a review of this in 2009 two of the issues identified to be further addressed were:

- agreed that the shortage of seafarers was the biggest issue for shipping and further agreed to intensify IMO efforts in support of this worthy cause;
- agreed that industry should continue its efforts to ensure the provision of berths for cadets so as to enable them to undertake on-the-job training and build up sea-going experience.

Three objectives were endorsed for the campaign:

- an enhanced, more favourable public perception of the maritime industry, in line with its excellent safety and environmental record, and vital role as the carrier of world trade;

- greater knowledge among young people of the opportunities offered by a career at sea; and
- a marked shift in the quality of life at sea by bringing it more closely in line with that available ashore.

IMO (2009)

The main basis for these decisions was research carried out in the UK by Shiptalk and then industry stakeholders' input. The main international shipping organisations were involved alongside government representatives.

To further develop the 'Go To Sea' campaign and to look further ahead in seafarer careers, the Merchant Navy Training Board(MNTB) launched their 'Careers at Sea and Beyond' initiative in 2013, in an effort to try to quantify the outcomes of training and movement through on-going career paths. The UK government currently supports training in the shipping sector given the continued demand, but there is on-going discussion on the continuation of this funding without evidence of deliverables and confirmation that trainees are continuing to pursue careers within the sector. The UK Seafarer Projections report was delivered in November 2016 and supported the increase of recruitment of officer recruits to meet the supply shortfall up to 2023. Another study that was completed in 2015 was the Maritime Growth Study: keeping the UK competitive in a global market Moving Britain Ahead. This report suggested a review of the current funding of cadet training in the Merchant Navy, and this will be explored later in this work.

In looking at the question of supply of seafarers in the UK it can be evidenced that it is an area that continues to be supported by Government funding through the Support for Maritime Training (SMarT) scheme, and yet not all funding is currently being used to train cadets. There is still under-recruitment and part of this is attributed to the suitability of candidates for the training available. Shipping Companies indicate that they would train more cadets if there were more applicants suitable for their programmes. Companies use interviews, academic qualifications, and in some cases, some forms of psychometric testing in selecting recruits. As Gekara (2009) concludes though, 'there is a great potential for conflict' between shipping companies in employment of cadets and their progress through to officers. This is due to the current structure for funding of the cadetships through SMarT mechanisms.

In an extensive report carried out by the European Centre for the Development of Vocational Training (Cedefop) in 2013 one of the sectors researched was Transport and Logistics with an example of Ship Engineer chosen as one of the specific occupations. The UK was also one of the ten countries chosen in their sample. Their conclusions for this sector were that:

- there is a strong regulatory framework, defined through European or international legislation;
- strict licensing requirements for entry into the profession, including demands on practical training and experience and additional criteria such as age and health;
- strict requirements regarding continuing professional development of occupational practitioners;
- strong role of sectoral organisations in implementing the regulatory framework, under the auspices of national authorities, in some cases entirely separate from public VET structure;
- little room for national and sectoral actors to influence or change the international framework of regulation;
- strong trust in qualifications at micro level, motivated by enforcement and concern for safety and security.

The study emphasised the 'International' nature of the sector and the high risk of accident that may affect the general public. This leads to international regulation and a strong emphasis on certification to evidence competence. It states that:

*'We can therefore speak of a top-down, labour-market centred approach, which determines entry to, and practice in, occupations in the sector.'*

This then emphasises the important role played by the qualification gained during training and the potential barrier it presents to entry into the sector.

The study summarises that there are very strict regulations applying to VET in this sector and that these may act as a deterrent and ultimately reduce the workforce in the sector. Cedefop (2013)

In a paper by Gonzalez et al. (2014) research was completed focussing on recruitment of seafarers in Latvia. The paper looks at the application of Social

Cognitive Career Theory of Lent et al. (2000) which is a further development of basic Social Cognitive Theory where the outcome of Bandura's research is that people's level of motivation and actions depend more on what they believe than on what is objectively the case. While developing the theory of positive perceptions and perceived barriers the researchers formed a questionnaire that was distributed to school children. A weakness in this research is that although the sample looks to be a group in a position prior to career influences, the sample group were already engaged in a seafarer competition being held by the Nautical College in Latvia which indicates they have a relationship with the industry.

The criteria selected for data collection are indicated in the table below which is an adaptation of their overall questionnaire.

**Table 2.4 Structure of the questionnaire "Youngsters' motivations and difficulties for choosing seafarer career"**

| | |
|---|---|
| Personal reasons for becoming a seafarer | I will have a good salary<br>I will have stable employment<br>I love nature and the sea<br>I like to travel and to see new places<br>It is a kind of tradition in my family<br>I like to be alone, far from cities<br>I will have wide responsibilities on board ship<br>I like risk and challenges<br>I will like to feel part of a team on board ship<br>I like discipline on board<br>I like to meet people from other countries<br>To be a seafarer is a prestigious work |
| Dissuading Factors | Studies are too expensive; I cannot afford them<br>It is difficult to combine seafaring and family life<br>It will be boring to be so long on board ship always with the same people<br>I do not like to be cut off the world: probably on board ship there is not internet<br>It will be like the army, too much discipline for me<br>Seafaring is bad for my health<br>It is a difficult career; too much competition<br>I found negative information in the media about the maritime profession<br>The profession of seafarer is not socially respected |

Adapted from Gonzalez et al. (2014)

The findings of the study matched others in this area in that stable employment and a good salary are the positive perceptions and a negative perception is of impact on family life. The expense issue is based on comparative studies in Latvia so would not have the same application in a UK study.

What is clearly being established by papers worldwide is that there is a shortage of well qualified seafarers and that there are similarities in the things that prospective applicants find attractive and in things they see as barriers.

An interesting additional aspect in the study above is in the separation of perception from reality. This will be developed further in the current work both from the question of changing the perceptions in recruiting but also in studying the relationship between expectations and reality for retention.

Perceptions were also tested in research done by Thomas (2004) in collaboration with researchers from Seafarers International Research Centre (SIRC) for the International Labour Organisation (ILO). She found that companies that employed women usually had positive perceptions of them in the workplace and companies that did not employ women generally had negative perceptions and unfounded reasons for non-employment of women. The research sampled shipping companies and women at sea across all ship types worldwide.

According to the IMO (2009), less than 2% of world seafarers are female and only 0.12% are working on cargo vessels. Increasing their recruitment could lead to a solution on shortages within the industry. It is often argued that female seafarers have higher attrition rates than males and this research looked at this and found no data to support this theory. There is also the argument of knowledge transfer and that females can invest in the industry in the long-term as well as men.

The recommendations from this report were:

- Dissemination of the positive experiences of companies employing women seafarers should be facilitated in order to address and diminish gender stereotypes within the industry.
- Development and implementation of policies addressing sexual harassment should be undertaken by all companies regardless of whether they currently employ women seafarers (as successfully undertaken by companies within the cruise sector).

- Where possible, the placement of female crew members (and particularly female cadets) should occur on vessels where they are not the lone female onboard.
- Consideration should be given to policies relating to pregnancy and maternity benefits.
- Active promotion of seafaring as a potential career for female (as well as male) young people should be extended.

The report then goes on to argue that the above measures would lead to improved recruitment across the industry as well as improved retention rates in both males and females.

### *2.3.2 Recruitment outside the UK*

In a paper by Bloor, Sampson and Gekara (2014) some very pertinent summations were made, relevant to the study of recruitment. The study was based on Literature and stakeholder interviews and concluded that the current international governance of seafarers is not effectively done using the 'white list' of the IMO. Their findings indicate that shipping companies are far less inclined to recruit and train and are outsourcing this to the local training provider and the expense is then transferred to the recruit. This then puts pressure on the training provider to produce trained personnel on request and impinges on the quality of these trainees. The paper also concludes that since enough resources are not available to assess and monitor training establishments, there is little ability to control quality through international pressure. The outcome of this practice is that shipping companies are very unhappy with the standard of some seafarers and will discriminate against those from certain training providers. This further feeds the divisions as given above of those companies willing to pay for training to ensure they continue to support an experienced work force against those shipping companies willing to employ seafarers on a just-in-time basis that show appropriate certification but may prove to not have the skills needed in the workplace.

In a study by Ruggunan, & Kanengoni (2017) the recruitment of seafarers into the South African MET system was researched with a focus on:

RQ1. What are the demographics of seafaring cadets at the Durban University of Technology?

RQ2. How are cadets' studies funded and what factors are the most impactful on cadets successfully completing their studies?

RQ3. How did cadets become aware of sea-based careers?

Although the research is limited to one set of recruits, within one institution, the outcomes present some interesting points for discussion that could be considered in recruitment practices within the UK system.

On completion of studies, the main driving factor in this study was financial. Sufficient financial support to complete training was the main element of concern to the participants. This is not relevant in the UK, as cadetships are funded by the shipping companies (though open knowledge of this can be questioned).

Over sixty percent of the cadets responded that awareness of sea careers came from family, friends and the media. Less than ten percent said career awareness was through a shipping company. This supports UK systems in that shipping companies have limited recruitment or marketing materials to recruit UK cadets.

There is also discussion in the paper on a broader career awareness strategy which is developed by the individual prior to making this choice on career. This involves exposure to the realities of the profession, thus a high percentage citing family and friends supporting the development of a personal interest in the career, and this then was given as the highest percentage reason for the choice of this profession. In then expanding to the question of the likelihood of the respondents continuing in a career at sea, over eighty percent cited salary and benefits as the drivers in this decision followed by personal interest – motivation.

One interesting outcome of the questionnaire was that although the majority of the males in the study intended to stay at sea in excess of ten years, the majority of the females intended to stay for less than ten years.

'*There are a high number of female students in the study (36%), given that globally women represent less than 2% of the world's 1.25 million seafarers with 94% of those females employed on passenger ships and 6% on cargo vessels (i.e. container ships, oil tankers, etc.) (Belcher 2003).*

*Our findings show a potential steady increase in women prospecting to work on the sea in South Africa. This is an outcome of state policy that encourages (through scholarships, for example) 'designated groups' such as women to pursue careers in male dominated fields. Further exploratory and longitudinal*

*work needs to be done to examine the reasons female cadets chose to pursue this career path and the magnitude of their intention to leave their careers at relatively young ages (early 30s).'*

This supports other literature and is a point for further discussion in general recruitment issues. There is a further point of interest related to female employment at sea when expanded into intergenerational mobility and occupational inheritance cited in this paper by Kerckhoff (1995). In the UK there is no longer the statement that 'you can't go away to sea because you are a girl' but without the demonstration of numbers we may still use the statement 'you don't want to go away to sea because you are a girl'.

The paper concludes that the stakeholders in this sector in South Africa are not working together to promote and fund training of seagoing recruits.

'*We urge the responsible stakeholders to raise awareness about maritime careers and hence facilitate a national maritime culture where shipping companies and training institutions work together to boost image of the sector by raising public awareness through the media, high school, company and university representatives'*

The other main discussion point from this paper is that if the career is chosen based on who you know from the industry, then that information and viewpoint is almost entirely male in origin. This could also be a consideration in the lack of recruitment of females into the industry.

The International Chamber of Shipping published a Diversity Tracker report in 2020 with extensive international responses to diversity issues including gender recruitment and retention.

They concluded that all corporate diversity and inclusion policies should:

- Actively promote and encourage diversity and inclusion;
- Include measures related to diversity and inclusion in their business plans;
- Specifically focus on diversity and inclusion to ensure it is properly reviewed;
- Place diversity and inclusion as a higher priority for the business;
- Significantly increase the number of women on board from 7.5% to 12% within the next three years and to 25% within 20 years; and
- Improve the numbers of women on board serving in the following roles:

At Sea:

- Masters
- Senior deck officers
- Junior deck officers
- Senior engineers
- Junior engineers
- Ratings
- Hotel and guest staff

Ashore:

- Commercial
- Legal
- Senior management
- Communications
- Technical
- Board level

They also summarised four main points in moving this area forward to a diverse workplace:

- Clearly identify what to achieve. Only by understanding the ultimate goal can shipping companies possibly succeed.
- Do not copy and paste. Every company is unique, so must every diversity initiative be. Every programme must consider specific corporate culture and context to be effective.
- Good design is key but good implementation is vital. Few diversity initiatives survive contact with operational management.
- Win ‘hearts and minds.’ Successful initiatives resolve “Why should I do this?”. However, benefits of workplace diversity are clearly attractive and challenges must be addressed.

### 2.4 Recruitment Practice

Within the recruitment sector of trainees in the UK Merchant Navy the traditional approach has been that shipping companies recruit cadets against their needs for future officers and then place them on programmes that are approved by the Department for Transport (or historical equivalent). The point of recruitment has depended on the level of the training programmes available, such as GCSE

equivalents for ONC/HNC programmes or 'A' level equivalent for BSc/FD/HND programmes. Recruitment has been historically, and continues to be, based on academic achievement. Other factors are also considered, usually based on interview questions, and at times on forms of testing that may allow judgements against certain characteristics. These followed changes in general recruitment testing throughout the latter part of the twentieth century. There is no specific literature related to the use of personality testing within this sector.

In papers covering more general recruitment areas there are papers that do relate to the use of personality testing in recruitment. As indicated in a study by Jai, et al. (2014) there has been a shift from demand on knowledge and skills to personality testing in both recruitment testing and in ongoing assessment of employees. In a study of graduate employment it was found that self-motivation was the leading characteristic desired by employers, followed by self-balance, agreeableness, conscientiousness and openness. This was a large study using grounded theory and provided some good discussion of culture and the influence this may have on what are seen as the main five indicators of personality known as the 'big five', Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism. It also develops the question of ensuring that recruits have the most suitable characteristics to make them suitable to the occupation of their choice. This relates essentially to the research in this thesis in looking at methods to allow measurement of these characteristics and ensuring that they are matched to the requirements of the specific jobs included in this research.

In looking at extensive work carried out by Scroggins et al. (2009), they conclude that there has been an evolution from '*crude measures to quite refined and valid ones'* in testing in personnel selection. This has led to development in personality testing in employee selection, and in 2009 stated that they had no doubt that personality measures would be refined to the point of playing a vital role in employee selection. This paper also states that there is a recurrence of core elements of personality against the Big-Five personality factors.

In an article by Fernandez-Araoz (2014), an interesting discussion is given on recruitment being driven by the potential demonstrated by the applicant rather than their '*brawn, brains, experience and competencies'*. Traditional, successful methods of recruitment looked for the smartest or most experienced and if in a leadership role, the applicants emotional intelligence was also seen as highly

significant. The discussion then looks at what is important if in a competitive environment that is likely to change. It then becomes important that a company's employees and leaders have not just the right skills, but the potential to learn new ones. The discussion then continues on the ability to accurately measure potential in the same way that IQ, and past experience may be clearly evidenced.

The author indicates that the first indicator of potential is in showing the right kind of motivation. This is supported in other papers discussed in this review.

The discussion indicates that 'high potentials have great ambition and want to leave their mark, but they also aspire to big, collective goals, show deep personal humility, and invest in getting better at everything they do. There are then four other qualities related to potential in their research and these are:

- Curiosity
- Insight
- Engagement
- Determination

There are many theoretical models that have been developed over previous decades to identify the factors that contribute to retention in employment. Many of these factors do not directly relate to seafarer employment because of the unique nature of the work environment. This theory will be discussed further in Chapter four where it relates to seafarer retention.

## 2.5 Testing

Extensive research exists in the area of testing of prospective employees such as the papers produced by Kirkpatrick (2007) summarising employment testing: trends and tactics. There is a wealth of literature available on the historical use of personality testing and its development in clinical settings throughout the twentieth century. The current work is limited to the development of this as it relates to development within recruitment settings and its further development into retention prediction, and continuous use in monitoring of personnel within employment, particularly within the maritime sector.

As pointed out by Scroggins et. al. (2009) there are major discussion points on 'the transient nature of models of personality….' and in 'current paradigms and the utility and fairness of personality testing for modern organisations'.

### *2.5.1 Personality testing*

One of the first instances of standardized personality testing was that developed by Carl Jung in 1910. It was different to prior methods of assessing personality because of its reliance on standardized administration and its data-based method of interpretation (Smith and Archer 2014).

Other psychologists such as Woodworth, Pressey and Pressey and Bernreuter also developed testing methods through the early part of the twentieth century, but the first that is still in use is the Minnesota Multiphasic Personality Inventory (MMPI) of Hathaway and McKinley in 1943 (Smith and Archer 2014).

Cattell defines personality as that which permits a prediction of what a person will do in a given situation. He developed an assessment test allowing identification of source traits (underlying variables that seem to determine the surface manifestation of surface traits through clusters of overt behaviour responses that appear to go together), called the Sixteen Personality Factor Questionnaire (16PF). (Engler 2009).

**Table 2.5 Cattell's sixteen basic source traits**

| | |
|---|---|
| Outgoing – reserved | Trusting – suspicious |
| More intelligent – less intelligent | Imaginative - practical |
| High ego strength – low ego strength | Shrewd - forthright |
| Assertive – humble | Apprehensive – self assured |
| Happy go lucky – sober | Experimental - conservative |
| Strong conscience – lack of internal standards | Group dependent – self sufficient |
| Adventurous – shy | Casual - controlled |
| Tough minded – tender minded | Relaxed - tense |

(Engler 2009)

Cattell's work provided the theoretical groundwork for much of the current research in the measurement of personality, and from this emerged five factors that form a potential basic model for delineating the structure of personality, popularly known as the Big Five. His use of factor analysis allowed for the development of the Five-Factor Model (FFM).

This was then developed by Costa and McCrae through to 1992. They developed the Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness often presented as an acronym OCEAN, though their test is represented by NEO

Personality Inventory, or NEO-PI-R which is often used in a short version called the NEO-FFI.

**Table 2.6 Facets encompassed within the Five-Factor model:**

| Neuroticism | Extraversion | Openness | Agreeableness | Conscientiousness |
|---|---|---|---|---|
| Anxiety | Warmth | Fantasy | Trust | Competence |
| Angry hostility | Gregariousness | Aesthetics | Straightforwardness | Order |
| Depression | Assertiveness | Feelings | Altruism | Dutifulness |
| Self-consciousness | Activity | Actions | Compliance | Achievement striving |
| Impulsiveness | Excitement seeking | Ideas | Modesty | Self-discipline |
| Vulnerability | Positive emotions | Values | Tender-mindedness | Deliberation |

(Engler 2009)

Much of the discussion in texts related to the development of personality assessment is focussed on the use of this testing in practice. The clinical applications, and the use of testing for diagnosis, is outside of the current work. The development of these tests into a clinical environment has led to the development of extensive tests that require extensive questioning of test subjects, by specialist practitioners. There is also extensive discussion on the permanence of any traits identified by the use of these tests and of the links of outcomes to causes. This may be relevant to the current work in that the majority of recruitment onto cadet programmes is aimed at school leavers. This then leads to discussion on the use of a test to identify traits suitable for completion of the cadetship, against the use of a single test at this point to identify traits suited to a long term career at sea and in the permanence of those traits across this extended period of time and emotional development.

Further research has been done to look at the further application of these tests in the area of job performance as outlined below. Their use in relation to job performance is based on their ability to predict behaviour of applicants against their identified traits rather than looking at the ability to allow treatments of patients in clinical applications.

In a paper by Trull et al. (1995) a comparison was made of Minnesota Multiphasic Personality Inventory Personality Psychopathology Five (PSY-5) and the NEO Personality Inventory and the revised NEO-PI-R. The paper focusses on the use

of these tests to diagnose personality disorders, but also confirms the reliability of the use of these tests to confirm diagnosis but also in the reliability of self-reporting.

The paper also highlights the basis of the NEO-PI as being 'developed as a measure of normal personality, with no attempt to assess specific dimensions of personality relevant to psychopathology'.

The paper also confirms the usefulness of the NEO-PI….., as the FFM on which it was explicitly based, has been elaborated and refined over a period of 30 years as a comprehensive model of personality' (McCrae & John, 1992 cited in Trull et al. 1995)

**Table 2.7 Definition of NEO facets**

| NEO facet | Description |
|---|---|
| | *Conscientiousness* |
| Competence | Sense that one is adept, prudent, and sensible |
| Order | Neat, tidy, and well-organized; methodical |
| Dutifulness | Governed by conscience; ethical; fulfil moral obligations |
| Achievement striving | High aspirations and work hard to achieve goals; driven to succeed |
| Self-discipline | Ability to begin and carry out tasks, self-motivating; persistent |
| Deliberation | Ability to think carefully before acting; cautious and deliberate |
| | *Agreeableness* |
| Trust | Belief that others are honest and well intentioned; not sceptical |
| Straightforwardness | Sincere; unwilling to manipulate through flattery or deception |
| Altruism | Active concern for others' welfare; helpful, generous, and considerate |
| Compliance | Cooperative; seek to inhibit aggression; forgiving; mild-mannered |
| Modesty | Humble and self-effacing |
| Tender-mindedness | Sympathy for human side of social policies; concerned for others |
| | *Neuroticism* |
| Anxiety | Apprehensive, fearful, prone to worry, tense, jittery |
| Angry hostility | Quick to anger; easily frustrated and irritated by others; bitter |
| Depression | Depressive affect, guilt, sadness, hopelessness; prone to dejection |
| Self-consciousness | Shame and embarrassment, sensitive to ridicule |
| Impulsiveness | Inability to control cravings or urges; susceptible to temptation |
| Vulnerability | Susceptibility to experience stress; easily panicked |
| | *Openness* |
| Fantasy | Active imagination; tendency toward daydreaming; lost in thought |
| Aesthetics | Appreciation for art and beauty, moved by poetry and music |
| Feelings | Receptive to inner feelings and emotions; empathetic |
| Actions | Willingness to try different activities; preference for variety to the routine |
| Ideas | |
| Values | |

| | |
|---|---|
| | Intellectual curiosity; willingness to consider new ideas<br>Readiness to re-examine values; liberal; ant tradition and antiauthority |
| | *Extraversion* |
| Warmth | Affectionate and friendly; informal and unreserved around others |
| Gregariousness | Sociable; preference for company of others; “the more the merrier” |
| Assertiveness | Dominant, forceful, and socially able; take charge and assume leadership |
| Activity | Prefer fast-paced life; high energy level; vigorous |
| Excitement-seeking | Crave excitement and stimulation; sensation-seeking |
| Positive emotions | Experience joy; laugh easily; cheerful and optimistic; high-spirited |

Judge et al. (2013)

Another well known form of testing, particularly in employment use, is the Myers-Briggs Type Indicator (MBTI). In a paper by Furnham in 1996 a comparison was done between the NEO-PI five factor model of personality and the MBTI. As is indicated in the name of these tests it is firstly clear that MBTI provides ‘type’ information rather than ‘trait’ information. The paper also points out that ‘studies using the MBTI have not always confirmed either the theory or the measure’s validity’, whereas the ‘NEO-PI…..a considerable amount of research has been done on it and excellent support for the validity and reliability of domains has been consistently reported’. The paper argues that ‘it is abundantly clear that the psychometric properties, particularly the all-important construct and predictive validity criteria of the NEO-PI are superior to that of the MBTI’.

Although there are very good uses of the MBTI in industry to allow managers to better understand how they come across to others, or in team building applications, this is not an appropriate test for the current work.

A paper that crosses from personality to vocational was produced by Costa et. al, in 1977. This research was carried out on a large sample of male volunteers from varying socioeconomic and educational levels. The basic analysis was based on the Strong Vocational Interest Bank associated with Holland. Five factors were then identified and correlated against Cattell’s Sixteen Personality Factor Questionnaire.

**Table 2.8 Summary of factor correlates**

| | | |
|---|---|---|
| Factor I<br>Person vs. Task Orientation | Outgoing<br>Happy-Go-Lucky<br>Group Dependant | Assertive<br>Venturesome<br>Low Theoretical Values |
| Factor II<br>Theoretical vs. Practical Interaction Style | Intelligent<br>Imaginative<br>Experimenting<br>Low Economic Values<br>Education | Assertive<br>Shrewd<br>Theoretical Values<br>Aesthetic Values<br>Warner Level SES |
| Factor III<br>Tough vs. Tender Minded | Tough Minded<br>Theoretical Values<br>Low Aesthetic Values | Unimaginative<br>Economic Values<br>Low Social Values |
| Factor IV<br>Self-Assertiveness vs. Retiring Altruism | Outgoing<br>Happy-Go-Lucky<br>Political Values<br>Warner Level SES | Assertive<br>Conscientious<br>Education |
| Factor V<br>Business vs. Healing | Sober | Economic Values |

Costa et al. (1977)

The discussion following this study relates occupations to the personality factors identified, and thus allocates broad factors to certain types of occupation. An extract evidences this as follows ‘it is seen that Extroversion is a major component in the distinction between person and task-oriented occupations, and a lesser contributor to the distinction between self-assertive and retiring altruistic occupations’. (Costa et al. 1977)

In a paper by Campion et, al. (1988) the process of introducing psychometric properties to the interview process is considered. At this time, it was common to use aptitude testing on applicants, and the question is then asked about the value of interviewing and the value it adds to the process. Formalising the interview with structured, points based questions is suggested to allow better decisions to be made. This also suggests wider discussion issues such as the removal of bias from the recruitment process.

In a paper by Judge et al. (2013) discussion includes the statement that ‘From a broad perspective, there are few areas that have proved more productive in the last 20 years of industrial– organizational psychology research than has the personality–job performance literature. Judge et al. (2008) noted, “*From the vantage point of today, that personality has shown itself relevant to individual attitudes and behaviour as well as team and organizational functioning seems an*

*incontrovertible statement'*. The paper goes on to suggest that better results on job performance are found when using lower order traits.

The current work is not to establish job performance, but traits associated with retention in a specified occupation, so the broad approach is deemed acceptable.

### *2.5.2 Shorter versions of the tests*

The main authors on using a reduced test when measuring the Big-Five are Woods and Hampson. In their paper in 2005,

*'For researchers assessing well established psychological constructs, the advantages of single-item measures are straightforward and lie in their simplicity and economy…….. Shorter measures encourage participation in studies by people who are usually expected to give their time for little or no reward. Personality measurement has traditionally been considered to require relatively lengthy questionnaires. The growing consensus about personality structure has increased the demand for personality assessment in a wide variety of research, including studies where lengthy measures are impractical. To address this, personality test construction, supported by a largely agreed Five Factor Model of personality, has moved toward shorter, though still psychometrically sound, measures (e.g. Gosling et al., 2003; Saucier, 1994).Consistent with this trend, five bipolar single-item measures of the Big Five are presented here to provide further evidence of the validity of single items to measure personality'*

The paper continues with discussion on the use of traditional testing such as the NEO-PI-R, but comments that with its 240 items, takes around forty five minutes to complete.

In work by Gosling (2003), a ten question test (Ten Item Personality Inventory, TIPI) was suggested and it was concluded that 'very short personality scales compare reasonably well with longer measures.' The researcher has to be aware of any limitations introduced by the use of shorter tests, but the benefits are seen to outweigh any psychometric concerns.

As stated by Woods and Hampson, 'In summary, it is argued that if very short measures of personality are to be constructed, single-item measures are an appropriate choice because it is difficult to justify the limited gain in psychometric benefits by using two- or three-item scales when they are weighed against the cost of doubling or tripling the number of items in the scale. Additionally, by using a

bipolar format, single-item measures can overcome the problem of using unipolar single items to assess bipolar personality dimensions.'

Woods and Hampson concluded that their Single-Item Measures of Personality (SIPI) was reliable and offered the format to future researchers. This will be developed further in the methodology section.

### *2.5.3 Intelligence testing*

It is widely accepted that intelligence testing is a means of predicting behaviour in future employment. Most professions place a reliance on this in some form as can be evidenced by the academic requirements for entry onto training programmes, academic courses and into employment positions. The Maritime sector follows this trend in setting academic requirements for applicants onto its training programmes. As is indicated by Ceci (2000) 'there is considerable agreement about the usefulness of measures of general intelligence whenever admissions officers or personnel officers are forced to choose among a group of applicants that exceed the number of slots'. An interesting discussion point related to the current work is in why this leads to better predictions of outcomes, and if that is a reason for its use. The indicators attached to the test of intelligence may not provide the basis for the attributes we then attach to the applicants.

### *2.5.4 Resilience*

There are multiple sources of research in the area of resilience. As described by Neenan (2009) cited in Ercan (2017) '*Resilience is an interesting concept in that it addresses the question, why do some people become all the stronger due to the hardships they had to deal with while others simply fall apart as a result of the same experiences*'. Ercan's study then goes on to look at the Big Five as a means of predicting resilience. 'Resilience can, ……, be used to define a set of characteristics that would lead to shaping positive outcomes even when the development or cohesion of individuals is seriously threatened.'

'*the notion put forward by the first wave of studies into resilience—that personality traits are a significant predictor of resilience—is still a valid one. The relatively stable personality traits that people possess are the significant determinants of their resilience levels. Moreover, the fact that personality traits only predict a certain percentage of resilience can be taken to mean that some other personal*

*characteristics and contextual conditions other than personality traits may be at work in determining resilience*.'

This paragraph is introduced into the current work as 'resilience' in its description would seem to be an indicator of one of the requirements of cadets when going away to sea. Although this study will not explore this aspect further, Ercan's study does indicate that the use of the five factor model may allow further research in the future into this relationship.

### *2.5.5 Testing for Retention*

In a paper by Barrick et al. (2009) it is argued that instead of hiring the candidate likely to be the best performer, organisations have started to try to determine which candidates are most likely to stay with the organisation. In selection research, focus has been on pre-hire predictors of job performance and they go on to research the question of whether employers can prevent turnover before employees start their jobs.

They found that during selection, general personality traits and life history experiences are better predictors of voluntary, avoidable turnover and job performance than pre-hire attitudes.

### *2.5.6 Testing for Employment*

There are many examples of psychometric testing being promoted as a means of determining the suitability of a candidate for an employment position. The tests can be subject specialist such as business or engineering directed, and then will commonly include sections on verbal reasoning and numerical problem solving. The development of these tests for these larger sectors also means that many sources are available on how to respond to the tests with example questions and answers. This form of testing is based on intelligence testing and does not usually refer to trait testing or assessing personality traits as suitable for specific employment. Some shipping companies use this form of testing at recruitment stage to confirm the applicant is at the correct level of intelligence to be considered for a cadetship.

There are many versions of many tests available online which allow those moving to employment to identify the general area they have appropriate skills to move into (Myers-Briggs) or where their personality traits indicate certain strengths such

as being classed as an advocate or a guardian. This might then influence the direction selected for employment. Recruitment companies will often direct clients to these, but they do not provide specific enough results to align clients with specific employment opportunities. This then also leads to the discussion of interviewers being able to identify the suitable traits more readily than a broad based test of this type.

There are examples of companies who specialise in offering these tests, providing a more detailed profile than those offered on open tests, but usually for a fee. The image this generates is of a special algorithm that only they have, that provides better insight into the results.

One of the main issues that arises in the use of these tests in this way, is in identifying to those running the test, the traits that you see as important in the role being recruited to. The tests are designed to identify traits held by the applicant, but the company decides whether the requirement for that trait be mid-point on a scale, or toward either extreme. A more common example of the use of specialist testing companies, would be in the use of tests to see which applicants are suited to certain positions in a company, when many different departments are recruiting in a large recruitment drive.

A significant question that is then raised is about how the applicants prepare for the use of these tests in the different applications, and in the honesty of the applicants in the responses they provide.

In a paper by Miller and Barrett (2008) the ability to coach and to fake responses on personality-based selection tests used in police selection in the USA was examined. This was a large study using psychology students and offering credit for participation. The study found that by coaching students their results would improve. The study also coached one group and told them to fake their responses. This group then scored highest and would have been at the top of the list for recruitment within any large recruitment event. The study used three different personality based tests used in police recruitment at the time. Interesting aspects of this study are that those involved adapted the standard NEO-FFI for the measurement of conscientiousness seen as relevant to police recruitment. Those involved in the research needed to know the responses favoured in this sector of

recruitment in order to be able to set up the coaching programme needed to prepare the participants. An interesting additional issue associated with this factor is that in many areas such as this, where more applicants than positions exist, companies exist to provide coaching for the tests as it is more lucrative than running the tests. These can be very expensive and provide the first barrier to recruitment across a wider range of candidates.

A comparison can be drawn here with the eleven-plus system of recruiting to secondary schools, now used in limited areas across England and Northern Ireland. Many resources exist that provide coaching to pupils in those areas to prepare for the exam, at a cost. Research has consistently found that support programmes have little influence on cognitive ability tests, in contrast to findings for personality tests.

A paper by Usami et al. (2016), research was completed on the resistance to faking in the development of pairwise preference-based personality tests. Discussion in the paper looks at the social measurement within questions and in the desirability to the respondent of representing that social position. The construct of the test then needs to consider the respondent trying to present a different picture of themselves. Solutions to this are presented by offering two statements so the respondent can only choose one, or offering a Likert scale to allow grading in agreement to a statement, or by presenting many options and requiring rank order responses. Again the study was set up using controlled groups with instructions to answer honestly or not. The study found that multi-unidimensional pairwise preference (MUPP) method allows for comparison of trait scores among participants with less risk of faking effect.

As previously mentioned, there are many sources of information on how best to answer these tests for different sectors such as IT or finance sectors. This is a reasonable system in the sense that students are either capable of providing responses from their learned knowledge or can prepared for the test and then still demonstrate learned knowledge in their responses. This is different for the tests based on personality. Since there is no right or wrong answer, the applicant may respond against what they see as the answer that most suits their personality, or they may try to respond against what they think is the most suitable response for the job they are applying for. Many of these tests build in protection against this by

having repeat questions and reverse scales, but the more questions and details in the test, the more time required to complete the test. The test, even if answered honestly, only shows the applicants' image of themselves which could again be questioned, especially when related to the age of the applicant and their level of self-awareness.

## 2.6 Conclusion

There are clear indications from all of the literature reviewed that there is an international shortage of seafarers. The UK continues to allocate funding to try to increase the number of seafarers in training, but the numbers have not increased to the targets set. The changes in funding to improve recruitment and retention of deck trainees will be examined further in this work, particularly with regard to post qualification employment.

It is also clear that expectations need to be managed and employers need to know the background of the people they are recruiting in order to effectively manage their expectations. In the case of seagoing employment, it is probable that applicants would have limited knowledge of the realities of a career at sea and will have mixed expectations that need to be closely managed, as it has been found that providing a realistic job preview during recruitment improves retention.

In reviewing general retention theory, it is clear that there are differences in the application of this theory for sea going employment. The combination of personal and working life on board a vessel and the separation for their support network at home mean that some of the general theories cannot be applied to those in sea going employment.

The quality of the training during the sea phase is frequently cited as a reason for higher attrition, and many trainees see no relationship between training and employment. One study identified that the main attrition occurred when the students went on their sea phases and there were questions raised about the suitability of that environment and the support available, but also in the suitability of the cadet to deal with these situations and in their preparedness. This will be looked at as one of the main themes of this work in developing further knowledge on cadets' suitability to deal with seagoing training, and on the expectations of cadets prior to their first sea phase.

Further study is needed in the recruitment practices used to provide the increases in numbers required across the industry. A complete review of the training programmes available is needed with regard to how they prepare trainees for a seagoing career. A review of criteria that lead to attrition in the seagoing phase is needed to ensure trainees have the characteristics required to deal with the additional stresses of a seagoing career and that expectations are realistic. One study identifies that retention is reduced where expectations do not match the experiences of the recruit.

Companies increase attrition by not guaranteeing employment, though some see the benefit in providing other incentives than just remuneration. Similar criteria appear across studies on factors that increase retention and those that increase attrition. Conditions on board, such as communication with home, increases retention. Studies show that different employment conditions can effect retention, but given the amount of variables, and the cost of change, a logical progression in that argument would be to recruit applicants with the ability to cope with these different conditions. It is also evidenced that retention figures decrease during the sea phase and one reason could be the amount of pressures on berths and subsequent quality issues associated with the sea phase. The factors considered here will drive the content of the current work in two specific directions*:*

- *What is being done by companies to ensure deck cadet are protected during their sea phase and to improve retention through improved training programmes?*
- *Are companies recruiting suitable candidates, able to cope with the requirements of a deck cadetship?*

One study focussed on the training programme and evidenced that there is a major question to ask in the use of selection techniques and particularly in the appropriateness of tests to match the changing requirements of working at sea. The current work will develop this theme by looking at the tests available against the traits required to continue in a career at sea.

One of the major European studies concluded that there is little room for national and sectoral actors to influence or change the international framework of regulation, and this will be researched further when examining the current training schemes available to these trainees.

Another area for further research is in the question of gender equality on these training programmes. The literature shows different results in some studies, in the approaches of male and female to continuing in this career. The South African study shows that the presence of more females on these programmes produces a greater sense of normality and that the use of positive discrimination raises the number of females on these programmes.

On general questions of testing used in recruitment, one conclusion is that it must be suited to purpose and adapt as the requirements of the employees role develops. Personality testing against the 'big five' is well researched, but there is also research indicating that the measurement of potential at recruitment stage is also a reliable method. All testing introduces some element of bias in limiting the scale of questioning to more positive responses by certain groups. It is also clear that applicants need to be at a stage in their lives where they have sufficient life experience to be able to respond to the questions asked.

In the Maritime sector, a very rigid qualifications system exists, which may present a barrier to recruitment. The main method used in recruitment to deck cadet programmes is academic suitability of applicants to meet the academic level to be attained on their training programme.

There is extensive literature available on the use of testing and the relationship it has with employment. Previous research exists that relates certain personality factors with areas of employment. Testing is used in recruitment, but is more likely to be aptitude or ability rather than personality or interest based.

Research is growing in the area of using predictors of retention as well as job performance at recruitment stage. It is also seen as possible to use personality traits as predictors. Large employment sectors are more likely to employ personality testing alongside cognitive testing where aspects of the employment require strengths in identified areas such as conscientiousness or honesty, but the results of these need to be judged against the availability of coaching for that particular sector. Tests don't exist for the Maritime sector, so research is needed to identify the significant traits most suited to a career in this sector, before test can be employed. Care will also need to be given in the design of any tests to ensure there is limited ability to coach applicants toward the most appropriate responses.

The validity and reliability of the tests is very well researched, and test have been developed for cognitive testing and personality testing that are widely used and accepted as reliable.

The current work will consider the application of the factors identified above in the recruitment of deck cadets into the UK Merchant Navy. It will research all of the factors related to retention and recruitment, and will look at the use of tests during the recruitment process that will allow the identification of personality traits that may make a candidate more or less suited to a career at sea and thus improve retention.

# 3.0 Methodology

## 3.1 Introduction

This chapter will investigate the most appropriate methods to be used in order to achieve the research aim. A mixed methods approach will be needed in order to deal with the various investigative aspects of the research. A discussion will follow on the overall research approach taken and then each area of independent research will be looked at in detail to establish the research approach taken and to look at the sample selections and data testing methods that will be used.

## 3.2 Mixed Methods

A mixed methods approach will be taken in completion of the work as there are different aspects to the research question, which may be answered using a combination of methodologies. According to Teddlie and Tashakkori (2009) the mixed methods approach allows both narrative and numeric data and their analysis, and focusses primarily on the pragmatic approach and looks at the question of what works and then develops the research to match any sub-set of questions that will need to be answered.

This research is looking at the question of:

*Are the most suitable processes used in the selection of deck cadets in the UK Merchant Navy to promote retention throughout the training phases?*

In order to address this there is a need to gather data from all of the sample groups related to this sector.

The facts that the work is based on are:

- There are applicants recruited into the UK Merchant Navy every year to work as Deck Cadets and then to qualify as Officers of the Watch (OOW).
- The number of UK junior officers is insufficient to meet sector demands in the future.
- The attrition rates across cadet programmes are too high.
- The expected career duration for an officer at sea has reduced in recent years.

The pragmatist approach is then to look at the processes contributing to these facts and to design the research to enable each contributing aspect to be evaluated. The research question can be split into four main areas:

- Are the recruitment practices used to select candidates, suitable to meet the increasing numbers needed in this area?
- Are the training programmes fit for purpose with respect to controlling attrition?
- Are there identifiable personality traits that are evident in those seafarers who continue in a career at sea, that could be identified in applicants, that determine their likelihood of continuing in a career at sea, or identify a suitable sector for them to work in?
- Can a test be used to identify those cadets needing additional support prior to their first sea phase?

The final research activity is then to combine these aspects to see what can be developed within the current selection processes to widen the applicant pool while selecting applicants most suited to the requirements of a career as a Deck Officer, and changes that should be made to the cadet programmes to make them more attractive to potential applicants and to increase retention during training.

The final outcomes will then be:

- suggested changes to current training programmes
- suggested changes to recruitment practices
- suggested test to be used in
    - selection
    - sector preference
    - diagnostically with those already recruited/on pre-sea courses

### 3.3 Selection Processes

The stakeholders involved in the selection processes are the companies that recruit the cadets, the colleges that provide the courses, the government bodies that accredit the training and provide funding and the applicant pool.

The research design that will be used, will be firstly to evaluate the training programmes currently on offer and their development internationally and nationally

to attract candidates while maintaining the quality of the programmes and producing qualified deck officers with the correct skills to continue in a career at sea. This will then contribute to the wider discussion on retention across these training programmes.

This will be developed in an extensive investigation chapter presenting secondary and primary data, to establish what controls are in place on the structure of the training schemes and in how they are financed. The primary data will be generated through interviews with government bodies to assess their overall strategies, interviews with the colleges involved in the running of the training programmes and interviews with the shipping/training companies who are the primary recruiters of cadets onto the training programmes. This will then allow all of those involved in the training of deck cadets to contribute to the wider discussion in the current work. The stakeholders interviewed will include:

**Table 3.1 Stakeholders**

| | |
|---|---|
| MNTB | Overall responsibility for training programme accreditation |
| MCA | Approval of funds for cadet training and ensuring that standards of training meet international requirements |
| IAMI | Represent training providers |
| Nautical Colleges | Representing the academic phase in cadet training |
| Training companies | Recruit and employ cadets and provide/arrange training berths |
| Maritime UK | Industry organisation reporting to Transport Minister |

### *3.3.1 MNTB, MCA and IAMI*

Semi-structured interviews will be used with the MNTB, MCA and IAMI as this will allow for core questions to be asked regarding training strategies, but more specific questions to be asked regarding the responsibilities of the specific body. Open questions will also be used as this will allow the opportunity for expanded discussion and inclusion of any additional, relevant material. These interviews will be conducted in person where possible, as this will allow discussion to be developed. The content of the college programmes, the sequencing of these programmes, the entrance requirements for those applying for the programmes, the sea time provision and the financial support available is all within the remit of these bodies, so the data from these interviews will be able to support the

investigation chapter in the detail provided on the strategies in place and in development for future recruitment and training.

### *3.3.2 Colleges*

A structured interview will be used with individual colleges as there are four main colleges, Glasgow, Fleetwood, South Tyneside and Solent, and a consistency of approach to the questions is preferred to allow for more consistent presentation of the data and comparison of the responses. This will also allow for the responses to be completed remotely or in person as opportunity allows. There will also be an open section at the end to allow for any additional comments the interviewee sees as relevant. The interviewees who are completing this remotely will also be encouraged to seek clarification if required. The completed interviews will contribute to the investigation of the structure of the training programmes and in identifying traits that would lead to the success of cadets in completion of the programme and in continuing to a career at sea.

### *3.3.3 Training Companies*

Shipping/training companies will be interviewed using semi-structured interviews, to allow for consistency in themes to be identified but also allow for individual input from each interviewee to ensure as many variations in selection processes are included as possible.

The companies will be asked questions on general recruitment practice and how these have developed over the years. They will also be asked about any form of testing that has been used or is used.

### *3.3.4 Deck Officers*

In looking at the development of a test to support selection techniques in recruitment, a population to be considered could be the applicant pool to see if applicants have specific characteristics leading them to apply to work in this area. This is a difficult population to gain access to, as the majority will be applying individually while still at school, and the applications go directly to a company. This group may be approached through companies once a form of test has been developed, but they are not suitable to try and approach in the design of the test,

as the first stage in the development of the test must be to identify the traits suited to a career at sea. This group will also have little knowledge of the reality of training at sea, so will be unable to accurately evaluate their suitability for a career at sea. In order to identify the personality traits most suited to a career it sea, it is clear that a sample set already exists of those working as deck officers at sea, who are continuing in this role. If their personality traits can be identified through the use of questionnaires, alongside other criteria associated with them continuing at sea, then it is reasonable to make this the basis of a test for use in selection to assess if applicants have the same personality traits. If there is also a criteria of working sector included in the data, this may also allow for identification of continuing seafarers' personality traits across different sectors to identify traits in testing that may demonstrate applicants more suitable to working in certain sectors of the industry. This may then allow for a separate application of the test, where it could be used as a diagnostic to better prepare first phase cadets for the requirements of a sea going career.

The questionnaire will be chosen because '*each person is asked to respond to the same set of questions, it provides an efficient way of collecting responses from a large sample*' (Creswell, 2009).

### *3.3.5 Cadets*

Questionnaires will also be used with the cadets. These will be used to evidence the expectations of the applicants prior to going on their first sea phase, and to see if the cadets felt prepared. The cadets will be questioned before their first sea phase and after their first sea phase in a longitudinal study '*involving repeated measures on the same variables for the same group or groups on an extended series of occasions'*. (Robson, 2002)

The questionnaires will highlight factors related to their expectations and the meeting of these on their first trip to sea. These questionnaires will be used to look at perception and expectation, as the research in the literature review indicates that many decisions are based on meeting expectations rather than making decisions based on actual conditions, and that a realistic job preview at recruitment promotes retention.

This will allow for the identification of those aspect which act as maximum deterrents to cadets and impact their retention, and when combined with personality testing, may be used in better preparing future cadets for the sea phase and in diagnostic testing to identify those with personality characteristics which make them less suited to spending time in a sea going environment.

The personality questionnaire will also be sent to current cadets to see if there is any difference in the outcomes from this sample compared to the outcomes from current deck officers. This will then allow for evaluation of any differences between the two sample sets and would then allow a more detailed test to be developed focussing on any trait that evidences as different between the two groups that could then be used in recruitment of more suitable cadets, likely to have an extended career at sea. If both groups respond to the same personality trait test questions, then the results for each group against each personality trait can be compared to see if there are any significant differences. If there are differences in any of these traits, then it would be reasonable to say that those being recruited into the industry do not match those of seafarers remaining at sea.

Once relevant traits have been identified, the test will be adapted to ensure it focusses on traits most relevant in recruitment of those likely to remain in a career at sea.

The final test will be sent out to newly recruited cadets to evaluate its effectiveness in measuring their traits for identification of those needing further support prior to their first sea phase, in looking at the sectors they will work in and in suggesting if any would not have been recruited if the test had been used at an earlier part of the selection process.

Ideally the test should be used with a sample of applicants, but it is unlikely that access will be available to this sample, as they are a vulnerable group.

### 3.4 Samples and Data quality

According to Saunders et. al., (2012) data quality issues related to reliability, forms of bias, generalisability and validity may arise with the use of semi-structured interviews. The reliability factor is due to the opportunity for discussion to arise with the use of open questions. This may then allow the bias of the interviewer or interviewee to be included based on the interaction and perceptions of those

involved. The data produced from the interviews in this study is not intended to be generalised, but to work as the foundation for identification of factors relevant to the recruitment and retention issues of deck cadets in the UK Merchant Navy. Validity refers to the extent to which the researcher has gained access to a participant's knowledge and experience and can infer meanings.

Reliability and bias will be controlled by speaking to interviewees who are in senior positions within their organisations, with a high level of experience within the industry and conducting the interviews in a professional manner.

The selection of respondents is based on stakeholder positions within the industry, or on purposive sampling of college representatives and training companies. According to Robson (2002), purposive sampling is '*acceptable when there is no intention or need to make a statistical generalization to any population beyond the sample surveyed.*' Purposive sampling will also ensure that a '*greater depth of information …..from a smaller number of carefully selected cases*' (Teddlie and Tashakkori 2009) is produced.

A stratified sampling technique will be used with the cadets for the longitudinal study and confirmation of the selected test, to ensure that the target group are at the correct stage in their training for the appropriate level of questions.

The sampling of the seagoing officers and cadets for the main questionnaire will be by convenience sampling to gain as much data as possible from large populations. Social media platforms and gatekeepers will be used to ensure a wide distribution to a geographically spread subject group. The data will be controlled to ensure that responses can be clearly categorised by nationality and to clearly identify UK deck officers trained through the UK system in the data.

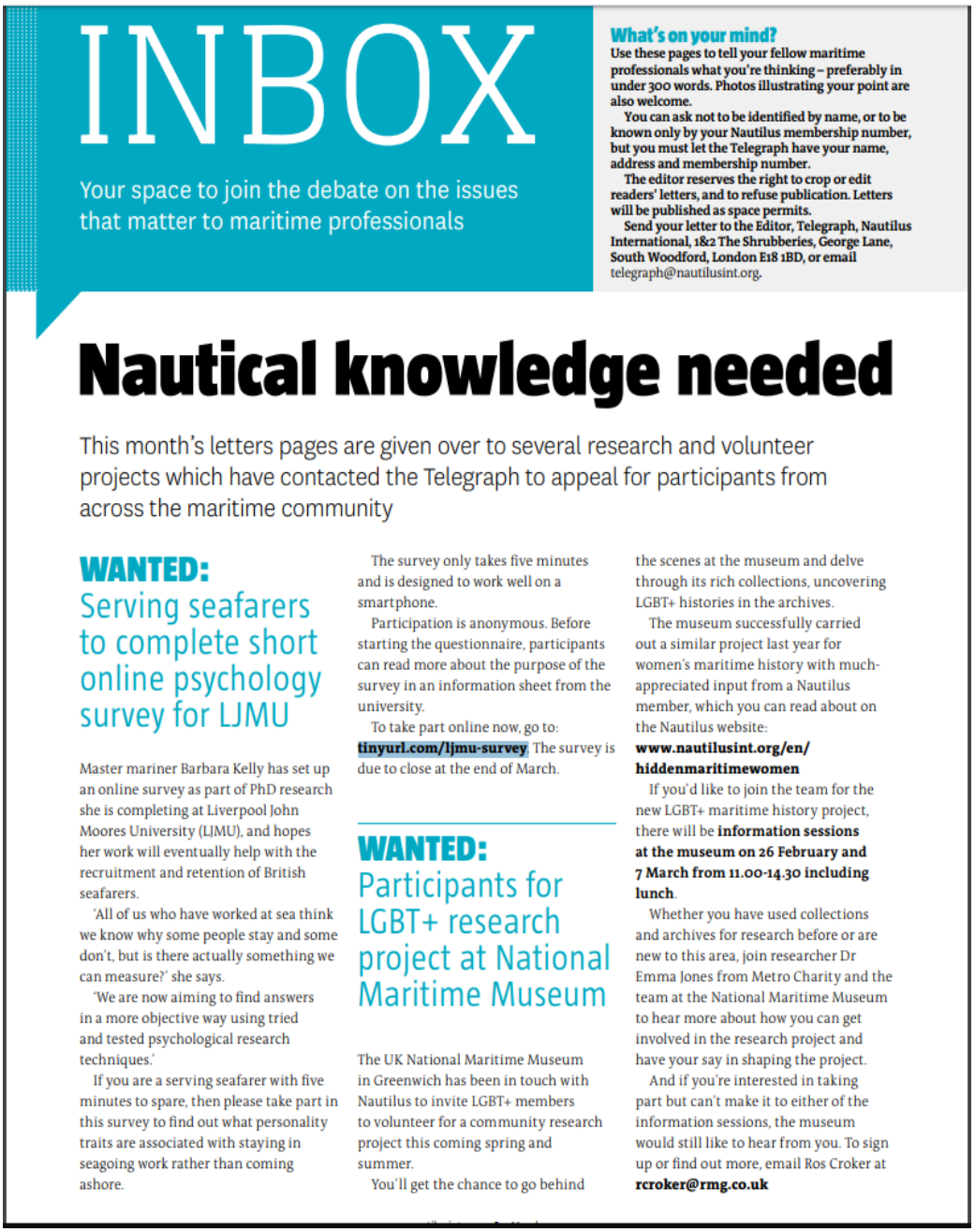
After the development of the questionnaire for seafarers, it was piloted with a current group of continuing seafarers to ensure that the data gathered is in the correct format and that it could be analysed. After the first pilot, refinement of the wording and personal variables was done. Also while considering the method of distribution it became clear that the simplest distribution method would be to ask gatekeepers to distribute the link to the questionnaire through their access portals.

This then meant that a simpler solution would be to connect all seafarers and cadets to a single questionnaire and to adapt the questions to allow both groups to

respond. The revised questionnaire was then piloted with a group of seafarers and a group of cadets to ensure responses were straight forward and that they could be completed in a matter of minutes, with access through a mobile phone. A few questions were again revised to ensure ease of understanding and completion. The most discussed question was on that of gender which introduced some challenges.

The sample selection has been justified above, as current seafarers remaining at sea and cadets as representing trainees.

In aligning to GDPR requirements on approaching respondents through email, gatekeepers were approached to request that seafarers who have allowed for approaches of this nature to be made, be sent the link to the questionnaire by the gatekeeper. The gatekeeper for this sample is the seafarers' Union who agreed to publicise the link. They first posted a summary of the research on their news feed as shown below.



# INBOX

Your space to join the debate on the issues that matter to maritime professionals

**What's on your mind?**

**Use these pages to tell your fellow maritime professionals what you're thinking – preferably in under 300 words. Photos illustrating your point are also welcome.**

**You can ask not to be identified by name, or to be known only by your Nautilus membership number, but you must let the Telegraph have your name, address and membership number.**

**The editor reserves the right to crop or edit readers' letters, and to refuse publication. Letters will be published as space permits.**

**Send your letter to the Editor, Telegraph, Nautilus International, 1&2 The Shrubberies, George Lane, South Woodford, London E18 1BD, or email** telegraph@nautilusint.org.

## Nautical knowledge needed

This month's letters pages are given over to several research and volunteer projects which have contacted the Telegraph to appeal for participants from across the maritime community

### WANTED: Serving seafarers to complete short online psychology survey for LJMU

Master mariner Barbara Kelly has set up an online survey as part of PhD research she is completing at Liverpool John Moores University (LJMU), and hopes her work will eventually help with the recruitment and retention of British seafarers.

'All of us who have worked at sea think we know why some people stay and some don't, but is there actually something we can measure?' she says.

'We are now aiming to find answers in a more objective way using tried and tested psychological research techniques.'

If you are a serving seafarer with five minutes to spare, then please take part in this survey to find out what personality traits are associated with staying in seagoing work rather than coming ashore.

The survey only takes five minutes and is designed to work well on a smartphone.

Participation is anonymous. Before starting the questionnaire, participants can read more about the purpose of the survey in an information sheet from the university.

To take part online now, go to: **tinyurl.com/ljmu-survey**. The survey is due to close at the end of March.

### WANTED: Participants for LGBT+ research project at National Maritime Museum

The UK National Maritime Museum in Greenwich has been in touch with Nautilus to invite LGBT+ members to volunteer for a community research project this coming spring and summer.

You'll get the chance to go behind the scenes at the museum and delve through its rich collections, uncovering LGBT+ histories in the archives.

The museum successfully carried out a similar project last year for women's maritime history with much-appreciated input from a Nautilus member, which you can read about on the Nautilus website: **www.nautilusint.org/en/hiddenmaritimewomen**

If you'd like to join the team for the new LGBT+ maritime history project, there will be **information sessions at the museum on 26 February and 7 March from 11.00-14.30 including lunch**.

Whether you have used collections and archives for research before or are new to this area, join researcher Dr Emma Jones from Metro Charity and the team at the National Maritime Museum to hear more about how you can get involved in the research project and have your say in shaping the project.

And if you're interested in taking part but can't make it to either of the information sessions, the museum would still like to hear from you. To sign up or find out more, email Ros Croker at **rcroker@rmg.co.uk**

**Figure 3.1 Gatekeeper request for data**

Nautilus Telegraph March (2020)

For the cadets, the gatekeepers are the companies employing them and the colleges overseeing the academic element of their training. The main training provider offered to act as gatekeeper for this, as did the main colleges in the UK.

With extensive responses this will mean that the data should be representative of both populations and should allow for some inferential statistical data to be produced.

## 3.5 Data Analysis

The data produced from interviews will be qualitative and will be used to inform on trends in the sector, current practice and criteria that contribute to the selection process and their level of importance. The data from the seafarers will be used to identify traits and then to correlate this against their defining criteria such as continuation in a career at sea, gender, nationality, sector, academic and age. The selected criteria are identified as relevant through the literature review. The responses to the questionnaire will then be evaluated to see which are the most significant questions to be used with applicants in order to select those most suited to a continued career at sea or to be used diagnostically to identify applicants needing additional support before their first sea phase.

Standard personality testing presents some issues when applied to sea going employment, as the division of characteristics does not translate easily to being at sea. For example, should someone going to sea be extravert or introvert? Extravert in the sense of adventure they require but introverted to deal with the lack of social exchanges. This additional complexity may allow mapping of different ship board conditions and the suitability of specific personal characteristics against specific sectors of shipping.

There will follow a further section in this work on the development of the questionnaire for seafarers as this constitutes the main data collection for the work overall.

The data collected through the longitudinal cadet questionnaires will be qualitative, but will also present an issue in that the questions asked are open so some form of coding is required to categorise the data. A grounded theory approach will be taken in doing this as Robson (2002) describes:

- *'Find conceptual categories in the data;*
- *Find relationships between these categories*
- *Conceptualise and account for these relationships through finding core categories.'*

This will then allow expectations to be evaluated against the reality of a first voyage at sea.

The main questionnaire responses will allow for analysis to see if there are any significant variables that provide results for comment such as gender preference for sector or ship type or age of moving ashore to see if there is any relationship between any of the variables and identified personality trait, such as those with preference for sector all scoring high in one personality trait. The main analysis will be in the data provided to the main five personality questions. Comparisons will be made between the responses of the cadets and those of the experienced seafarers to identify any significant differences across these traits. Should these be identified then it will allow for development of the final test based on those traits seen as significant to continuing in a career at sea. The final test data can then be used to identify scores across these traits and assessment of those tested as being suitable to a continued career at sea.

### 3.6 Ethical Approval

Ethical approval will be gained prior to collection of any data to ensure that appropriate participant information is provided to those involved and that any data collected will be appropriately protected. An example one of the Participant Information Sheets is provided in Appendix I, which also includes the ethical approval reference. All of the data for the study will be collected from non-vulnerable adults and will not involve sensitive material.

### 3.7 Research structure

The research will involve incorporating opinions and data from all relevant sectors of the maritime sector related to seagoing employment and then combining the outcomes and data to evaluate recruitment and retention factors in the training of deck cadets within the UK Merchant Navy.

## 3.8 Data Outcomes

**Table 3.2 Data outcomes**

| Source | Type | Outcome |
|---|---|---|
| Stakeholders | Interview | Suitability of training structure<br>Recruitment processes |
| Companies | Questionnaire/Interview | Selection Criteria<br>Testing Methods |
| Colleges | Questionnaire/Interview | Skills/Characteristics for retention |
| Seafarers/Cadets | Questionnaire | Personality test for those that stay at sea and in which sectors |
| Cadets | Questionnaires on expectations/reality and final test piloting | Perception data for use in recruitment recommendations and training structure evaluation.<br>Use of final test as diagnostic. |

The final outcome of the work will be to identify a suitable test to be used in recruitment, to allow applicants to be categorised by personality traits most relevant to a continued career at sea. This will improve the selection process and allow for the selection of candidates with the most suitable traits to deal with working on board ship and to deal with the social environment of working at sea. This test will also allow for the identification of those recruits without the required profile and this will allow for additional support to be offered pre-sea or for the sector of work most suited to the applicant to be better identified.

## 3.9 Limitations

The ideal population for trial of this form of testing, prior to application to the Merchant Navy would be all those in the UK educational system making career choices. This is not realistic in a study of this size and would require greater resources than are available. The next relevant population would be the cadets currently in the UK system. Although it is feasible that these could be targeted for the main part of the study, as in much of the literature previously cited, this sample set have already made a choice to follow this career without any testing being done of their personality traits. This then limits the responses to those within the context of this being their initial career choice. The phase of their training will also dictate their ability to respond on ship board training. Responses from this sample are then

limited to being questioned on how prepared they feel for the career and their experiences following their first voyage. Only those cadets that are currently in the system will be available to respond. The samples used will all only represent those already engaged in the system from the policy makers to the educators, and they are stakeholders and do have positions to protect. The cadets in the system only represent those groups that have been recruited based on previous practice with the inbuilt prejudices that entails. Current recruitment demonstrates a high percentage of white males from a small range of socio-economic backgrounds. This bias will then be transmitted to responses and can only be applied to this set of participants and not across the potential pool of applicants.

### 3.10 Development of the questionnaire

In the development stages of the current work, a test to be used with applicants into the UK Merchant Navy as deck cadets was the main component. The original approach to this was to be to look at the skills required by cadets once they are at sea and then to develop a test that allows for the identification of these skills during the application phase. When completing the literature review it became clear that psychometric tests used to measure aptitude and ability would not address the aim of the work. In reviewing the literature, it became clear, that skills requirements within the maritime sector are substantially related to academic achievement and knowledge based processes. This will be developed further in the main body of the work as it became clear that a further aim of this work is to investigate the current training schemes for these cadets and to look further at movement within the sector to support social changes experienced by the cadets onboard ships alongside their training in the employment aspect of their time at sea.

To achieve the aim within the current work, the test that is developed needs to look at the personality traits of the applicant. Although a substantial amount of research exists in the measurement of general factors suited to certain areas of employment, specific work related to the requirements of deck cadets in the Merchant Navy does not exist. The added complexity of assessing applicants for these positions is that the assessment is not based only on the employment requirements, but also on the total change in social requirements associated with going away to sea. The further complexity in this is also that going away may also require a wide variation in that social change, from passenger vessels where there

is a high level of social interaction to very large crude carriers where there is very little.

It is evidenced in the literature that it is valid to use personality factor identifiers to indicate job preference, but sea going occupations are not included in these wide occupational groups.

For this work the basis of the research reviewed is reversed and the proposal made to use those in the occupation selected to evidence the personality factors related to those remaining in that occupation, in a reversal of many of the outcomes of work in the literature review.

The literature also clearly shows that tests exist that allow for the measurement of personality indicators against 'normal' levels. The main area of research in this area suggests the FFM and the use of the NEO-PI. These tests come in many forms, and have been developed for use in different employment scenarios. A re-focus of this work then took place in deciding that it would be more useful to use a developed test to look at the personality indicators in those staying in a career at sea and then analysing these results to see if there are any specific factors that could be identified that indicate those staying at sea score highly in any of the major five factors. This would then allow a similar test to be suggested, focussing on the same outcomes rather than being measured against the 'normal' results. The logical progression of this being that applicants that show the same profile as those seafarers who stay at sea, may be more likely to complete training and remain in a seafaring career.

Psychometric selection tests are in two main areas.; Personality and Interest and also Aptitude and Ability.

All psychometric test should be:

- Objective – The score should not be affected by the testers' beliefs or values Standardised – It must be administered under controlled conditions
- Reliable – It must minimize and quantify any intrinsic errors, and show the same results if repeated
- Predictive – It must make an accurate prediction of performance
- Non-discriminatory – It must not disadvantage any group on the basis of gender, culture, ethnicity, etc
- Validity – measures what it says it does

Newton and Bristoll n.d.

The extensive nature of many of these tests was seen as unsuitable as they take too long to complete. The NEO-PI has five domains and each has six facets. The inventory is composed of 240 self-descriptive statements to which respondents use a five-point scale in Likert format. (Furnham, A 1996). This format of the test is useful when respondents have time and motivation to respond, but would not allow for extensive response rates if distributed remotely.

A shortened version of the FFM test was selected as likely to provide a comprehensive set of data allowing personality indicators to be identified against current seafarers, while allowing for a short response time for respondents.

The Wood and Sampson (2005) test was selected as their research within this area states:

'*In conclusion, the results reported here indicate that the SIMPs are probably reliable and valid measures of the Big Five for research purposes. They are offered freely here to researchers, ……. and their use is especially recommended for the following types of study: (1) where participants' time is limited, (2) pilot research, (3) studies in which personality is not the principal focus, and (4) time-series or round-robin research designs and other designs that ask participants to provide multiple personality ratings of themselves and/or multiple targets. Finally, the SIMPs offer a simple, accessible questionnaire for students' research projects. In sum, if research necessitates that a very short measure of the Big Five is the only practical option, and the benefits of their use are believed to outweigh the psychometric costs, then the use of the SIMP is recommended*.'

The test they provide is shown below:

### 3.11 The Single-Item Measures of Personality (SIMP)

Below are five pairs of descriptions. Circle **one point** on each scale to indicate how much you think each description sounds like you. For example:

- If a pair of descriptions describe you equally well, then mark the centre of the scale

Scoring: Recode item responses as values 1–9 (from left to right). Items are presented in the order Extraversion (R), Agreeableness, Emotional Stability, Conscientiousness (R), Openness. (R denotes reverse keyed items.)

This basic test has been refined since this paper and now presents in the format below:

**The single item measure of personality (5 items in total)**

Woods, S.A. & Hampson, S.E. (2005). Measuring the big five with single items using a bipolar response scale. *European Journal of Personality*, 19, 373-390. doi: 10.1002/per.542.

In the following 5 items there are a pair of descriptive statements related to each one. If both statements describe you equally well, then select the middle number (5). If description 1 represents you then select a number from 1 to 4 as appropriate (1 = strongly to 4 = slightly). If description 2 represents you then select a number from 6 to 9 as appropriate (6 = slightly to 9 = strongly). This test will give you a little flavour of the larger five-factor model and will be helpful if you complete it in advance of the session (will only take a few minutes). We will not ask you to divulge your scores during the session. You will note that there are 4 concepts in each description (corresponding with 1-4 in description 1, or 6-9 in description 2). You might like to ask someone close to rate you later.

Generally, I come across as:

**Item 1.**

Description 1: Someone who is a practical person, who is not interested in abstract ideas, prefers work that is routine and has few artistic interests (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who spends time reflecting on things, has an active imagination and likes to think up new ways of doing things, but may lack pragmatism (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 2.**

Description 1: Someone who doesn't necessarily work to a schedule, tends to be flexible, but disorganised and often forgets to put things back in their place (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who likes to plan things, likes to tidy up, pays attention to details, but can be rigid or inflexible (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 3.**

Description 1: Someone who is a reserved, private person, doesn't like to draw attention to themselves and can be shy around strangers (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who is talkative, outgoing, is comfortable around people, but could be noisy and attention seeking (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 4.**

Description 1: Someone who is forthright, tends to be critical and find fault with others and doesn't suffer fools gladly (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who is generally trusting and forgiving, is interested in people, but can be taken for granted and finds it difficult to say no (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 5.**

Description 1: Someone who is relaxed, unemotional, rarely gets irritated and seldom feels blue (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who is sensitive and excitable, and can be tense (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

Here are some guidelines on scoring the measure (the order below corresponds with the order above). In the column below, you can multiply each score you gave yourself by 5 (1 = 5, 2 = 10, 3 = 15, 4 = 20, 5 = 25, 6 = 30, 7= 35, 8 = 40, 9 = 45), and then mark these (x) as appropriate on the chart.

Score (x 5)

Item 1 - Openness to Experience …….

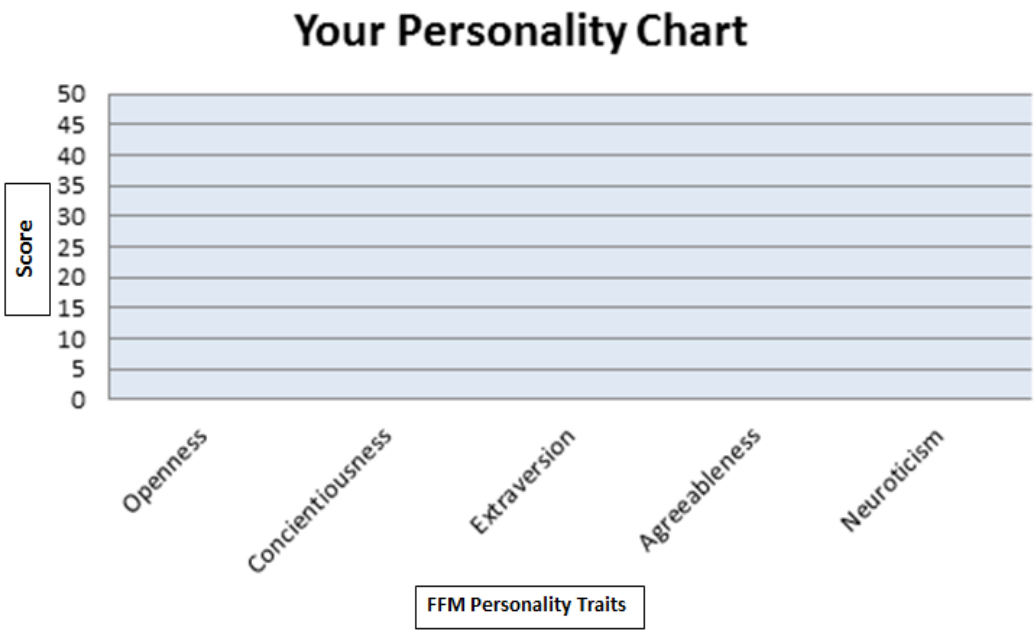
Item 2 – Conscientiousness …….

Item 3 – Extraversion …….

Item 4 – Agreeableness …….

Item 5 – Neuroticism …….

The midpoint score for each item after converting scores is 25. Therefore, a score above 25 is toward Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. A score below 25 is therefore in the opposite direction.




It also became clear that if discriminators were supplied by the respondent such as age, gender, time at sea, likely year of departure from sea and sector of employment, the data may also allow the measurement of relationships between personality identifiers and other factors. This may allow trends in gender distribution or sector of work to be identified to ensure that applicants could be directed to appropriate sectors of work or to allow diagnostic assessment to identify those cadets with additional support requirements. The discriminators were chosen based on their significance as identified in the literature review, and then confirmed as relevant through use of a pilot study. The pilot study was to be used to confirm the suitability of the construction of the questionnaire and its ease of use, and to allow feedback to clarify any issues.

The test was then distributed to current seafarers at LJMU as a pilot study to see that completion was within the capabilities of the selected sample and to see the response rate.

Out of a sample of 35 students, nine responses were received giving a twenty six percent response rate.

In each of the graphs, the numbers on the horizontal axis represent:

1 – Openness
2 – Conscientiousness
3 – Extraversion
4 – Agreeableness
5 – Neuroticism

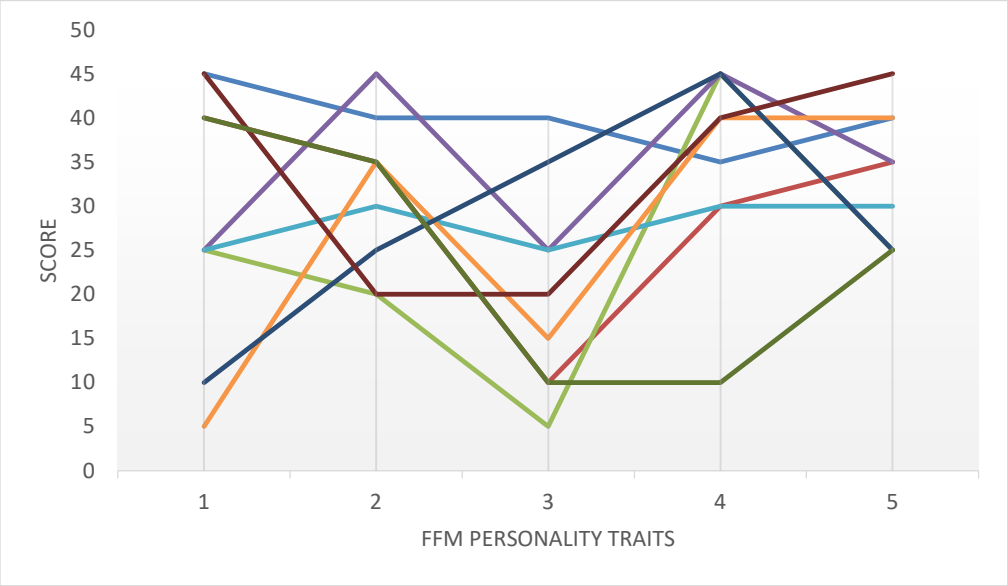



**Figure 3.2 Pilot test with seafarers**

It was noted that the pattern of distribution is interesting and since the survey was emailed to the students, the suggested improvement was that an online version would be better.

Qualtrics was then used to set up an online version of the survey, which could be completed on a mobile phone.

The decision was then taken to maximise the response rates through the use of the shortest possible test and number of questions. The proposal was to look at large numbers of responses compared to each of the populations, to allow for some inferential analysis. This was driven by the offers of support from stakeholders in the industry willing to act as gatekeepers in the distribution of the survey.

Since the distributors would have difficulty distinguishing between cadets and seafarers, it was also decided to combine the surveys originally targeting each group, and to adapt the questions to allow filtering of the groups once the data is collected.

The survey was revised and sent to a group of LJMU cadets, and a different LJMU seafarer group.

Of the eight cadets sent the link to the survey, all eight responded, and their results are shown below.

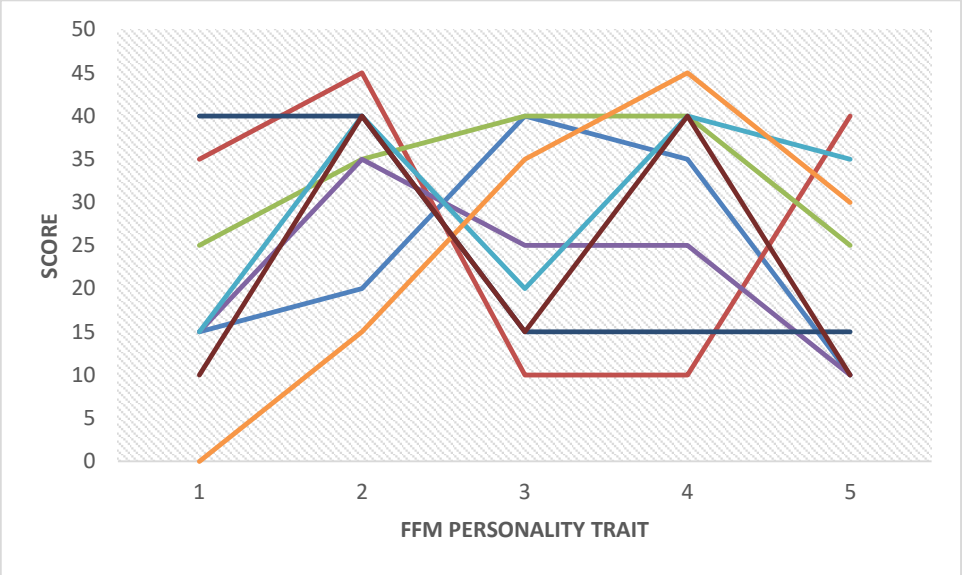



**Figure 3.3 Pilot test with cadets**

Again an interesting distribution was observed in the responses. The group also provided very useful feedback in the way the questions were phrased. The wording was revised and the survey was then sent to seventeen LJMU seafarers.

Of the 17 seafarers sent the link to the survey, ten responded giving a fifty-nine percent response rate.

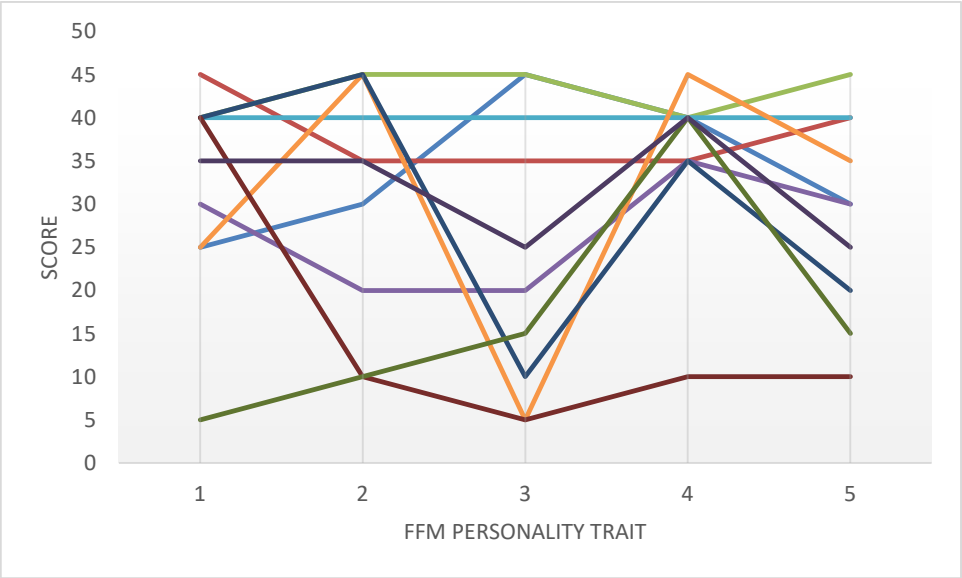



**Figure 3.4 Reviewed pilot test with seafarers**

Again the distribution shows a variation in the response of each student, with no two individuals having an identical profile.

It is also evident from this group that some patterns are immediately identifiable in the nature of the responses to certain traits. Openness and agreeableness are scored highly by all but one responder, whereas there is a downward trend between four and five and a spread in the scores on the responses to question three.

### 3.12 Final stage

Once the results of the initial stage of research are known, the appropriate test for use in recruitment or at early training stages will be selected. If there is an emphasis on certain personality traits then a FFM test will be used with extended questions in those areas, but with limited numbers of traits included. An example of this would be as given in Goldberg et al, (2006)

### 3.13 Example FFM test for use with deck cadet applicants

On the following pages, there are phrases describing people's behaviours. Please use the rating scale below to describe how accurately each statement describes ***you***. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the appropriate number.

**Response Options**

**1**: Very Inaccurate
**2**: Moderately Inaccurate
**3**: Neither Inaccurate nor Accurate
**4**: Moderately Accurate
**5**: Very Accurate

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | I am the life of the party ……. | **1** | **2** | **3** | **4** | **5** |
| 2. | I feel comfortable around other people …….. | **1** | **2** | **3** | **4** | **5** |
| 3. | I start conversations ……..... | **1** | **2** | **3** | **4** | **5** |
| 4. | I talk to a lot of different people at parties ……. | **1** | **2** | **3** | **4** | **5** |
| 5. | I don't mind being the centre of attention …….. | **1** | **2** | **3** | **4** | **5** |
| 6. | I don't talk a lot …….. | **1** | **2** | **3** | **4** | **5** |
| 7. | I keep in the background …… | **1** | **2** | **3** | **4** | **5** |
| 8. | I have little to say ……..... | **1** | **2** | **3** | **4** | **5** |
| 9. | I don't like to draw attention to myself …….. | **1** | **2** | **3** | **4** | **5** |
| 10. | I am quiet around strangers …… | **1** | **2** | **3** | **4** | **5** |
| 11. | I am interested in people ……. | **1** | **2** | **3** | **4** | **5** |
| 12. | I sympathize with others' feelings …….. | **1** | **2** | **3** | **4** | **5** |
| 13. | I have a soft heart ……..... | **1** | **2** | **3** | **4** | **5** |
| 14. | I take time out for others …… | **1** | **2** | **3** | **4** | **5** |
| 15. | I feel others' emotions …… | **1** | **2** | **3** | **4** | **5** |
| 16. | I make people feel at ease …….. | **1** | **2** | **3** | **4** | **5** |
| 17. | I am not really interested in others ……. | **1** | **2** | **3** | **4** | **5** |
| 18. | I insult people ……. | **1** | **2** | **3** | **4** | **5** |
| 19. | I am not interested in other people's problems …….. | **1** | **2** | **3** | **4** | **5** |
| 20. | I feel little concern for others ……. | **1** | **2** | **3** | **4** | **5** |
| 21. | I am always prepared …….. | **1** | **2** | **3** | **4** | **5** |
| 22. | I pay attention to details ……. | **1** | **2** | **3** | **4** | **5** |
| 23. | I get chores done right away …….. | **1** | **2** | **3** | **4** | **5** |
| 24. | I like order …….. | **1** | **2** | **3** | **4** | **5** |
| 25. | I follow a schedule …….. | **1** | **2** | **3** | **4** | **5** |
| 26. | I am exacting in my work …….. | **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27. | I leave my belongings around …….. | **1** | **2** | **3** | **4** | **5** |
| 28. | I make a mess of things …….. | **1** | **2** | **3** | **4** | **5** |
| 29. | I often forget to put things back in their proper place …… | **1** | **2** | **3** | **4** | **5** |
| 30. | I shirk my duties …….. | **1** | **2** | **3** | **4** | **5** |
| 31. | I am relaxed most of the time …….. | **1** | **2** | **3** | **4** | **5** |
| 32. | I seldom feel blue ……..... | **1** | **2** | **3** | **4** | **5** |
| 33. | I get stressed out easily …….. | **1** | **2** | **3** | **4** | **5** |
| 34. | I worry about things ……..... | **1** | **2** | **3** | **4** | **5** |
| 35. | I am easily disturbed …….. | **1** | **2** | **3** | **4** | **5** |
| 36. | I get upset easily …….. | **1** | **2** | **3** | **4** | **5** |
| 37. | I change my mood a lot …….. | **1** | **2** | **3** | **4** | **5** |
| 38. | I have frequent mood swings …….. | **1** | **2** | **3** | **4** | **5** |
| 39. | I get irritated easily …….. | **1** | **2** | **3** | **4** | **5** |
| 40. | I often feel blue …….. | **1** | **2** | **3** | **4** | **5** |
| 41. | I have a rich vocabulary …….. | **1** | **2** | **3** | **4** | **5** |
| 42. | I have a vivid imagination …….. | **1** | **2** | **3** | **4** | **5** |
| 43. | I have excellent ideas …….. | **1** | **2** | **3** | **4** | **5** |
| 44. | I am quick to understand things …….. | **1** | **2** | **3** | **4** | **5** |
| 45. | I use difficult words ……..... | **1** | **2** | **3** | **4** | **5** |
| 46. | I spend time reflecting on things …… | **1** | **2** | **3** | **4** | **5** |
| 47. | I am full of ideas …….. | **1** | **2** | **3** | **4** | **5** |
| 48. | I have difficulty understanding abstract ideas …… | **1** | **2** | **3** | **4** | **5** |
| 49. | I am not interested in abstract ideas ……..... | **1** | **2** | **3** | **4** | **5** |
| 50. | I do not have a good imagination …….. | **1** | **2** | **3** | **4** | **5** |

IPIP (2019)

A test such as this, as indicated in Gow et al, (2005), has already been psychometrically validated for use in this way. This then means that a selection can be taken from the questions above, related to the traits seen as significant to a career at sea. This will again allow for a test that is short and easily managed and therefore more likely to be used in practice.

### 3.14 Summary

This chapter has detailed the research methods that will be utilised to achieve the aim of the work. A mixed method approach is to be used to collect data from multiple sources to allow discussion based on interview and questionnaire data collected from stakeholders and samples representing continuing seafarers during and post training.

The main data collected will be through the main questionnaire, and this will allow for any distinguishable differences in personality traits to be identified between those staying at sea and those in training. This will then allow a test to be refined that allows for measurement of these specific traits at application stage and during the early stages of training to allow support to be put in place.

The revised test will then be used with a phase one cadet cohort to see it in use as a diagnostic, and its application in identifying those cadets suited to a continued career at sea.

There will also be data produced through a longitudinal study providing data on expectations of cadets of their training phases at sea, which will allow suggestions as to the type of support students need in order to be suitably prepared for their first sea phase.

# 4.0 Factors relating to Selection and Retention in Seafaring

## 4.1 Introduction

As outlined in the literature review, seafaring recruitment and retention does not align with practices in other sectors because the environment of the workplace includes working and social space with no relief from the vessel for weeks or months. The training of the cadets is also dictated by International standards that limit the development of the programmes. The recruitment also stands apart from most other industries in that recruits are selected by companies, but their programmes are run and managed by the colleges. Further detail is now provided to discuss the issues specific to this sector.

This chapter will focus on the current strategies used in the recruitment of deck cadets into the UK Merchant Navy and their ongoing employment into officer ranks. It will also look at the current training structures and preparation for a career at sea and ashore.

## 4.2 Recruitment of Seafarers

Historically, the Merchant Navy has relied on the recruitment of seafarers through family connections, and this is indicated in continuing studies such as Ruggunan & Kanengoni (2017). The profession was associated with adventure and travel and offered experiences away from the norms of young people starting in a career. As the extent of travel increased over the latter part of the twentieth century, potential recruits would normally be exposed to wider opportunities to travel in personal and professional environments so the opportunity offered by a career at sea could be seen as no longer offering an unusual addition of travel as an attractive factor. Social changes also mean that higher education opportunities have become available to a wider sector of the potential recruitment pool.

In the latter part of the twentieth century the majority of those recruited onto cadetships were sixteen and at school leaving age. The majority of cadetships were based at ONC/OND level and the phasing of the programmes were different, but also included a requirement for the cadet to spend two years at sea to be eligible for their first Certificate of Competence.

As social and political changes meant that more young people were staying at school for higher qualifications, it was decided to make major changes to the cadetships in the UK in the late nineteen nineties, as figures were in serious decline. Alongside the introduction of a Tonnage Tax by the Government came a training requirement placed on companies to include one trainee per fifteen employees. At this stage the MNTB adopted inclusion of a foundation degree which would allow applicants onto a programme including an alternative higher education qualification alongside those recruits who by this time were on programmes with the inclusion of either HND or HNC. The main purpose was to open up the recruitment pool to those leaving school at eighteen as well as those still leaving school at sixteen. By this time the sea time requirement had been reduced to eighteen months and then to twelve months. The changes made put more emphasis on the academic elements of the programmes and less on the seagoing elements. Part of this was aligned to the structures allowed for Government funding and the availability of training berths. At the time, the industry was not recruiting sufficient entrants into the industry to support its needs against those leaving the industry. This has been evidenced throughout the intervening years through ITF/BIMCO reports as cited earlier in the work.

Attempt have been made to refine the training schemes of cadets in order to make them more attractive to potential recruits, but the numbers recruited still do not draw down all of the Government funding available.

Socio-political changes have continued to widen the expectations of school leavers with greater access to higher education options and the lack of visibility of seagoing options, there is still a problem attracting suitable candidates onto these cadetships. There has also been the support for apprenticeships from recent Governments, which again allow further options to school leavers to move into practical occupations without the need to go away to sea. There is also little visibility of the ongoing prospects for those who complete cadetships and continue in a career at sea.

### 4.3 Management and regulation including Tonnage Tax

The current UK system supports the training of cadets through a system known as SMarT funding. This was introduced to revive the numbers being recruited into the maritime industry.

*'Support for Maritime Training (SMarT) is a government funded scheme created to increase the number of qualified seafarers in the UK maritime industry.*

*The SMarT scheme was established in April 1998 and supports training courses approved by the Maritime and Coastguard Agency (MCA) and the Merchant Navy Training Board (MNTB) for the training of officers, officer cadets and ratings.'*

(UK Ship Registry n.d.)

A tonnage tax was introduce by the UK government in 2000 to boost the maritime sector through an advantageous tax regime, provided a training commitment is maintained.

*'Election into tonnage tax requires a commitment by the company to train or underwrite the training of sufficient UK/European Economic Area (EEA) seafarers to meet a "Minimum Training Obligation" (MTO). The MTO falls into two parts: one for officers and one for ratings, and is set out below. Companies are free to operate higher levels of training to meet their specific circumstances.*

*The MTO for officers is to train one officer trainee per year for every 15 deck, engineer and electro-technical officer posts of the company's effective officer complement. "Officer trainee" includes defined categories of trainee undertaking a course of training approved by the Maritime Training Trust (MTT), a company established by the UK Chamber of Shipping, Nautilus International and the National Union of Rail, Maritime and Transport Workers (RMT) to hold and allocate monies contributed by companies for the purpose of promoting the training of seafarers, and the Merchant Navy Training Board (MNTB) and leading to the first certificate of competency (FCC2).'*

assets.publishing.service.gov.uk accessed 08-03-20

**Table 4.1 Length of training programmes**

| Type of Trainee | Training period | Notes |
|---|---|---|
| Cadet / Apprentice | Tracked over 36 months | There may be occasions where a cadet may take more than 36 months to complete training. In these cases you should record the first 36 months only. |
| Undergraduate | Tracked over 36 months | Undergraduate training may last 4 years. You should record the first 36 months. |

assets.publishing.service.gov.uk accessed 08-03-20

Accounting for Wastage Lord Alexander's Report stated that companies would be required to '*adjust annual cadet recruitment targets to take account of wastage during the training of cadets recruited under the training obligation. By maintaining appropriate levels of recruitment of officer trainees or equivalent ratings trainees, companies will be able to manage their training programmes to ensure that officer trainee numbers or equivalent ratings trainees normally remain at or above the level set out in the Company Training Commitment (CTC). However, should wastage bring officer or equivalent ratings trainee numbers below the CTC, the shortfall shall be made good by remittance of Payment in Lieu of Training (PILOT) to the MTT. In traditional cadet training schemes, wastage can be high and is not entirely predictable.*

*The training commitment described …is an obligation arising from participation in the tonnage tax. Some of the trainees recruited under the CTC may be eligible for UK government training support under the Support for Maritime Training (SMarT) scheme. However, the specific requirements of the SMarT scheme must be met and normal SMarT application procedures followed*. '

assets.publishing.service.gov.uk accessed 08-03-20

The consideration given to attrition in this report supports earlier literature about the low retention rates in these training schemes.

In 2018, numbers of cadets in training was still not sufficient to support the needs of the industry. In order to make the schemes more attractive to applicants, the Government introduced the next stage in SMarT funding which is called SMarT Plus. This funding allows increased funding for companies if they guarantee

employment of the trainee on successful completion of their first Certificate of Competence (CoC).

*'The Government funded scheme Support for Maritime Training (SMarT) aims to ensure a continuing supply of UK seafarers. On the 2nd of February the Minister announced that the Government's financial support for maritime training would be doubling from £15 million to £30 million through the new SMarT Plus initiative. SMarT Plus will see SMarT funding doubled, over a 7-year period. The aim of new scheme is to increase the annual intake of cadets from 750 to 1,200 to meet the nation's economic and strategic requirements. It also aims to further support companies with the cost of training these cadets to meet the requirements of gaining their second Certificate of Competency (CoC). 1.2 This MIN sets out an initial strategy to both administer and monitor the success of the SMarT Plus scheme. This strategy is reliant upon stakeholder engagement which will evolve over time to meet the needs of industry. The strategy is currently in the development stage and we welcome feedback on the proposals. By working with our stakeholders, we believe that together we can deliver the next generation of trained seafarers to meet the needs of a global industry.'*

MIN 567 (2018)

### 4.4 Training structures in the UK

UK trainees are employed by the Shipping/Training Companies and so are not the customers of the colleges that run the training programmes. The PILOT funding described above is used to fund additional cadets through the Maritime Educational Foundation (MEF) scheme, and these are managed through training companies. The companies oversee the overall training programmes and monitor the provision of sea time. The companies will usually pay the fees for the training programmes and offer the trainee a monthly payment of around £700 (2020) towards their additional costs. The companies will also meet the cost of all elements of the training required by the trainee such as short courses and Uniform/Safety gear. The colleges may then need to meet company request more readily than those of the trainee, as they do not directly recruit cadets but are reliant on the supply of their students through the company. This may then mean that the colleges may not need to be as student centred as they may be on other courses.

The current training programmes for UK deck cadets are overseen by the MNTB with regulations provided by the MCA through M Notices. The MCA coordinate the presentation of the programmes through IAMI, and monitor the quality of training provision through audit processes.

**Table 4.2 Training route for deck trainees**

| CoC | Area Limitation | Tonnage Limitation | STCW Convention Regulation |
|---|---|---|---|
| Officer of the Watch (OOW) | Near-coastal<br>Unlimited | Less than 500 GT<br>Unlimited | II/3<br>II/1 |
| Chief Mate | Near-coastal<br>Near-coastal<br>Unlimited<br>Unlimited | Unlimited<br>Less than 3,000 GT<br>Less than 3,000 GT<br>Unlimited | II/2<br>II/2<br>II/2<br>II/2 |
| Master | Near-coastal<br>Specified area<br><br>Near-coastal<br>Unlimited<br>Unlimited | Less than 500 GT<br>Less than 3,000 GT domestic vessels<br><br>Unlimited<br>Less than 3,000 GT<br>Unlimited | II/3<br>II/3<br><br>II/2<br>II/2<br>II/2 |

MSN 1856 (2015)

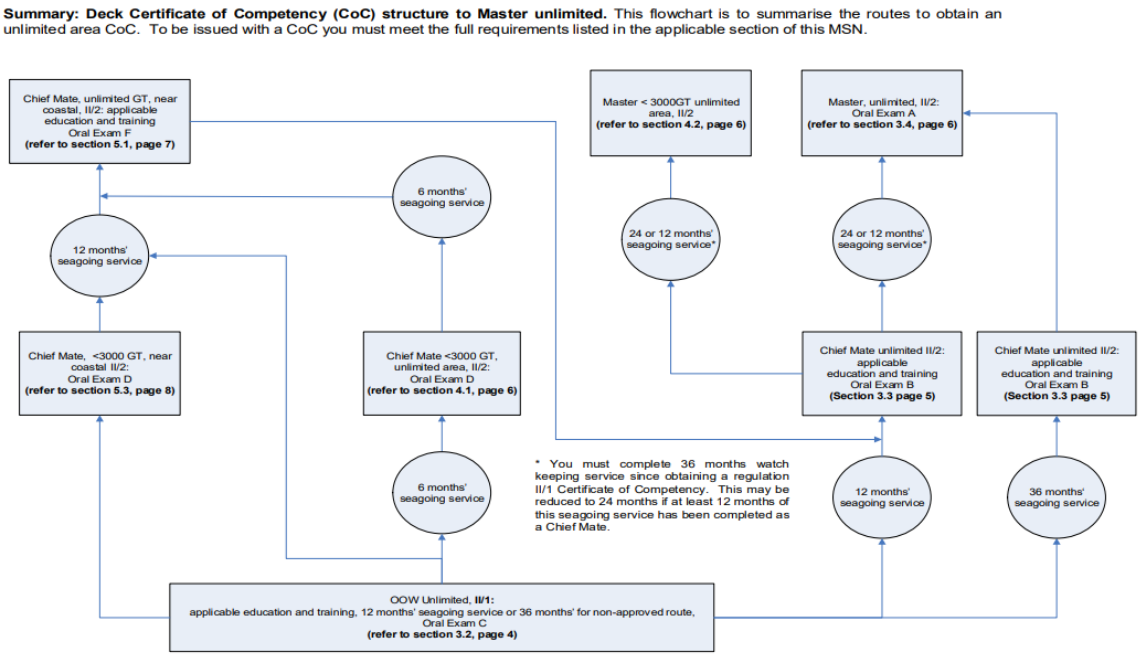



**Figure 4.1 Training structure**

MSN 1856 (2015)

Since seafaring is an International employment area, all training requirements have their source at the International Maritime Organisation (IMO), and employment conditions are developed through the International Labour Organisation (ILO).

The IMO is '*a specialized agency of the United Nations, IMO is the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented*'. (IMO 2019a)

The ILO is *'the only tripartite U.N. agency, since 1919 the ILO brings together governments, employers and workers of 187 member States , to set labour standards, develop policies and devise programmes promoting decent work for all women and men.'* (ILO 2019a)

These International Organisations present Conventions to which nations become signatory. Individual nations then create national laws which enforce compliance with these conventions by ships flying that nation's flag. For the training of seafarers, the main conventions are the International Convention on Standards of Training, Certification and Watchkeeping (STCW) and the Maritime Labour Convention (MLC). The position of the UK has been further complicated by

compliance with European Union requirements, but this is now in a change of state, though they continue to align to international requirements in this area.

STCW *'prescribes minimum standards relating to training, certification and watchkeeping for seafarers which countries are obliged to meet or exceed'* (IMO 2019b). In the UK, STCW compliance is monitored by the Maritime and Coastguard agency (MCA). They provide the frameworks for Education and Training in the seagoing Maritime sector in the UK. This is primarily done through M Notices such as MSN 1856, which continuously adjust the rules applied to these programmes.

International standards are then monitored through National organisations reporting to IMO. If national organisations demonstrate compliance with STCW requirements, their country is named on something known as the white list. Any seafarer with a qualification issued by a country on the white list is then seen as qualified to the international standard of STCW.

For the training of deck cadets, the detail of the individual presentation of programmes is overseen by the Merchant Navy Training Board. This body looks at the detailed application of STCW within training programmes and compliance with the achievement of the competence requirements.

The complication added to this system is that as a training body, there are also compliance issues for these programmes with such things as National Occupational Standards that allow demonstration of standards against other programmes at this level within the UK educational system, and attainment of skills as in other UK training programmes.

This all then means that applicants coming onto deck officer training programmes are enrolled onto strictly controlled programmes delivering international curriculum content and being assessed within very prescribed assessment structures. At OOW level, these programmes are primarily at level four and five of the current UK QAA descriptors.

Within the STCW structure, OOW is known as 'operational' level and could directly be mapped against level four descriptors within the HE/FE sectors in the UK. When equating STCW to level five in the UK system the descriptor is 'management' level and includes all of the curriculum needed to lead to the higher Certificates of Competency of Chief Mate and Master.

Because of this level of equating content, the most common form of training programmes for deck seagoing programmes incorporate a Foundation Degree or

HNC/HND.

The current training programmes for UK deck cadets are presented for validation at the MNTB. Their focus will be that all STCW content is presented at stages of the programme, but also that the programme is within a framework they have produced to ensure phases in education and phases at sea, with supervised training for deck cadets while they are on their sea phase. They will also require evidence that all short course requirements are included within a training programme.

### 4.5 OOW Training

The extract below is from the MNTB framework for Maritime Sector Foundation Degree Framework for the Merchant Navy.

**Table 4.3 Frameworks for the Merchant Navy Deck Cadet scheme**

**Figure 4: Indicative model for deck cadet scheme, incorporating Foundation Degree programme**
(References to 'Level' are to the QCA National Qualification Framework – September 2004)

| Stage | Phase | Duration | Content |
|---|---|---|---|
| Induction and Initial Training | 1 First college phase | 4 weeks | Company and college induction (3 weeks). STCW Basic Training - Personal Survival Techniques, Elementary First Aid, Fire Prevention and Fire Fighting, Personal Safety and Social Responsibilities (1 week). Theoretical and practical aspects of Proficiency in Survival Craft and Rescue Boats (PSC&RB) and Efficient Deck Hand (EDH) certificates. NB: Examination for PSC&RB and EDH takes place in Phase 5. |
| | | 15 weeks | Level 4 Foundation Degree subjects (credit value in brackets): study skills (10); maths and science (10); ship construction (5); meteorology (10); navigation (10); cargo (10); navigation aids theory (5). |
| | 2 First sea phase | 8 months (approx) | Shipboard induction, familiarisation and development of basic seamanship and seafarer skills.<br>Undertake work-based learning at level 4 (20 credits) based on: ship/cargo operations and bridge/navigation operations.<br>Undertake planned training documented in Training Record Book. |
| Training and Development | 3 Second college phase | 30 weeks | Assess/consolidate work-based learning from Phase 2.<br>Level 4 Foundation Degree subjects: Navigation Instruments (5); Management (20); Engineering (5); College devised (10).<br>Level 5 subjects: Navigation (20); Cargo (10); Management (5); Ship stability (15); Law (10); Research skills (10); College devised (10) |
| Skills development and certification | 4 Second sea phase | 10 months (aprox) | Emphasis moves from basic skills to bridge/cargo handling duties and responsibilities, including understudying the role of the OOW.<br>Undertake work-based learning at level 5 (40 credits) based on: ship/cargo management; bridge/navigation management; management of safety and security of the vessel.<br>Complete programme of shipboard training documented in Training Record Book. |
| | 5 Third college phase | 3 weeks | Assess/consolidate work-based learning from Phase 4. Foundation Degree programme completed. |
| | | 8 weeks | STCW short courses: Examination for PSC&RB and EDH certificates; GMDSS; Medical first aid; NARAS(O) - simulator; Advanced fire fighting |
| | | 4 weeks | Preparation for MCA oral examination for OOW certificate of competency |

MNTB n.d.

For students following the HNC/HND route the following extracts from Merchant Navy Deck HNC and HND Programmes Framework Document with MNTB Programme Approval Process and Criteria:

**Figure 4: Indicative model for deck officer trainee scheme, incorporating HNC and /or HND awards**

| Stage | Phase | Duration | Content |
|---|---|---|---|
| Access Course and Initial Training | 1<br>First college/university phase | 18 weeks | STCW Basic Training - Personal Survival Techniques, Elementary First Aid, Fire Prevention and Fire Fighting, Personal Safety and Social Responsibilities.<br>FEC/HEI and company induction.<br>Study skills. English/communications, mathematics and IT to support HN studies. Key/core skills.<br>Introductions to - the Shipping industry; Shipboard operations; Ship construction and stability; Nautical science; Bridge watchkeeping.<br>Theoretical and practical aspects of Efficient Deck Hand (EDH), Proficiency in Survival Craft and Rescue Boats (PSC&RB) certificates. |
| | 2<br>First sea phase | 34 weeks/<br>8 months<br>(approx) | Shipboard induction, familiarisation and development of basic seamanship and seafarer skills<br>Undertake planned training documented in the Training Record Book |
| Training and Development | 3<br>Second college/university phase | 30 weeks | Assess/consolidate learning from Phase 2.<br>HN units required for OOW: Chartwork and tides; Navigational mathematics and science; OOW Meteorology; Bridge watchkeeping; Marine cargo operations; OOW Ship stability; Naval architecture – ship construction; Celestial navigation; Marine emergency response and communication; Marine law and management.<br>Optionally - STCW Short course: GMDSS; HNC completion. |
| | 4<br>Second sea phase | 50 weeks/<br>11 months<br>(approx) | Emphasis moves from basic skills to bridge/cargo handling duties and responsibilities, including understudying the role of the OOW<br>Complete programme of shipboard training documented in the Training Record Book |
| Skills Development and Certification | 5<br>Third college/university phase | 17 weeks | Optionally - STCW Short course: GMDSS; HNC completion.<br>STCW short courses: Certification of PSC&RB and EDH; Medical first aid.<br>NARAS(O) – simulator; Advanced fire fighting.<br>SQA/MCA OOW examinations. MCA oral examination for OOW certificate of competency. |
| | Additional | 26 weeks | HND units: Information Technology; Passage planning; Management of bridge operations; Further marine meteorology; Ship stability – theory and practical application; Marine vessel structures and maintenance; Management of vessel operations; Shipmasters business; Shipboard management; Safety management systems.<br>HND programme completed.<br>Successful completion of HND (Part 2) academic assessments provides prequalification to Chief Mate/Master level. (Marine engineering systems; Emergency planning; SQA/MCA Chief Mate papers and the Mates oral examination will need to be undertaken after the necessary sea service.) |

MNTB n.d.

The short course requirements for the OOW training scheme are given below:

**Table 4.4 Short course requirements**

| Ancillary/Safety Course Certificate | II/1 | II/2 | II/3 | STCW Code Reference | Updating required |
|---|---|---|---|---|---|
| **Personal Survival Techniques** [a] | Yes | Yes | Yes | A-V1/1-1 | • |
| **Fire Prevention and Fire Fighting** [a] | Yes | Yes | Yes | A-VI/1-2 | • |
| **Elementary First Aid** [a] | Yes | Yes | Yes | A-V1/1-3 | |
| **Personal Safety and Social Responsibility** [a] | Yes | Yes | Yes | A-V1/1-4 | |
| **Proficiency in Survival Craft and Rescue Boats** [b] | Yes | Yes | Yes | A-V1/2* | • |
| **Advanced Fire Fighting** [b] | Yes | Yes | Yes | A-VI/3 | • |
| **Medical First Aid** [b] | Yes | Yes | Yes | A-V1/4-1 | |
| **Medical Care** [b] | | Yes | | A-VI/4-2 | **See 10.8** |
| **NAEST (operational)** [c] | Yes | Yes | Yes | A-II/1 | |
| **NAEST (management)** [c] | | Yes | | A-II/2 | |
| **Efficient Deck Hand (EDH)** [c] | Yes | Yes | Yes | N/A | |
| **HELM (operational)** [c] | Yes | | Yes | N/A | |
| **HELM (management)** [c] | | Yes | | N/A | |
| **GMDSS (GOC)** [d] | Yes | Yes | | A-IV/2 | |
| **GMDSS (ROC)** [d] | | | Yes | A-IV/2 | |

**a -** The MCA will accept certificates issued under the authority of any IMO 'White List' country.
**b -** The MCA will accept certificates issued under the authority of any EU Member State, as well as Canada, New Zealand and South Africa[6].
**c -** Certificates must be MCA-approved.
**d -** The MCA will accept certificates issued under the authority of any EU Member State and those listed on the approved list available from our website: go to www.gov.uk and search "GMDSS".

MSN 1856 (2015)

The MCA are the Government regulators that ensure all training of seafarers, at all levels in all disciplines including fishing. The regulations on training are contained within Statutory Instruments which are explained in M Notices. The MCA coordinate the presentation of the programmes through IAMI, and monitor the quality of training provision through audit processes. Extracts from current M Notices on training are shown above.

## Table 4.5 MCA requirements for STCW training

**Figure 2.1: Core technical and academic knowledge and skills for STCW deck officer certificates of competency**

| STCW Function | STCW Code Standard of Competence | | Related National Occupational Standard |
|---|---|---|---|
| | Operational (Table A-II/1) | Management (Table A-II/2) | |
| Navigation | Plan and conduct a passage and determine position | Plan a voyage and conduct navigation<br>Determine position and the accuracy of the resultant fix by any means<br>Determine and allow for compass errors<br>Forecast weather and oceanic conditions | B02 Maintain a navigational watch<br>B03 Plan a navigational voyage |
| | Maintain a safe navigational watch | Establish watchkeeping arrangements and procedures | B02 Maintain a navigational watch<br>B22 Control vessel mooring, anchoring and securing operations |
| | Use radar and ARPA to maintain safety of navigation | Maintain safe navigation through use of radar and ARPA and modern navigation systems to assist command decision-making | B02 Maintain a navigational watch<br>B03 Plan a navigational voyage |
| | Respond to emergencies | Respond to navigational emergencies | A13 Control the response to emergencies on board a vessel |
| | Respond to a distress signal at sea | Co-ordinate search and rescue operations | B11 Initiate the response to navigation emergencies |
| | Transmit and receive information by visual signalling | | Covered by all units as appropriate |
| | Manoeuvre the ship | Manoeuvre and handle a ship in all conditions<br>Operate remote controls of propulsion plant and engineering systems and services | B02 Maintain a navigational watch<br>B22 Control vessel mooring, anchoring and securing operations<br>B03 Plan a navigational voyage<br>B04 Control navigation and vessel handling |

| STCW Function | STCW Standard | | Related National Occupational Standard |
|---|---|---|---|
| | Operational (Table A-II/1) | Management (Table A-II/2) | |
| Cargo handling and stowage | Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage | Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes<br>Carriage of dangerous cargoes | B14 Monitor and control vessel operations<br>B13 Plan and direct vessel operations |
| Controlling the operation of the ship and care for persons on board | Maintain seaworthiness of the ship | Control trim, stability and stress | A22 Plan and organise the maintenance of the vessel's structure, fittings and equipment<br>A02 Ensure the stability and watertight integrity of a vessel<br>A01 Contribute to the stability and watertight integrity of a vessel<br>B14 Monitor and control vessel operations |
| | Monitor compliance with legislative requirements<br>Ensure compliance with pollution prevention requirements | Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment | A32 Maintain safe, legal and effective working practices on board a vessel<br>A33 Ensure safe, legal and effective working practices on board a vessel<br>A34 Create, maintain and enhance productive working relationships on board a vessel<br>B15 Plan and direct vessel operations |
| | Prevent, control and fight fires on board | Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems | A12 Respond to emergencies on board a vessel<br>A13 Control the response to emergencies on board a vessel |
| | Operate life-saving appliances | Develop emergency and damage control plans and handle emergency situations | A12 Respond to emergencies on board a vessel<br>A13 Control the response to emergencies on board a vessel<br>A15 Take control of survival craft and rescue boats |

| STCW Function | STCW Standard | | Related National Occupational Standard |
|---|---|---|---|
| | Operational (Table A-II/1) | Management (Table A-II/2) | |
| Controlling the operation of the ship and care for persons on board *(continued)* | Apply medical first aid on board ship | Organise and manage the provision of medical care on board | A12 Respond to emergencies on board a vessel<br>A16 Provide medical services on board a vessel |
| | - | Organise and manage the crew | A12 Respond to emergencies on board a vessel<br>A13 Control the response to emergencies on board a vessel<br>A34 Create, maintain and enhance productive working relationships on board a vessel |

IMO (2019d)

As can be seen from the above extracts, the STCW content is integral to all training within the UK. The last major amendment to this Convention was in 2010, and is known as the Manila amendment. The Convention was due for revision in 2020, and discussion has been underway for some time as the MCA look for areas for change to put forward to the IMO review. With the outbreak of COVID during this process, there has not yet been any notification of changes. The STCW content is still based on basic seafarer requirements at all levels, and includes all traditional content on areas such as the Navigation of vessels and Shipboard Operations.

In the Manila amendments, attention was given to technological development, such as the use of electronic charts for Navigation, but little traditional content is ever removed.

Any changes require agreement from all IMO members and so it is difficult to gain consent for the removal of such things as the training in the use of sextants on board ship, though many trainees will never have access to a sextant on board current vessels.

This then means that training programmes can appear very alien to potential recruits. Simulators are used as one element of training, but students will also spend many hours in classrooms working on paper charts and learning how to correct a magnetic compass.

### 4.6 The academic element of training, and the relationship to recruitment

As can be seen from the tables above, the academic content of the training programmes for cadets is based primarily on STCW content, and is targeted at level four and five of HE/FE programmes. This has presented some challenges in the recruitment of school leavers onto training schemes.

A main discussion point that has been raised within the maritime sector has been related to recruitment of sufficient numbers, and in ensuring that sufficient entrants can be attracted to the industry to maintain levels required within the sector. Applicants are considered at the age of eighteen as this allows a level of maturity that it is hoped would improve retention, but sixteen year olds are also recruited onto lower level academic programmes.

In attracting eighteen year olds, the competition from other industries is considered a factor in the lack of recruitment of sufficient numbers. There are many choices open to eighteen year olds, one being the apprenticeship route. One of the main

attractive features of selecting a career at sea through a deck cadetship is that there is a direct link to industry and employment alongside funding for the training scheme, and payment from employees for most elements of the training alongside a training allowance.

In recent years, many apprenticeship routes have also developed into the same format allowing for these advantages to be taken up by the school leaver without the need to go away to sea.

The maritime sector has also resisted any move towards apprenticeship schemes for cadet training as they already had separate government funding so did not want this amalgamated into a larger funding source through the apprenticeship scheme, incorporating all of the additional regulations associated with apprenticeships scheme. This means that any school leavers will not be exposed to the possibility of a deck cadetship when looking at apprenticeship literature.

School leavers are also able to choose Higher Education and select the option of studying at degree level. In the development of the Foundation Degree route, it was seen as a more attractive option to allow potential recruits to access HE and for it to be seen as a viable option for those choosing HE. At the time of its development there was a resurgence in the use of Foundation Degrees as programmes designed around industrial content with work based learning elements allowing for practical training. These programmes were initially set up with articulated pathways to ensure students had automatic access to BSc programmes in order to complete higher level degrees if that option was selected. Since their development across programmes such as Nautical Science, Policing, and Nursing some issues have been identified that have caused areas such as Nursing to move back towards full degrees being incorporated into their training schemes. The first issue identified is the use of the word ‘Foundation’. This is off putting to many applicants as it suggests a lower level study, and they are not always clear that this qualification equates to the first two years of a standard degree. The Foundation Degree framework was also changed to remove the requirement for articulated pathways, which removed links to BSc degree programmes and the need for ongoing relationships between FE providers for the Foundation Degree and HE providers of the top-up programmes to BSc. These issues were addressed in some part by HE providers incorporating these training programmes into BSc programmes, but as indicated earlier in this chapter, funding

is only available for 36 months for cadets on seagoing programmes. Since there is a need to incorporate twelve months of sea time within the programme, alongside the STCW content at level four and five, the final year of a BSc programme cannot be funded within the SMarT scheme. Many companies (as evidenced in the interview section below) are also reluctant to support students through to BSc as they are then worried that the newly qualified OOW will move to employment ashore with this higher qualification. There are no figures available to evidence if this is a fair representation of the movement of newly qualified OOW.

A further factor in the selection of this route by potential cadets is in the content of these programme. The academic standard is not outside of the levels set, but traditional methods are still attached to their validation associated with contact hours, assessment and attendance requirements. The STCW content is extensive and requires extensive contact hours that would not normally be associated with these levels of study. There are also higher pass marks required on this content that exceed usual requirements because of the competency link.

### 4.7 Entry points

One option for the current selection of deck cadets is at eighteen onto the Foundation Degree with entry requirements of forty eight UCAS points as provided in the MNTB framework. This is an extremely low tariff requirement and is a deterrent to those with higher points scores.

On this programme the cadets complete all of the level four and five content of STCW that is required at operational and management level. This then means that the cadet can proceed through to Master's CoC without a further extended period in college.

Another option is to recruit at sixteen or eighteen onto a HNC programme with entry requirements of five GCSE. Here the cadet will study all level four operational content of STCW and then return after a year at sea holding their OOW, to complete the college phase covering all management STCW content before being examined for their Chief Mate CoC. This college phase will include a HND qualification.

Another option that has existed for many years is the BSc(Hons) route. This recruits eighteen year olds with the required UCAS tariff for the University. This would typically be around one hundred and twelve, as aligned to entry requirements on other degrees in this subject area. The STCW content for these programmes would typically be at level four and five and would provide the necessary content at operational and management levels to allow the cadet to proceed to Master's CoC without a further extended period at college.

Another option that has been recently developed in this area is a BSc(Hons) entry without company sponsorship. This supports students enrolling on the degree without an initial commitment to going away to sea. The student would use standard funding for their first year and then opt for sea going if they chose that route for level five. This would then bring funding from level five onward and would allow the three years of SMarT funding to be attached to completion of level six within the thirty-six month time allowance.

This model has had little uptake in England as it requires a commitment from the student to self-fund, where college FD programmes do not require this. It is also worth mentioning that the different funding structure in Scotland has meant that many companies use Scottish colleges in preference to other UK provision. Ireland followed this latter option and has seen success with numbers and one company interviewed expressed a preference for these students as they have shown a commitment from the start and seem to be better motivated. A group of Irish seafarers were included in the main data collection to see if there is any noticeable variation in their personality traits from the UK seafarer group.

A further option adopted over recent years is the Pre-Cadetship course. Colleges developed courses at level three to allow students with only four GCSE passes to do a preparatory course, to then allow them to progress to interview for acceptance onto the HNC or FD cadet programmes.

**Table 4.6 Entry routes to cadet training**

| Route | Age | Advantages | Disadvantages |
|---|---|---|---|
| BSc(Hons) | 18 | Maturity<br>Higher tariff<br>Alternate funding<br>Additional skills obtained<br>Completion of all STCW content<br>No external written examinations at OOW | Options to proceed to shoreside employment<br>Extended period in Education<br>High level students with high expectations<br>No SMarT funding beyond 36 months |
| BSc(Hons) self-funded | 18 | Maturity<br>Higher tariff<br>Alternate funding required for first year<br>Additional skills obtained<br>Completion of all STCW content<br>No external written examinations at OOW<br>Students self motivated by initial cost | Options to proceed to shoreside employment<br>Extended period in Education<br>High level students with high expectations |
| FD Sc | 18 | Maturity<br>Additional skills obtained<br>Completion of all STCW content<br>No external written examinations at OOW | Low entry tariff lowers value of qualification<br>Some expectation of higher achievement |
| HNC | 16 | Wider pool of potential applicants with lower tariff and at earlier stage<br>Reduced time in college at company expense as lower content | Less emotional intelligence to deal with sea phase<br>No completion of higher STCW content<br>Requires external written examinations at OOW |
| Pre-sea | 16 | Allows access to wider pool of applicants<br>Offers opportunity to increase numbers of cadets through wider pool<br>Prepares students through a longer period for the sea phase<br>Can provide numbers of cadets on both HNC and FD route | Less emotional intelligence (though some development through pre-sea course)<br>Requires additional phase at college which needs to attract separate funding |

Source Author 2020

It can be seen above that attempts have been made to extend recruitment both for those with higher level entry qualifications and for those with lower level entry qualifications. Arguments continue about the need for recruitment of those able to cope with the boredom and isolation of being away at sea and the targeting of those with lower academic qualifications and at a younger age, against the skills needed to support the industry at all stages in the future and so attracting those with high academic profiles and ambition to manage the industry in the future.

The main discussion points that continue are about recruiting purely to OOW and the limitations of that role against recruitment to supply the future needs of the industry.

Shipping companies are often recruiting to the programmes with lower academic levels to provide training against Tonnage Tax requirements to attract funding. In an interview carried out with the main training provider in the UK, the focus is currently on recruiting to HNC where possible to ensure the aspirations of the cadet are limited to a career at sea and that they will be able to deal with the limited requirements of that position.

### *4.7.1 The Gender Question*

There has been little change in the number of females recruited onto deck cadet schemes pre or post gender equality legislation in the UK.

In the World Maritime University (WMU) Training Practices Report 2019 an average of 9.1% of the crew on their operator's vessels' is female.

In a paper by Brickman (2012), based on recruitment and retention of women into deck officer schemes in the USA it is noted that while other male-dominated fields such as medicine and law increased the proportion of women in the workforce following the changes in legislation in the 1970s, the maritime professions have not paralleled this. A main argument throughout this paper is that females are not given the opportunity to find the information to give them a clear picture of a career at sea.

The subject of attrition on college phases is also discussed and solutions such as women's' groups and support sessions are highlighted. She states that '*even with progress, until women represent a 'critical mass' (20 to 25%) in the student body, skewed gender demographics demand that maritime educators create*

*programmatic counterweights that help to ensure equal educations for the 'token' group……..separate meetings for women remain important instruments for female confidence and problem solving*.' (Brickman 2012) The issue that is then raised is the preferential treatment given to women in giving them this additional support.

The recommendations suggested to the shipping industry in the report are:

- Ensure better contact with shoreside
- Enforce policies banning discrimination and harassment and ensure complaints are responded to promptly and without retaliation
- Explore the values that women bring to ship board life
- Address the family issue head on
- Establish a mentoring network
- See sailing as part of a career path

In March 2019, representatives from all areas of shipping met at the ILO to set objectives for improving the recruitment and retention of women seafarers. Of the thirty four points in the conclusion of the report, Nautilus highlighted the following as being major actions needing to be targeted:

- '*Jointly addressing all issues related to the recruitment and retention of seafarers and the promotion of opportunities for women seafarers*
- *Ensuring that the fundamental principles and rights at work, especially in relation to equality of treatment and equal opportunities are applied to all seafarers*
- *Publicising opportunities for women at sea and ashore*
- *Encouraging the inclusion of women's voices when developing policies and social dialogue*
- *Identifying role models and establishing mentoring and networking programmes for women seafarers'*

(Nautilus 2019a)

In follow-up action to this report, the UK shipping minister Nusrat Ghani announced a donation of £100000 to an educational charity to support the promotion of maritime careers for women through attendance at ten roadshows around the UK

for girls aged 11-14 with ambassadors for the industry, allowing the students to talk to women already in the maritime sector before they make their GCSE choices.

(Nautilus 2019a)

Following this, an issue of the Telegraph was dedicated almost entirely to female issues, the first letter published in the following edition was titled 'What's the point of Nautilus promoting women in maritime?' with quotes such as 'The more this industry continues to highlight and place on a pedestal the successes of women in the industry, the further you drive the wedge. Has anyone ever considered that as a male in the industry you are perceivably at a disadvantage because there are no headlines in it?' and 'Has no one perhaps thought that, just maybe, only 3% of women in the industry want to be at sea……. It's time to accept that there's only a certain amount of women that find work in the maritime industry appealing'.

(Nautilus 2019c)

The response from an experienced female seafarer included the following: 'No-one should be forced to go to sea if they don't want to; however…….the women who do want to go to sea shouldn't be forced out by harassment and a hostile work environment. Dealing with the ordinary perils of the sea is part of my job; dealing with the specific perils posed by some of the men should not be.'

(Nautilus 2019d)

Under the Equality Act 2010, companies with more than two hundred and fifty employees need to report on gender pay gaps. According to a summary provided by Nautilus, the large companies reported an excess of 23% gender pay gap in the 2018/2019 time period. Comment then includes possible solutions involving reviewing recruitment processes, setting targets on female recruitments by focussing on STEM promotion among female students in school. Other options include providing better work/life balance options, with flexible working options and advancement for females through their careers.

(Nautilus 2019b)

In 2018, Maritime UK launched a Women in Maritime Taskforce who created the Women in Maritime Charter, which offers a framework to challenge companies to make progress on diversity, including closing the gender pay gap.

In research by Ashe and Stewart (2012) the hypothesis that underrepresentation of women and visible minorities in the Canadian Legislature is based on gate keeper discrimination is tested by using diagnostic testing. The research is very thorough and uses appropriate testing models to identify significant factors contributing to gate keeper decisions in the selection of candidates, while also discussing supply and demand figures at each stage of the process. The work is not directly related to the current work, in that there are not as many stages of selection. It does raise the question of discrimination in selection in so far as it relates to the supply side of recruitment and in desirable traits in selection processes. It can also provide an excellent basis in methodology for testing recruiters in their selection practices and in seeing which traits are currently seen as desirable by employers, independent of their relationship to discrimination.

### *4.7.2 The appropriate criteria for selection*

As previously indicated in this work, the entry requirements onto these training programmes is set either nationally by the MNTB, or by the individual University/College. Once these academic levels are attained the selection process then moves to the individual companies to recruit their numbers based on industry needs, or MEF allocations. In interviews conducted with these companies, the main criteria for use in selection is academic attainment. This then also directs the potential cadet to the programme most suited to these qualifications. The companies generally then use interviews to ensure that the potential recruit will be suited to the programme and to going away to sea.

The exception to this is in the programmes where applicants are given places on a programme based on their academic achievement, and then look for company sponsorship at the end on the first academic year. At this stage, the companies would again use interviews to establish if the candidate will be suited to a career at sea.

There is currently limited use of psychometric testing at this stage, and where it is used, it is mainly skills based. There is currently no structured measure of the suitability of a potential recruit for a career at sea. Some companies responded that they would use indicators such as member of a group such as sea cadets to measure ability to conform to hierarchical structures or member of a football team

to measure the applicant's ability to work within a team. One training provider also indicated that they would also be trying to ascertain the ability of the applicant to withstand boredom, as there are many hours spent on a ship at sea with very little change in routine and little access to the outside world. One of the main factors explored at interview is the expectation of the applicant and their measurement of the reality of a life at sea. An indicator used for this is usually knowing a relative or friend in the industry. One of the main factors highlighted by this is in the bias it introduces to selection. Favoured applicants are more likely to reflect the social, ethnic and gender of those already in the industry.

As can be seen be previous sections, the industry has tried to widen participation by allowing entry at either sixteen or eighteen across a range of programmes accepting varying academic qualifications, but is still not attracting sufficient numbers.

There are currently only variable interviewing questions to allow traits to be measured to ensure that applicants are suited to a career at sea, and thus support retention through the training scheme. There is also no mechanism to measure if an applicant would be better suited to long sea voyages with limited activity, or coastal voyages with increased activity. There is also no measure to establish if an applicant would be better suited to voyages providing social interaction and contact with home or voyages with limited crew and little external communications.

When looking at applications for selection a job description would normally dictate the basic requirements for consideration for employment. There would be essential and desirable criteria that would be evidenced through academic qualifications and through previous experience. The decision is then based on 'suitability' of the applicant and this is usually measured at interview. A panel of interviewers would normally have a set of questions ready to ensure that each applicant is treated the same and given the same opportunity to respond. Additional discussion or questioning will very much then dictate the depth each section of questioning reaches.

In an interview with a recruitment specialist, the discussion on criteria for selection evidenced the process above and then the subjectivity that is then used to assess the 'suitability' of the candidate for the position on offer.

Once main criteria have been looked at, the next stage is in assessing the 'personality' attributes that may make the applicant suitable and those of the company that may be attractive to the applicant.

In the recruiting of cadets, the applicant may respond to these questions with examples from previous employment if they have them, or with involvement with other activities that demonstrate these attributes.

Any decision then made on employment will be decided by the interviewers, and responses that match their experience of most suitable attributes will usually work in favour of the applicant. It is notable that there is no way to measure any of the latter part except in looking at the retention of those recruited, but there is no information against those that were not recruited. It is also worth noting that the attributes that are seen as attractive by the interviewer will be biased toward the viewpoint of the interviewer. This is not a system that offers great opportunity for change unless those interviewing offer alternative viewpoints across gender, traditional attitudes, widening participation.

A test that would allow attributes to be measured at this stage could be an aid in this decision making process. Even if argued that a test might not be responded to truthfully, it would at least allow an additional element to this decision making process, and allow an opening for discussion about the traits needed in different sectors, and to deal with the realities of going away to sea for the first time.

### 4.8 Technology in training

A further discussion point which is ongoing in the industry, attached to the current draft suggestions to changes to STCW being put forward by the UK, is the use of technology in training.

Simulators have been in wide use across training programmes for many years, but the MCA/MNTB are currently researching the use of simulation to replace some elements of sea time.

Because of the ongoing discussion of the value of sea time as part of cadet training it is being reviewed, with the proposal that up to one month of the required twelve at sea, be replace by simulator training. Many ships are highly automated, and many cadets no longer get the opportunity to develop ship handling skills or to deal with complicated collision avoidance due to traffic control schemes. Allowing

cadets to work through these scenarios on a simulator is seen as a preferred option to full sea time completion, with experience of very limited management scenarios.

Most Navigation on board ships is also completed using technology and limited opportunities exist on board to use traditional methods using Celestial Navigation techniques and paper charts. These are again being discussed as possible proposals for change at STCW review this year.

In a report by the World Maritime University in 2019, the training initiatives most suggested by respondents from vessel operators and MET institutions given unlimited budgets would be increased simulator training, training ship and multiple e-based solutions. There are also indications of increased onboard assessment being an increasing tool in ensuring best practice in training.

There is also some movement towards blended learning on programmes and a reduction in the face-to face classroom based teaching. As previously indicated, the appearance of these courses to potential applicants is that they are very traditional compared to many other options.

In the WMU report, it indicates that a third of respondents expect to decrease their reliance on face-to-face teaching, which is still the most adopted method of training in the industry.

One other interesting outcome of the report is that the ‘majority of the responding seafarers cited regulations as their primary reason for engaging in seafarer training. It is positive to see that more than half also train for self-improvement purposes.’ (WMU 2019)

The COVID-19 virus has caused this area to move forward at a rapid pace. Cadets have continued their training remotely, and the MCA have started holding orals exams remotely. Although there have been many negative impact of this virus on the training of cadets, the use of technology has developed at a rapid pace, and it is likely that many changes such as remote learning will be integrated into permanent changes to the presentation of these programmes once society moves to post a COVID normal.

### 4.9 Support for cadets during the Sea Phase

Cadets complete twelve months sea time which is integrated into phases of the training programme as indicted above. The most common model is that adopted by the MNTB of around four months seatime for completion of level four and then eight months sea time towards the latter part of level five. The cadets then return from sea to complete any remaining academic assessment, short courses and professional examinations for completion of their OOW CoC.

The sea time can be completed on any vessel in excess of 24 metres, and the type of vessel will depend upon availability of berths with the sponsoring company. The company will be approved by the MNTB to provide training berths and the vessel may be manned with any nationality crew, provided there is a mechanism to inform whoever takes on the responsibility of training officer, of the structure of training for UK cadets.

STCW states in the mandatory Part A:

***'Onboard training***

*Every candidate for certification as officer in charge of a navigational watch of ships of 500 gross tonnage or more whose seagoing service, in accordance with paragraph 2.2 of* ***regulation II/1****, forms part of a training programme approved as meeting the requirements of this section shall follow an approved programme of onboard training which:*

- *ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational watch, taking into account the guidance given in section* ***B-II/1*** *of this Code;*
- *is closely supervised and monitored by qualified officers aboard the ships in which the approved seagoing service is performed; and*
- *is adequately documented in a training record book or similar document.'*

IMO (2019d)

In the guidance in Part B it states:

*'Where the seagoing service forms part of an approved training programme, the following principles should be observed:*

- *The programme of onboard training should be an integral part of the overall training plan.*
- *The programme of onboard training should be managed and coordinated by the company which manages the ship on which the seagoing service is to be performed.*
- *The prospective officer should be provided with a training record book[1] to enable a comprehensive record of practical training and experience at sea to be maintained. The training record book should be laid out in such a way that it can provide detailed information about the tasks and duties which should be undertaken and the progress towards their completion. Duly completed, the record book will provide unique evidence that a structured programme of onboard training has been completed which can be taken into account in the process of evaluating competence for the issue of a certificate.*
- *At all times, the prospective officer should be aware of two identifiable individuals who are immediately responsible for the management of the programme of onboard training. The first of these is a qualified seagoing officer,referred to as the "shipboard training officer", who, under the authority of the master, should organize and supervise the programme of training for the duration of each voyage. The second should be a person nominated by the company, referred to as the "company training officer", who should have an overall responsibility for the training programme and for coordination with colleges and training institutions.*
- *The company should ensure that appropriate periods are set aside for completion of the programme of onboard training within the normal operational requirements of the ship.*

IMO (2019e)

The cadet will be provided with a Training Record Book (TRB) produced by the MNTB, containing a DVD with instructions for training.

The TRB contains the tasks to be completed by a cadet throughout their sea phases. These tasks are signed off by the officers on board once the cadet is deemed competent in that task. This process is to ensure that all cadets follow a

similar training scheme incorporating all of the required STCW training while on board ship.

The issuing of a TRB is straightforward but there are some components of the guidance that are not as easily complied with. The nature of recruitment in the UK means that many cadets are employed by training companies on behalf of shipping companies or the MEF. There is often no link between the company managing the ship and the cadet employer. This can lead to little control over the sea phase training, and cadets arriving on vessels where no one is in a position to support their training. The nominated 'shipboard training officer' may not understand the needs of a cadet for a certain sea phase because they have not been trained through the same type of scheme.

There are many additional reasons why this training experience may not be consistent based on ship type, voyage type, crew type and cadet investment.

One example of this would be in completion of cargo operations. Most cadets will not experience all types of cargoes across their sea phases. For example, a cadet sponsored by a tanker company will only usually get tasks for liquid cargoes signed off. These sections are therefore made optional in the TRB and additional theoretical work is seen as ensuring cadet competence across a range of cargoes.

Applicants are informed of these limitations at interview stage and usually asked to consider which sector they think would appeal to them most, but at this stage the applicant has very little knowledge of the differences in the ship type or in their suitability for each.

It is difficult to explain to an applicant the level of social isolation that can occur on board a ship. If the ship is a large tanker on world-wide trade, there is a possibility that the ship may not call into port for the whole of their time on board. These ships often load and discharge at facilities offshore so there is no need to enter ports. There may only be around twenty people on the ship and these may be of multiple nationalities with different first languages. There is an argument that this environment could satisfy a sense of adventure in just moving into this different social structure. The negative aspect, related by cadets, can be the different culture relating to things like food, exercise and social activities. A cadet going on a passenger vessel for their first sea voyage will still experience some of the aspects

above in meeting people from different cultures, but will also have many other options to socialise in an environment suited to their needs. An important aspect that is relevant to all ship types is in the type of communications available to those on board to maintain contact with home.

Most applicants into cadetships will see their normal as being in constant communications with their support group, but this may not be possible once a vessel is at sea. The communications systems are often available but expensive. Most cadets will have some connections through email, but this will be limited with no attachments because of the cost of data transmission. This is a very limited way for cadets to stay in touch with their support network.

In interviews with companies and colleges, it is suggested that the greatest phase for loss of cadets is after their first sea phase, though again there are no figures available to support this.

Mechanisms have been put in place to try and protect the cadet during these phases at sea to try and reduce attrition during these phases.

'The Convention, known as "MLC, 2006" came into force on 20 August 2013 – effectively becoming binding in international law – and established minimum working and living standards for all seafarers on those ships. What's more, it is also an essential step toward ensuring fair competition and a level-playing field for quality owners of ships flying the flags of ratifying countries.' (ILO 2019b)

Alongside addressing issues such as working hours, this convention also addressed age requirements for seafarers.

An explanatory M Notice was issued in 2014 on minimum age requirements contained within the MLC with information about the minimum age for seafarers and the protection of young seafarers (under 18 years) working on board UK ships. It summarises that:

- *'The minimum age for working on a UK seagoing ship is 16 years of age.*
- *Those under the age of 18 years must not be assigned work which is likely to jeopardise their health and safety, unless they are fully qualified in the relevant skills or are working under supervision.*
- *The employer must carry out a risk assessment with regard to the particular risks to young persons.*

- *Those under the age of 18 years may not work at night unless as part of recognised training.*
- *In this context, "night" means a period of at least nine hours including the hours between midnight and 5 a.m. (local time)*
- *The minimum hours of rest are specified for seafarers under 18 years of age.*
- *Certain types of work should not be undertaken by young persons on the grounds that such work is likely to jeopardise their health and safety.'*

MSN 1838 (2014)

The initial response to this was that companies moved to greater recruitment at eighteen years of age to ensure they did not have to put in place additional risk assessments for cadets. In the intervening years, processes have been put in place to ensure compliance with these rules and allow the return to recruitment of sixteen year olds, but there are still some additional considerations that need to be given to younger recruits, such as their right to return home after four months should they request, and this may restrict the range of companies willing to provide sea time on their vessels.

The MLC also brought in enhanced measures for allowing complaints by those on board. This is significant to cadets on their first voyages as it provides a mechanism for them to be heard, and for issues to be resolved before escalating to a point where they leave the career entirely.

The MNTB have also been active in promoting anti-bullying and harassment policies and in ensuring there are elements in seafarer training on these issues. Unfortunately, if a cadet then sails on a vessel with crew who have training through other systems, there is no guarantee that this training has taken place with those personnel in charge of the cadet training, as this is not yet STCW content.

### *4.9.1 Training Vessel*

There are countries such as the USA, South Africa and Egypt that utilise training vessels to provide all or part of the required sea time for cadets. The advantages associated with these are that they provide a controlled and protected environment for cadets during their training phase. The time at sea is managed by the college and therefore theory can be demonstrated in practice, and there is a consistency of approach as all the training is from the same provider. The cadets are also in a

protected environment, with social support from their colleagues, and managed by familiar lecturers. This then allows cadets to become familiarised to a sea environment without the additional stressors of a commercial environment with multi-national crew.

The disadvantages to this system are given as being that the cadet does not get a realistic view of life at sea on a conventional merchant ship and there is then a higher possibility for attrition once the cadet progresses to their first OOW position. There is also a question of the preparedness of the cadet to be fully competent to take up the position of an OOW given their limited experience on board the training ship. Since there are high numbers of cadets on these vessels there are very limited opportunities for them to complete practical tasks such as bridge watchkeeping for the hours required. There is also the issue that most training vessels are not commercially operated so the cadets will get very limited cargo handling experience. Training ships are also very expensive to run, and need to be financed by other means than the college, in order to keep the training costs overall at a realistic level.

The outcome of research in the USA suggests that a combination of the use of training vessels for the first sea phase, then sea time on a commercial vessel for the second sea phase is the best combination to provide support for the cadet alongside competence training in a commercial environment.

The UK is currently developing a plan through a charity called Britannia Maritime Aid, to build a disaster relief vessel with a dual role as a training ship. The proposal is for a new build vessel, currently proposed to be built at Cammell Laird in Birkenhead. The vessel will be designed:

*'to be able to carry up to 6,000 tonnes of vehicles and aid supplies – more than ten times the capacity of current vessels – including field hospitals, field kitchens, tents, fresh water and fuel for devastated areas.*

BMA's project will provide much-needed sea training berths at a time when the Government plans to double the number of Merchant Navy officer cadets under its SMarT Plus initiative.

https://www.charitytoday.co.uk/training-aid-ship-project-set-for-launch/

Accessed 17-04-20

This project is currently at funding stage and hopes to gain long-term funding from the Government, industry, the private sector and benefactors.

### 4.10 Summary

It can be seen by the content above, that cadets are recruited onto suitable programmes at levels set to allow progress against the academic level of the cadet at entry point. There is limited recruitment practice that supports selection practices that indicate retention on the programmes particularly once the sea phases begin. There are processes that have been developed that try to mitigate the effects of this sea time but two main factors remain that can be considered through the primary research in this work. The applicants are not tested to allow better discrimination in sector of work and traits required to remain at sea, and there is limited preparation given to cadets against the realities of completion of their sea phases. The length of time at sea during training has been reduced over time, and there is now the development of the use of simulators to reduce this even further, but the industry, through STCW, is clear on the requirement of time at sea in order to complete training.

Although these training programmes are regularly reviewed, STCW content changes very slowly, and rarely removes any content required in cadet training, so the burden on the cadet is often increased when STCW changes are made.

Companies will use SMarT funding to comply with MTC, but this means that the cadets may be offered training with a focus on Tonnage Tax compliance rather than the training environment available.

The age at which applicants are accepted onto courses is a constant discussion point within the sector and depends on many variables such as legislation, entry requirements on courses, perceived maturity and options available on career or academic progression when leaving school.

# 5.0 Stakeholder Opinions

## 5.1 Introduction

Interviews were conducted with the main stakeholders in the training of seafarers in the UK. These are the MNTB, the MCA, colleges and training companies, and IAMI. Interviewees were asked to represent these bodies in their responses and informed that any data would only be attributed to that body within the work.

The questions asked are included in Appendix two. The focus of these questions was to establish the current practices in the recruitment, training and retention of deck cadets in the UK Merchant Navy.

## 5.2 MNTB

The MNTB monitor recruitment rates and currently have processes in place to encourage additional recruitment. The MNTB do not monitor retention rates although general feedback to them indicates that 20-25% wastage was not uncommon up to around 2013 but then the training companies recognised the payment system if students didn't complete and focussed more on cadets completing their training. The MNTB do monitor those continuing in training as they receive payment for them, and also see their role developing into more of a leadership role in ensuring cadets finish training and move into employment. The MNTB are keen to generate data on retention and on recruitment profiles.

The numbers of cadets recruited for September 2020 looks to have reduced intake numbers by twenty percent. This is seen as a direct consequence of COVID-19. In usual circumstances, many companies would recruit in excess of their Tonnage Tax training commitment, but with reduced economic activity, and less certain future, companies seem to be only recruiting to their Tonnage Tax requirement. If the size of fleets is reduced due to economic downturn the core training commitments will also reduce and the situation on recruitment may get even worse in the coming years.

When asked about the sea time provision on these courses, the response was that the MNTB do not monitor this provision as it is overseen by MaTSU (company used to oversee sea time provision and to audit the companies each year. They also oversee SMarT contracts). The MNTB only provide support and advice to the companies when needed. The MCA provide the regulations on what should be

within the seatime provision but it is unclear if MaTSU actually reference this specifically on each yearly audit.

The MNTB do provide general advice on the TRB (including accompanying DVD), plus raise issues and provide links to industry guidance on harassment, policy on females and any other matters at our annual seminars (two per year). When asked about the recruitment pool the response was that the MNTB have close links with a charity called the Maritime Educational Fund (MEF). Discussion about their recruitment has included considering that funding may have future condition of percentage female recruitment. There may also be a condition of encouraging the limiting of attrition to 15% or less. This is the way one particular organisation (MEF) seeks to manage under-representation.

Because of legislation associated with the age of cadets, many companies will no longer employ sixteen year olds and this may then mean that potential applicants will be lost to other sectors by taking alternate paths at sixteen, particularly those not intending to complete A levels. There is currently in development an FE programme for this group to allow for the earlier academic work to be done using standard government funding and then recruiting at eighteen years of age but with some STCW content already completed.

The predicted increase in recruitment numbers did not translate into cadets, even with the SMarT Plus initiative. It is thought that companies were unsure what it entailed and what form the commitment would take when reaching employment phase.

The discussion on the involvement of shoreside industry in the training of cadets is ongoing. The MNTB see a model with companies ashore sponsoring shipboard cadets/officers to further their qualifications before moving into their company ashore. There was no clarification on how this differs from the current model and how this could be implemented. There is still a wide industry requirement for qualified personnel from ships, but the shoreside industries should have no direct say in the training of cadets. There could be inclusion of their view when discussing the inclusion of transferrable skills. There is limited evidence to suggest that cadets see the value of the training they receive and are aware of the academic

component and its value in other areas of employment. There is little evidence that the cadets see very far beyond their immediate needs.

The MNTB sees some very positive aspects in the use of a training vessel and is looking at options available to try to incorporate some aspect of this in our training structures.

There is currently being developed simulator training that could be used to replace some aspect of the sea going training required by cadets. It is being suggested that five days on the simulator could replace fifteen days at sea, with a maximum of thirty days reduction in sea time. This has been suggested as a course to be provided while the cadet is on their first college phase. It is seen as a mechanism to allow better preparation for the first sea phase by exposing the cadets to many different bridge scenarios they may not get the chance to take an active role in on their first sea phase. The course could also be used to make up shortfalls in seatime that may be difficult for a company to provide. This course would also be ideal in the proposed sixteen to eighteen year olds programme currently in development.

### 5.3 IAMI

IAMI see their role in the training of cadets as advisory to the government and to the MNTB (they sit on their technical committee). They guide the MET establishments so that there is continuity of provision and sharing of best practice. Their committee and fora includes UK MET colleges, MCA, MNTB, commercial training companies, professional bodies (e.g. IMarEST and NI) and other stakeholders.

IAMI assist the MCA in disseminating policy to ensure uniform application across UK MET institutions.

Their involvement in cadet training is incorporated into the role given above. They contribute to discussions with the MNTB and MCA on policy issues.

When asked about their opinion on the recruitment of cadets onto MET programmes and the suitability of the cadets' profiles, the response was that cadets are recruited against set academic requirements in the first instance and these are dictated by the individual MET institution. The caveat on this is that a standard

entry profile is required by the MNTB onto Foundation Degrees and so most MET institutions follow this requirement.

Another issue associated with recruitment is that it is now possible that some companies recruit to meet Tonnage Tax requirements rather than matching their recruitment needs.

When asked about the current phasing of the cadet training programmes to allow for success of the student, the response was that the programmes are in place designed to meet SMarT requirements and these are overseen by the MNTB and the MCA. The structure supports the completion of a professional qualification alongside the academic qualification and this is what allows for the continued government funding.

When asked about the current assessment structure within these programmes the response given was that there is an opportunity to improve current training structures by allowing more blended learning and matching professional qualifications to academic levels with the Foundation Degree matching OOW, the BSc matching Mates and the MSc matching Masters.

The opportunity exists to include more CPD provision to ensure cadets can see a pathway through a continued career at sea.

### 5.4 Colleges

The four main colleges providing programmes for deck cadets were sent questionnaires or interviewed in person using the same questionnaire, as attached in Appendix two. The purpose of this was to establish opinion on the matching of skills and characteristics used for recruitment of cadets against their retention on these programmes.

When asked about involvement in recruitment all respondents answered that they are not directly involved in this but are indirectly involved through open days specific to the college or through Careers at Sea Open Days.

When asked about direct recruitment through the colleges, responses were split. Two colleges thought this would not be appropriate as they are not set up to do this and may use different techniques to the companies. Two colleges suggested earlier intervention for the companies in using access programmes. This would allow a wider recruitment pool with selection by profiling across the access

programme. One comment also noted that access programmes support widening participation and allow for a broadening in recruitment practice against gender, ethnicity and socio-economic groups.

When asked about skills mapping three agreed that some form of skills mapping would be of benefit to make the recruits aware of the skills required during the cadetship through to employment in the wider industry. These could include personality testing against the perceived challenges of the programme. One college commented that the school leavers are not equipped for skills testing and should continue to be profiled by their academic qualifications.

When asked about using alternate testing methods comment made included using some form of testing of emotional intelligence to gauge the ability of the recruit to deal with being at sea for long periods. It was noted that companies who already invest in alternate recruitment testing like Carnival and Conway allocate additional resources at an early stage to establish if the recruit will be suitable to a career at sea. One comment was to say that the only real test that should be offered is a short trip to sea. This is already implemented by Conway who send recruits on a tall ship over the summer prior to commencing the cadet programme.

When asked about attributes that may make applicants more suited to a career at sea responses included autonomy, self-drive, knowledge of industry, resilience, perseverance, developed emotional intelligence. One comment included that the most important factor is that they should have relatives who have been away to sea.

One response pointed out that we concentrate very much on technical skills but do not pay as much attention to the soft skills. Time spent away from home needs to be spent in a positive and supportive training environment, and for this to happen deck cadets need to be able to engage with staff on board and develop productive relationships during their time on board. Their attitude to work and learning are so important, they must want to work and learn. In terms of personality testing, this would equate to conscientiousness in the FFM.

When asked if the current cadets are suitable to support the needs of the industry the general view was the current system works to OOW. There is a need for greater support after this. A comment was also made about some of the dated content of the programmes such as signals, sextants and splices and that the industry needs to focus more on 21st century requirements.

When asked about skills suitable to college/sea phase one comment was that it is clear that some cadets are more academically inclined so find the college part less challenging, but that both academic and practical skills are required in both environments especially once qualified. There is often a need to write reports on ships and the need to complete practical short courses in order to complete college phases.

When asked about widening participation in recruitment the common response was to comment on the lack of female representation on these programmes, though one response indicated that they think there is enough diversity on their programmes. There is currently a gender action plan in Scotland which requires a 40% representation of females on these programmes in the future and that looks to be a difficult task. There was comment about the difficulty in finding support and guidance on this. Recent incidents on ships indicate that there is a real need for education on this issue but the industry is currently unclear on how this should be done. Any action should include MNTB, MCA, Colleges and Companies.

When asked about retention, all responded that the greatest loss from these programmes is when the cadets first go to sea. Sea-sickness, loneliness, being away from home etc.

When asked about colleges being allowed to refuse cadets as unsuitable for the programme it was pointed out that the companies have comprehensive recruitment processes and ensure that all recruits comply with the academic requirements as prescribed by the MNTB. If there is an access course then the college will play a role in measuring suitability and recommending by using profiling as mentioned above.

When asked for additional comment two interesting issues were raised. One is that recruitment onto these programmes is attractive because of the ‘no debt’ element and the professional qualification in addition to the academic qualification. This may then mean that applicants can be swayed towards the career even if they are not suited. The second issue was about assessment in that the syllabus is out dated and requires students to sit professional exams that include theoretical concepts that would never be used in practice. These theoretical aspects are often included to control pass rates and so ultimately favour the more academically skilled cadets than the practical ones.

The results above all indicate that the training programmes currently available for

deck cadets are highly regulated both Internationally and nationally. There is little room for development of alternate presentations of the programme or for alternate material or assessments to be included. Any relationship to retention is not easily addressed through such changes. A further note is that the MNTB have just offered an alternate validation method that is not as prescriptive as they move towards overseeing training standards rather than specific validation of all content against National Occupational Standards (NOS). Even in this new system, the programmes for deck cadets will still be structured as at present.

Some interesting college comments include some discussion on the possibility of testing those on pre-sea courses, but there is no detail of the criteria used or identified indicators that can be used when looking at the specific attributes required to succeed.

### 5.5 Companies

Interviews held with five main training companies through October 2019 revealed that little testing is currently used in their cadet recruitment. One company suggested that testing may limit choice as it may show an applicant as non-risk averse and exclude them from being recruited as the company sees this as a reason to exclude. As the applicants are often very young, it may be too early to categorise applicant in this way and there may still be an opportunity to change. Two companies have used testing at different stages in their development, but not found any that provide sufficiently reliable data. One company is keen to use a test if developed, and keen to use the opportunity to pilot the test to see outcomes.

One very interesting remark was that they do use psychology based questions at interview, and may ask things like ‘are you part of a sports team’. An affirmative response would be seen as a negative indicator here by some companies as it shows a need for social integration that may not be suited to some of their ships, because of the long periods of isolation. An alternate view used evidence of team activities as a strength in showing an essential skill needed onboard ships.

One passenger company said they did use tests, but that these were related to aptitudes not traits. They recruit cadets from all areas of Europe and compare all through the different systems. When cadets qualify as OOW they take them to their own facility for additional training such as Bridge Resource Management, they find their skills gaps and then address these. Feedback indicates that UK seafarers are

good at things like Rule of the Road and wrote learning, but weak in other areas. They see better retention rates with Irish cadets, as they do their college phase up front at their own expense before being taken on as a cadet and completing their seatime. They indicated that this may be because they are older, or more invested after spending their own money.

When looking at literature, companies like Shell and Maersk, that are direct employers of cadets, are more likely to use recruitment tests, aligned to their overall company processes.

One company stated they would not want to recruit at an age below 18 as they think that it is difficult for younger applicants to deal with such an intense environment.

One company suggested that their selection processes had no bias, but qualified this by saying that they would look for applicants who are involved in activities like Sea Cadets, which immediately stratifies the sample pool.

In comment at the MNTB symposium, London 9-10-19, companies indicated their move towards 18 year old recruitment as working regulations for 16 year olds is too difficult to comply with. This aligned with the better retention figures evidenced by the passenger sector for older trainees, and could indicate the move to recruitment moving again to the eighteen-year-old pool. This is not aligned to increasing numbers of recruits with the current routes on offer and has led to the MNTB increasing their support for BSc for a greater recruitment pool including all potential degree directed potential applicants.

One shipping Company when interviewed described using a testing service like this in the past, but not being convinced that the results provided any better insight to applicants than could be acquired by an experienced interviewer with the right questions. A company with experienced interviewers would correctly have confidence in their being able to make selections in this way, but when referenced to earlier content in the current work, this promotes the continuance of any bias built into the system as to who is suitable, though all tests have an element of bias as well as they often summarise social situations which favour a certain group within society.

### 5.6 Maritime UK

This is the umbrella body for the Maritime sector with Princess Anne as its patron. Maritime UK announced in June 2020 the inaugural Commissioners to serve on the Maritime Skills Commission (MSC). The MSC is a core element of delivering the Department for Transport's Maritime 2050 strategy and reports jointly to the Maritime Minister and to Maritime UK's National Council.

(Maritime UK 2020)

In a report published by the MSC in August 2020, titled Labour Market Intelligence Scoping Report there were six core objectives identified and one of these was to look again at the Merchant Navy Cadet programme. A main point is that it was decided to look very broadly at this to include the requirement for former seafarers ashore and the value of enhancing the content of cadets' training.

*'The training syllabus (STCW) is not fit for purpose; it is not dynamic to meet the needs of the advancement of technology. We need people with great flexibility and adaptability for the future, addressing both seafarer and non-seafarer roles.'*

(Mackinnon, I 2020b)

The report continues to support the arguments presented earlier in this work with regard to the continued shortage of qualified seafarers to fill all of the sectors and looks at the impact of both Brexit and Coronavirus within this sector. It questions the current appropriateness of the Tonnage Tax regime and the allocation of SMarT funding.

One of the main points raised was in the limited relationship that exists between the Company and the cadet with the result of high levels of drop out. The question of evidence about what actually works in cadet programmes was also of interest and the question of why there is a shortfall in the number of cadets in training (and completing).

Comments related to Coronavirus about its impact on the cruise sector are also significant to this work as are the references to other skills needed by seafarers so they are equipped to move ashore, and the changing requirements from shore side in moving to recruiting from lower ranks to fill vacancies rather than requiring Master Mariner certificates. This all contributes to a further problem with retention at sea. The report also repeats the theme of cadets being trained for a job ashore when there is no contribution from the wider Maritime industry to their training. This then places an additional burden on the cadet to be trained in areas for which they

have no immediate need.

(Mackinnon, I 2020a)

The author of this report who is also one of the members of the council, was interviewed to discuss the issue of cadet training. He indicated that a working group has already been set up following the report. With regard to the preparation of cadets for employment ashore he maintained that discussion is ongoing in the industry about the preparedness of officers for shoreside employment. When asked about their lobbying role within the industry it was agreed that this was strong and that shoreside employers have intervened in training their own seafarers for future employment ashore such as Lloyds but the findings of The Maritime Growth Study in 2015 made recommendations concerning involvement of the shore side sector:

*'Recommendation 10 – Maritime Skills Investment Fund For the promotional body recommended in this report to establish a 'Maritime Skills Investment Fund' to address the decline in seafaring and other skills sector-wide by a) working with existing industry providers to coordinate, rebrand and act as the 'shop front' for the various funds that support maritime skills, training and qualifications; and b) design and establish a voluntary scheme to secure contributions into the Fund from those maritime businesses that are not already engaged in maritime training or apprenticeships.*

*Recommendation 12 – Ship to Shore Mentoring - For the promotional body recommended in this report to develop an industry-wide 'ship to shore' mentoring scheme that identifies career structures and develops the sector's future business leaders from the seafaring community. This scheme should identify or define career paths that ensure participants gain the relevant experience at sea before supporting a move into a relevant shore-based role in the UK.'*

(Lord Mountevans 2015)

The changing needs ashore was also discussed with a suggestion in the scoping report that needs ashore should be reviewed with regard to sea going experience being a requirement for roles ashore. The interviewees opinion on this is that a new balance is being found in teams ashore being a combination of ex-seafarers and those with non-sea going experience but with developed specialisms in other areas such as technology and software knowledge.

Looking at the statement about the training of cadets above the question of

preparing cadets for a role ashore was discussed. The interviewee was asked if there is a comparable industry that he knows of where the training for the first role in that industry contains elements that prepare the trainee for employment in a different sector during their first training phase. An example would be in the training of police officers. The interviewee suggested that this will all be a part of the working group's remit.

(Mackinnon, I 2020b)

The review of cadet training seems already directed towards this view point in the formation of the members of the working group. There seems to be little evidence that the cadets see a deficit in this area, particularly at the early stages of their training.

A significant point of the working party, that has been convened to review cadet training is that it consists of the CEO of the MCA, head of the MNTB, the general secretary of the seafarers' union, a business leader (non-shipping), a maritime strategist looking at long-term skills and capability requirements, a learning and development manager from the yacht sector and a HR manager. Only one member appears to have sea going experience including cadet training. It is also noteworthy that five out of the seven members are female.

(Maritime UK n.d.)

At an industry meeting on 2nd September 2020 the Maritime Skills Commission presented the following seven points that they had identified for further discussion in reviewing cadet training:

*Seafarer Cadet Review Success Criteria*

- *The UK strengthens its position as the best place in the world to educate seafaring officers*
- *The seafarer education system ensures that we have enough of the right people for long-term success*
- *The seafarer education system attracts the best of STEM students*
- *Oversight arrangements ensure that the seafarer education system anticipates and meets users' needs, including timely adaptation to changing need*
- *The seafarer education system is designed to support a range of longer-term needs, not just the requirements of the first job at sea*

- *The system ensures that all trainees reach a consistently high standard*
- *The system provides similar value for money to other high quality professional and technical education*

Another reference in this report is to the SkillSea, EU project developed by the European Community Shipowners' Association designed to 'Future-proof skills for the maritime transport sector'. Again the focus is to ensure that seafarers have the skills to allow them career employability and mobility. One of the main focusses of this work is to develop courses that bridge the skills gaps identified between seafarers with only STCW underpinning knowledge, and their development in areas such as technology, management of the environment and meta skills such as digitalisation skills. Again there is a clear link to seafarers developing skills that will benefit future employers, but in the wording of all the interim reports on this, there is no indication that the future employers will contribute financially to this additional skills development, though they have been involved in the development of the areas for skills development that will benefit them with potentially better trained potential employees.

This wider set of skills could be used to promote future employability and aid in recruitment numbers, but could also lead to an increase in attrition if programmes are made more intense by continuing to include all STCW content to the current depth required.

### 5.7 Oil Companies International Marine Forum (OCIMF) and Intertanko

In March 2019 the above bodies presented a paper to the Maritime Safety Committee of the IMO describing processes they have put in place on tankers, related to the implementation of the STCW convention. The title of the paper was 'Behavioural competency assessment and verification for vessel operators', and summarised new means to assess and verify the behavioural competencies of seafarers. The system focuses on the non-technical behavioural soft skills of seafarers as described in STCW 1978 as amended, such as leadership and managerial skills, decision-making, teamwork and communication.

According to this paper, 'the tanker industry recognises that personnel behaviour and attitude are key elements of a positive safety culture that promotes a safe working environment and helps reduce incidents'. (IMO, 2019c)

The system in use on tankers defines behavioural competencies as vital for safe and efficient vessel operations as:

- Team working
- Communication and influencing
- Situational awareness
- Decision making
- Results focus
- Leadership and managerial skills

OCIMF-Intertanco (2018)

Each of the areas above is then divided into separate elements with behavioural indicators that relate to competency. The indicators are observable behaviours, and lists of negative behavioural indicators are provided for companies where they expect that negative marking will also be adopted. These industry bodies provide this system suggesting it provides for objective assessment of seafarers' soft skills using examples of behaviours that are easy to understand and observe in order to assess the competence domains listed above through any of the chosen elements in the system.

There is no indication in the document for the basis of the choices made to develop the list or elements chosen within the system, other than a reference to the IMO model course 1.30 (on-board assessment). It is clear that these are related to the areas covered by HELM training within the UK system which incorporates the elements of the Manila amendments to STCW 1978 where a higher level of focus on soft skills was included in the Convention.

The model course suggests that assessment should ideally be done by observation of work activities on board a vessel, but also recognises other assessment tools may also be used such as Psychometrics, role play, simulation, group work or briefing exercises.

Examples of actions are also given that may demonstrate competence in each area at either Management or Operational level. For the Results Focus area examples include:

- The relieving officer shows up with enough time to allow for familiarisation and adapting to prevailing conditions before taking over the watch.
- The OOW fully understands the cargo plan and is focussed on maintaining the cargo discharge rate to achieve the vessel's schedule.

The officer in charge at a mooring station remains focussed during an extended mooring operation taking place outside of their usual hours of work

An example is given below related to 'Results Focus':

| | |
|---|---|
| Results Focus | |
| Focuses on achieving desired results and how best to achieve them.<br>Takes conscientious action to get the job done, using initiative and energy, and demonstrating flexibility and emotional toughness. | |
| Initiative | |
| + | Identifies what needs to be done and initiates appropriate action.<br>Implements new ideas and better ways to do things; finds solutions to problems.<br>Puts in extra effort to achieve objectives.<br>Challenges accepted risks, processes or measurements. |
| - | Seldom takes action to improve outcomes, processes or measurements.<br>Seldom seeks out or accepts additional responsibilities in the context of the role.<br>Avoids all but what is directly asked of them.<br>Frequently requires supervision to complete routine tasks. |
| Determination | |
| + | Pushes self and others to reach milestones.<br>Renews and increases effort to achieve goals, persisting in the face of problems.<br>Has a sense of urgency about solving problems and getting work done.<br>Looks for opportunities to help achieve team objectives.<br>Willingly puts in extra time and effort in crisis situations. |
| - | Fails to sustain pace and progress over a period of time.<br>Performance suffers substantially when working long hours.<br>Allows work to drift away from priorities. |
| Flexibility | |
| + | Responds positively to change, embracing new ideas or practices to accomplish goals and solve problems.<br>Adapts to changing business needs, conditions and responsibilities.<br>Adapts approach, goals and methods to achieve solutions and results in a changing environment.<br>Shows others the benefits of change. |
| - | Sticks to outdated methods, puts off making changes for as long as possible or finds excuses for not doing things differently.<br>Does not respond to the changing demands of the situation.<br>Makes little or no attempts to promote change positively. |
| Emotional Toughness | |
| + | Recovers quickly from setbacks and responds with renewed and increased effort.<br>Persists in the face of difficulty and finds alternative ways to complete tasks and goals.<br>Handles high workloads, competing demands, vague assignments, interruptions and distractions with composure.<br>Stays calm and maintains focus in emergency situations. |
| - | Constantly thinks about past disappointments or failures.<br>Struggles to maintain focus and perseverance in the face of obstacles.<br>Is unable to perform mentally or physically taxing work effectively.<br>Panics, reacts inappropriately or with hostility to stressful situations. |
| Accountability and Dependability | |
| + | Effectively manages their time and resources to accomplish tasks, prioritising the most important ones.<br>Takes personal responsibility for the quality and timeliness of work and achieves results with little need for supervision.<br>Shows up to work on time and follows instructions, policies and procedures.<br>Stays focussed on tasks and meets productivity standards, deadlines and work schedules.<br>Acknowledges and corrects mistakes, taking personal responsibility when appropriate. |
| - | Struggles to use time efficiently.<br>Fails to prioritise or plan ahead; completes least important tasks first.<br>Often slow to respond or to adjust priorities.<br>Becomes distracted or unable to complete tasks when confronted with challenges.<br>Misses deadlines or leaves tasks unfinished.<br>Defers authority and decision making to others, e,g, terminal staff/pilots, rather than take responsibility. |

OCIMF-Intertanko (2018)

The setting up of these assessments on board would be time consuming and extensive across a whole crew, but an organised data base incorporated into the safety management system would allow for ongoing assessments across repeated activities such as navigational tasks and mooring operations.

This is another indication of industry not being wholly satisfied with current training methods, but this solution for companies provides yet another layer of complexities in management and assessment for operators, without any indication of what could be replaced or removed.

### 5.8 Collective Views

At a Maritime 50 symposium City of Glasgow College 3rd and 4th October 2019, much discussion took place on the skills needed by OOW against the skills gained during training. A major focus became the issue of preparing seafarers for a shoreside job as against continuing at sea. This is not seen by the companies as being their responsibility, as they need these employees to remain at sea to meet the future demands. The suggestion given was that shoreside companies can sponsor cadets and train them against their future needs if they want to. P&I Clubs and ports already do this, but it takes a very long term strategy so is difficult to fund. Other industries don't do this. This is a continuing discussion point across the sector in that many jobs ashore prefer to employ those that have experience of ship board employment, so continue to try to influence elements of training schemes for cadets. This is an unusual situation as it is not reasonable to consider that police training includes elements that provide skills training for future employment police officers may enter into once they transfer out of the police service. We expect employees to move throughout their career, but security companies would not expect to dictate on skills requirements they have that should be included in basic police training.

In the Maritime sector, sea employment has very unique management structures (cadets still sign an absolute 'obedience' clause in a code of conduct), and the international environment means different Human Element interaction may not be within the structures accepted ashore. All of this means that a changed mental

model is required before switching to employment ashore, and shore companies constantly contribute to discussions on training to deal with these elements.

From a recruitment point of view, the applicant has very little knowledge of the employment on board ship, and even less of those ashore so is not usually driven by decisions in this area regarding their training.

The discussion on Meta skills, though related to shore side employment has now also become an issue for ship board training. These are the generic skills that are not content or competence based. Within this area phrases like ‘adaptive resilience’ are used, and this is very relevant to this work. The industry is beginning to recognise that content and competence do not provide sufficient support for cadets in a sea going environment and that what are traditionally called ‘soft skills’ could provide cadets with coping mechanisms that could reduce attrition during sea phases.

Without official retention rates in the sector, open discussion suggested a standard drop-out rate of cadets of 25%. One company indicated they only have a 10% rate, but one Nautical College Dean stated that they have had a 59% drop-out rate from one cohort in 2019.

### 5.9 Summary

The MNTB has the main role in the format of cadet training schemes, but have little control over the sea phases completed by the cadets. Colleges are wary about changes in the programmes and in recruiting to them, as they need to maintain the relationships they have with the shipping/training companies, as they pay the fees and supply the cadets.

The proposed pre-sea courses are seen as an improvement in the programmes available, as they allow more time to present all of the STCW content and to prepare students for sea. They are difficult to manage in ensuring students have the opportunity to progress to seatime through company sponsorship, so still present the difficult relationship between company and college. This form of programme will offer a continued widening access opportunity, but it is of note that one college responded that there is sufficient diversity on the programmes. This promotes the traditional attitude that continues to prevail in some of those involved in decisions in moving the recruitment of cadets forward. The students on these

programmes would present the best opportunity for the use of a recruitment test to allow improved selection from a group of candidates, but also as a diagnostic to allow support to be offered and allow better preparation of potential cadets with a realistic job preview prior to selecting a career in the Merchant Navy.

It is clear that colleges see the conscientiousness trait as essential in cadets.

Companies have had experience in using tests, and would need to be convinced of the added value a personality test would provide against any cost it would add to the selection process.

Shore side interests have a strong lobbying voice in the training structures of seafarers as they see themselves as future employers. They provide for the demand for seafarer skills that drives ongoing financial provision through government funding. There is then continued input to discussion in development of these programmes, particularly in the ‘soft skills’ elements.

# 6.0 Perception of Cadets of their Sea Phase

## 6.1 Introduction

In looking at factors related to the current work, in a paper by Allen et, al. (2010) they found that:

- Recruitment, selection, and socialisation practices during organisational entry affect subsequent retention

In looking at HR management strategies for reducing turnover they state:

- Providing a realistic job preview during recruitment improves retention

This chapter will present the results of the primary data collected with a group of cadets prior to their first sea phase and then on their return from that sea phase, and analyse the results obtained.

## 6.2 Recruitment of Cadets

Much of the content in the earlier chapters of the current work indicates that a common method used in the recruitment of cadets is in trying to ascertain if their perception of a career at sea is realistic. This is usually completed by questioning at interview related to who the applicant knows at sea and in involvement in such things as sea cadets. As previously suggested, this builds an automatic prejudice into recruitment practice as it matches previous intakes within socio-economic groups and considers activities such as sea cadets which may not be broadly available to all applicants. This may also impact on female recruitment as their personal experiences and interests may not by recognised as measures for successful employment by the interviewee.

## 6.3 Cadet Expectation of Sea Phase

A discussion point from the literature review was that attrition is highest in the training of cadets, during their first sea phase. In the general literature on retention it is also argued that it is not the reality of employment conditions that causes high attrition, but that the employment conditions do not match the expectations of those taking up the opportunity. In an attempt to look at the expectations of cadets in preparing for their first trip away to sea, a short questionnaire was used with a sample of thirty-two first phase cadets from a single college. This was as a follow up to the study by Arsenie et al in 2012 which concluded that recruitment is the first

step in retention, and that during recruitment it is most important to know the seafarer's expectation and future plans. A short survey of cadets new to the industry was undertaken prior to their sea phase to establish their expectations of going away to sea and then on return from their first sea phase to establish if these expectations were met.

## 6.4 Survey of deck cadet entrants to identify expectations prior to their first sea phase

A full copy of the questionnaire is included in Appendix III. Initial questions were asked to establish the background of entrants and then to establish their expectations of a career at sea. Two cohorts of students completed the questionnaire and all the respondents were deck cadets commencing their programmes in February 2016. The respondents were asked to state the three most positive aspects they expect from going away to sea and the three most negative aspects they expect from going away to sea.

## 6.5 Results

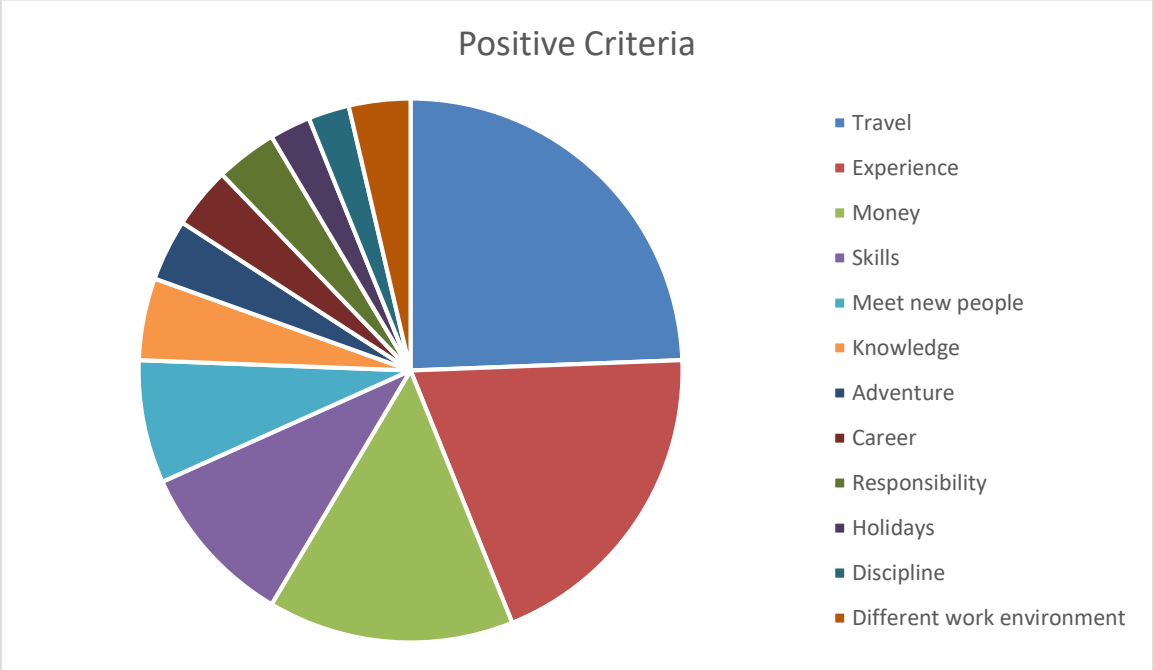



**Figure 6.1 Results February intake 32 deck cadets**

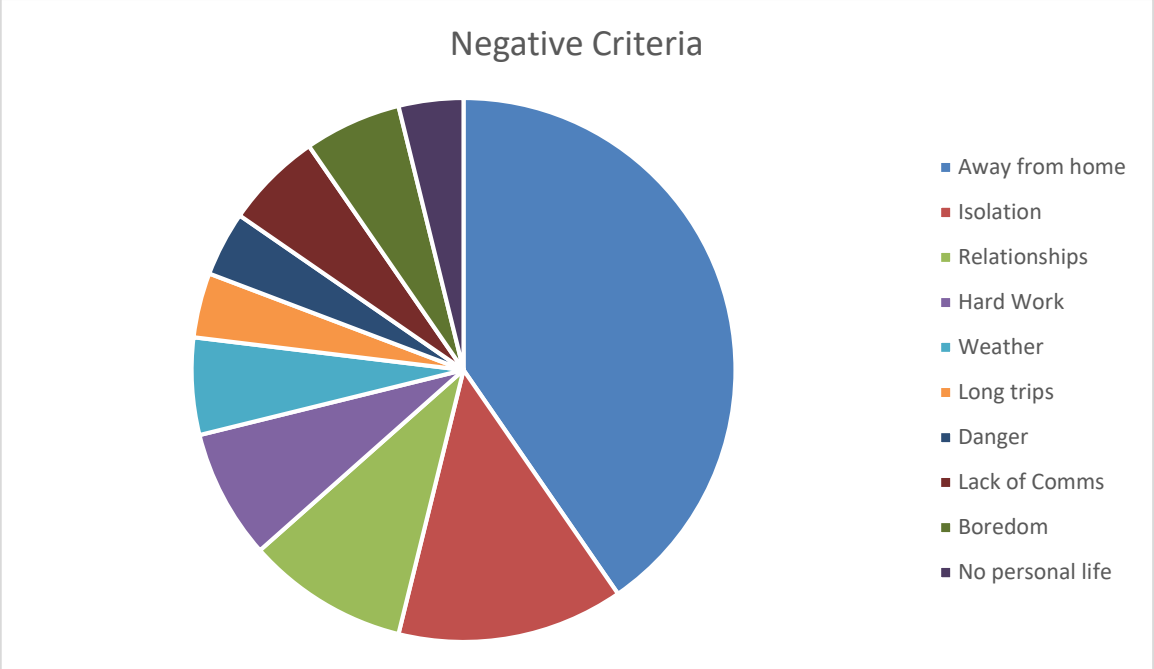



**Figure 6.2 Results February intake 32 deck cadets**

The results indicate that a wide variety of criteria are considered as positive and negative by cadets prior to going away to sea. There also appears to be a broad understanding across the sample of the experience of a life at sea.

Out of the thirty two cadets, twenty six think they are prepared for sea, three were neutral and three think they are not prepared.

## 6.6 Survey of deck cadets post first sea phase

The same two cohorts of students completed the second questionnaire on their return from their first sea phase. The respondents were asked to state the three most positive factors about going away to sea and the three most negative factors about going away to sea.

Results indicate that there are less positive criteria and more negative criteria following the first sea phase. The students have a wider vocabulary for ship activities and factors affecting their daily lives on board.

**Table 6.1 Results February intake 32 deck cadets**

| Positive criteria | Number |
|---|---|
| Travel | 17 |
| Knowledge | 1 |
| Discipline | |
| Experiences | 9 |
| Adventure | |
| Skills | 4 |
| Meet new people | 8 |
| Money | 3 |
| Responsibility | |
| Career | 1 |
| Different work environment | 4 |
| Work-Life balance | |
| Away from bustle of the world/freedom | 2 |
| Doing something I enjoy as a career | 2 |
| Theory into practice | 16 |
| Encountering other cultures | 3 |
| Good lifestyle | 1 |
| Back in work environment | 1 |
| On board culture/team | 2 |
| Personal development | 1 |
| Learning from professionals | 2 |

| Negative criteria | Number |
|---|---|
| Away from home | 16 |
| Relationship disruption | 3 |
| Weather | 1 |
| Hard work | 1 |
| Long trips away | |
| Isolation | 4 |
| Danger | |
| Lack of comms/News | 8 |
| Stress | |
| Boredom | 2 |
| Food | 1 |
| No personal life | |
| Felt poorly prepared by college | 4 |
| Lots of bastards | 1 |
| Poor leave ratio | 2 |
| Missing events | 4 |
| Missing hobbies | 1 |
| Organising travel to ship | 1 |
| WBL project | 3 |
| Fatigue | 10 |
| Being lowest rank | 1 |
| Trapped | 4 |
| Deck work in hot climates | 1 |
| Sexism/Discrimination | 2 |
| Limited training support | 1 |
| Uncertainty about paying off | 1 |
| Spending too much money | 1 |

Indicates categories that have not been chosen post first sea phase

Indicates categories in addition to those indicated in the pre-sea questionnaire

Students were also asked the questions below:

**Table 6.2 Additional questions**

| Question | Yes | No |
|---|---|---|
| Were you prepared? | 14 | 9 |
| Did it meet your expectations? | 23 | 1 |

Results indicate that this group identified more positive and more negative criteria following the first sea phase. This would seem to indicate that their experiences have allowed a wider variation in the results offered.

Most noteworthy numbers are those related to theory into practice and fatigue. It is interesting that many of the cadets appreciated one of the purposes of the sea phase in using practice to consolidate the theory learnt during the college phase. It is also clear that a third of the cadets considered fatigue as a major issue during the sea phase. Cadets can be prepared for dealing with fatigue, loneliness and isolation with additional training that is already available through MCA sources for fatigue and in mental health. It is clear that a test allowing this training to be targeted at those with low scores in targeted personality traits, could be used to better prepare cadets at this stage of training.

As a discussion point, it is interesting to see the change in vocabulary for negatives after the sea phase. Words like trapped and missing events are significant terms and cadets could be prepared for these but those feeling trapped may not have suitable personal characteristics to cope with this feeling.

Less than half of the cadets responded that they felt prepared for their first sea phase, and almost a third of the cadets responded that they did not feel prepared for the sea phase. Others responded with phrases such as ‘adapted quickly’, ‘it is not possible to prepare for this’ and ‘had difficult start but then felt OK’.

When asked if it met their expectations, eighty-five percent said that it did, but there were many qualifications offered in attached text that it is difficult to respond on this as their expectations were broad and associated very much with the unknown.

### 6.7 Summary

This data provided an opportunity to evaluate the preparedness of cadets for the realities of a phase at sea. Evidence is provided by this data that additional support could be used prior to a first sea phase in cadet training, to manage the negative aspects highlighted by the cadets and in ensuring they are better prepared for challenges such as fatigue, being away from home and the lack of communications available.

# 7.0 Main questionnaire results and analysis

## 7.1 Introduction

This chapter will present the results obtained for the main questionnaire and analysis will then be undertaken across the groups to establish any similarities or differences across the responding groups, then the results for each individual group will be evaluated to establish any relationships between responses and characteristics.

The outcomes will be used to refine a final test that will be piloted with a first phase cohort of cadets to measure their suitability to a continued career at sea.

As indicated in the methodology, the targeted groups are:

- UK experienced seafarers to establish a profile of personality traits for those continuing in a career at sea. Sixty-one respondents.
- UK cadets to establish a profile of personality traits against those recruited into the sector. Sixty-seven respondents.
- Irish seafarers because of their different training programme. Fifteen respondents.
- International experienced seafarers to look for comparisons with the UK seafarers. Twenty-three respondents.

## 7.2 The single item measure of personality

The first set of results will focus on identifying the responses to the five questions related to personality in the questionnaire. These were used to identify responses related to the 'big five',

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

The average score for each group of respondents is given below and then a set of combined results is given. The questionnaire can be accessed in Appendix IV, or via the following link: Seafarer Personality Survey

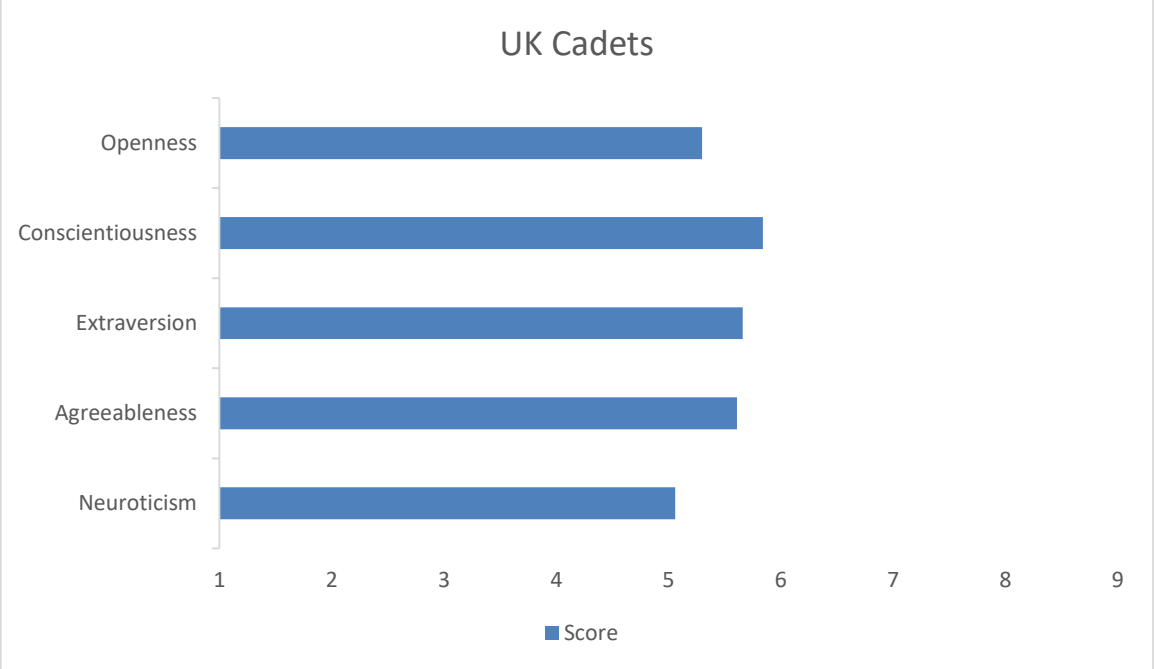



**Figure 7.1 UK cadets**

The cadet group scored similarly across each trait with all results being close to the midpoint of the scale.

The results are presented as a line graph of individual responses below:

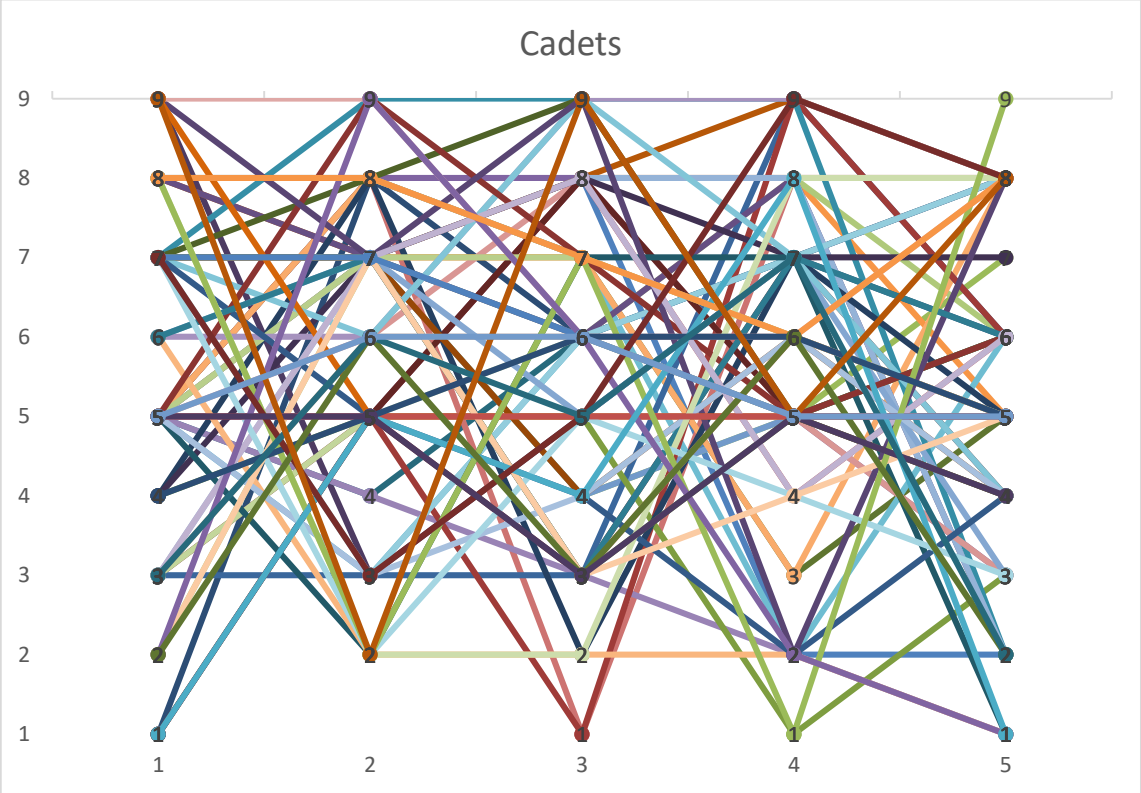



**Figure 7.2 UK cadet distributions**

There is a spread of responses across each trait, with a concentration of responses toward the centre values on the scale, and a slight upward trend for question two.

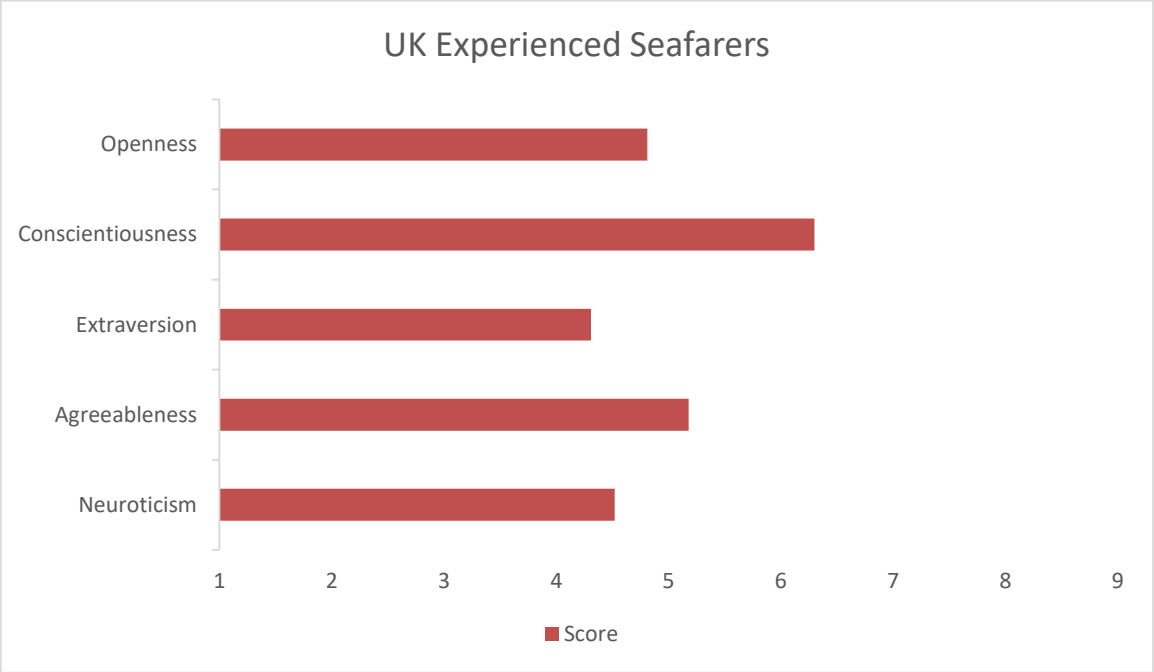



**Figure 7.3 UK experienced seafarers**

The UK experienced seafarers showed a greater variation on their responses with results above midpoint in conscientiousness and agreeableness and with their lowest score against extraversion.

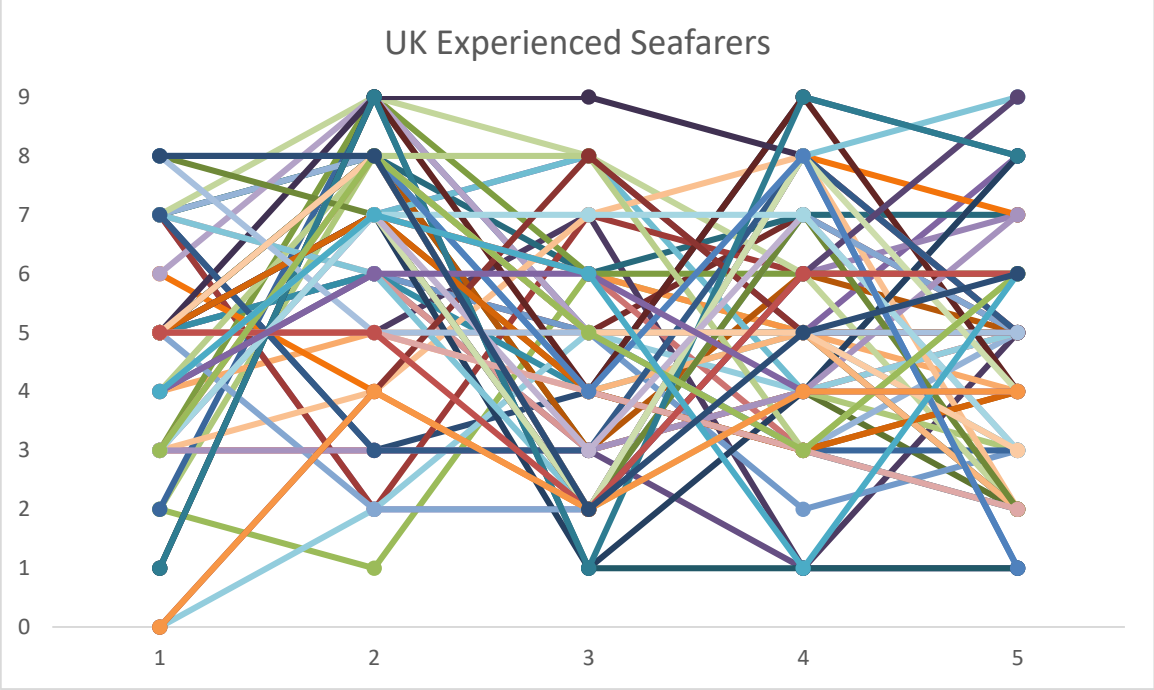



**Figure 7.4 UK experienced seafarer distributions**

There is a spread of responses against each trait, but there is also a clear indication of an upward trend from one to two and then a downward trend from two to three.

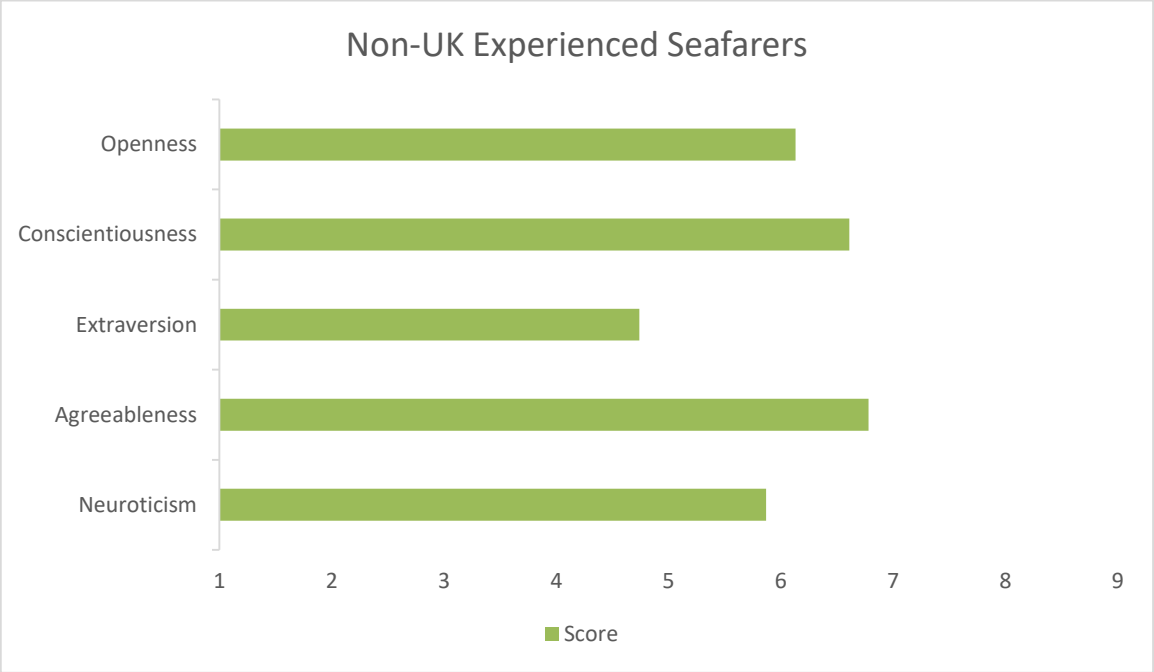



**Figure 7.5 Non-UK experienced seafarers**

The non-UK experienced seafarers scored higher across all of the traits except extraversion which scored higher than the UK experienced seafarers but lower than the UK cadets.

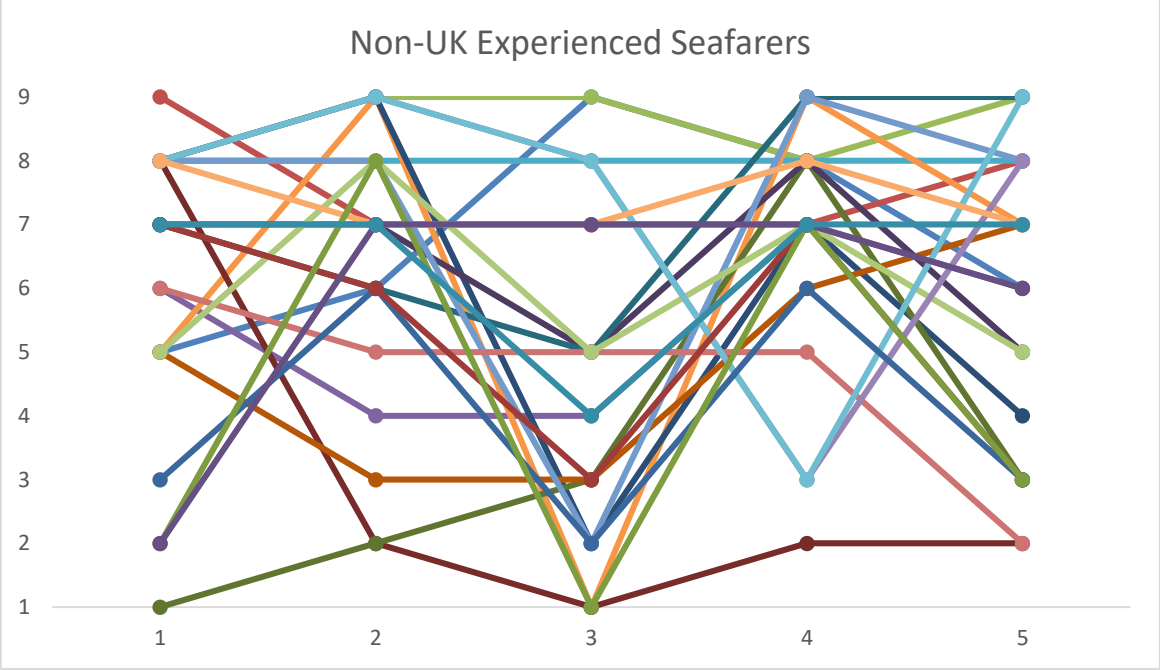



**Figure 7.6 Non-UK experienced seafarer distributions**

There is a spread of responses against each trait, but there is also a clear indication of an upward trend from one to two and then a downward trend from two to three. There is then an upward trend from three to four.

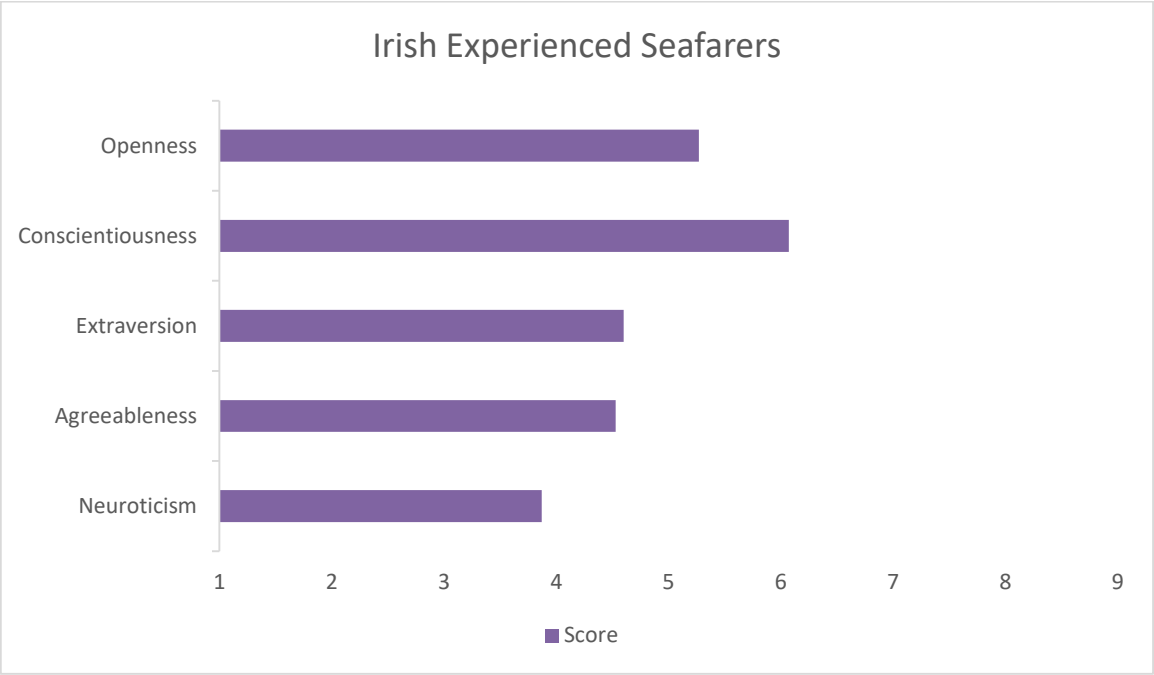



**Figure 7.7 Irish experienced seafarer**

The Irish experienced seafarers scored above median in openness and conscientiousness, and below median in the other three traits. Their results are similar to the other groups in all but neuroticism which is of note.

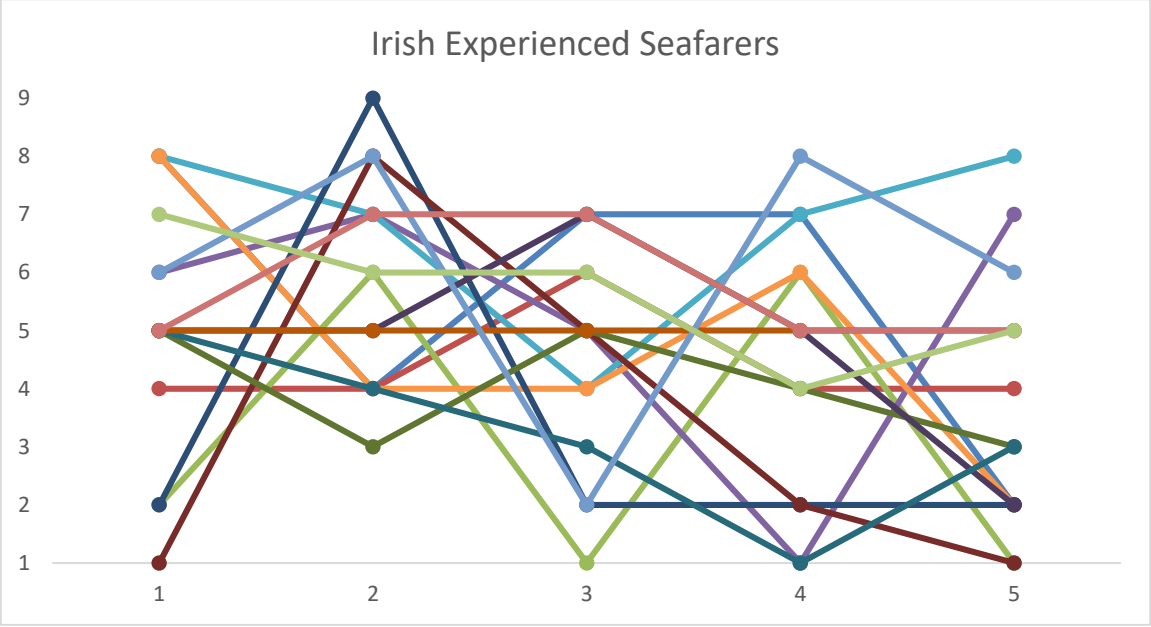



**Figure 7.8 Irish experienced seafarer distributions**

There is a spread of responses against each trait, but there is also a clear indication of an upward trend from one to two and then a downward trend from two to three.

This then shows a clear trend upward for question two for all the experienced seafarers, with a slight upward trend for the cadets. There is then a downward trend for question three for all the experienced seafarers, that is not evident in the cadet sample.

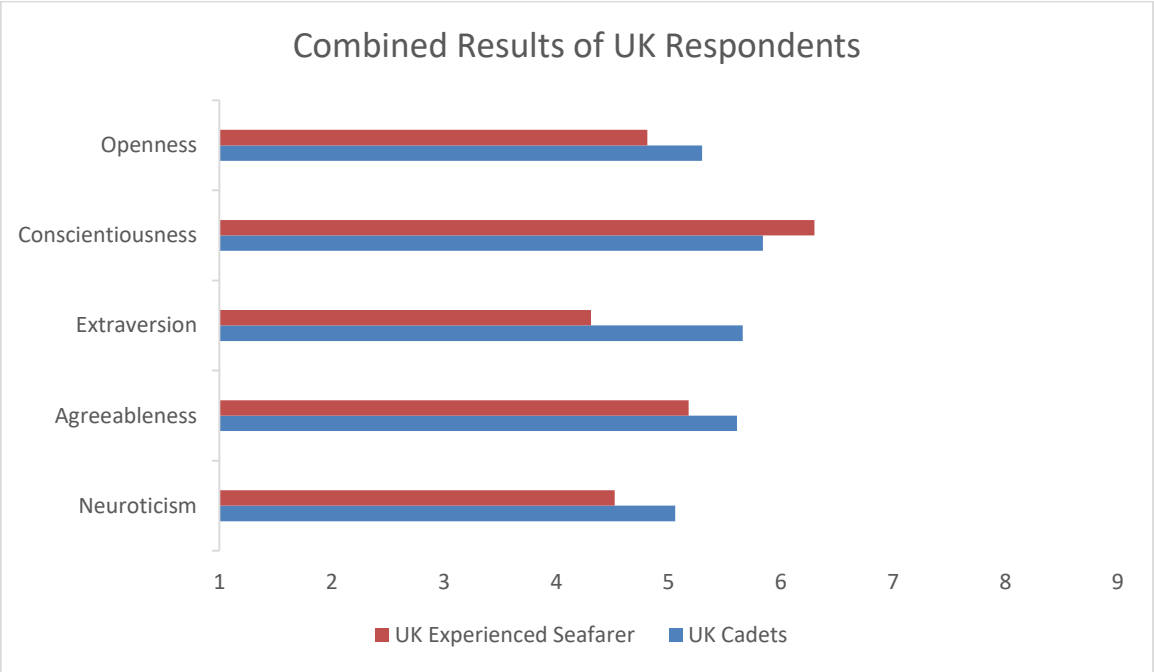



**Figure 7.9 Combined results of UK respondents**

Of the two main groups in the study, all of UK nationality, the noteworthy results away from the midpoint are those for conscientiousness in scoring above this point for both samples, and for extraversion where the two samples have results with notably different scores which are either side of the midpoint.

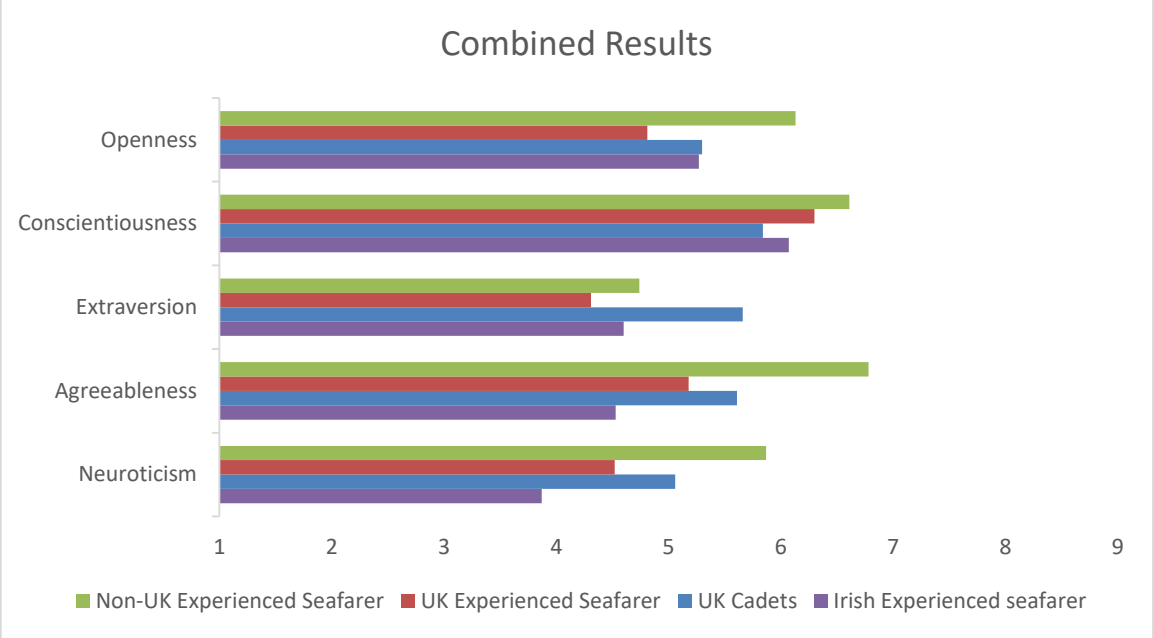



**Figure 7.10 Combined results of all groups**

The combined results show the differences between the different samples, where the non-UK experienced seafarers can be seen as varying from the other groups except in conscientiousness and extraversion. In both traits they match the other experienced seafarer samples.

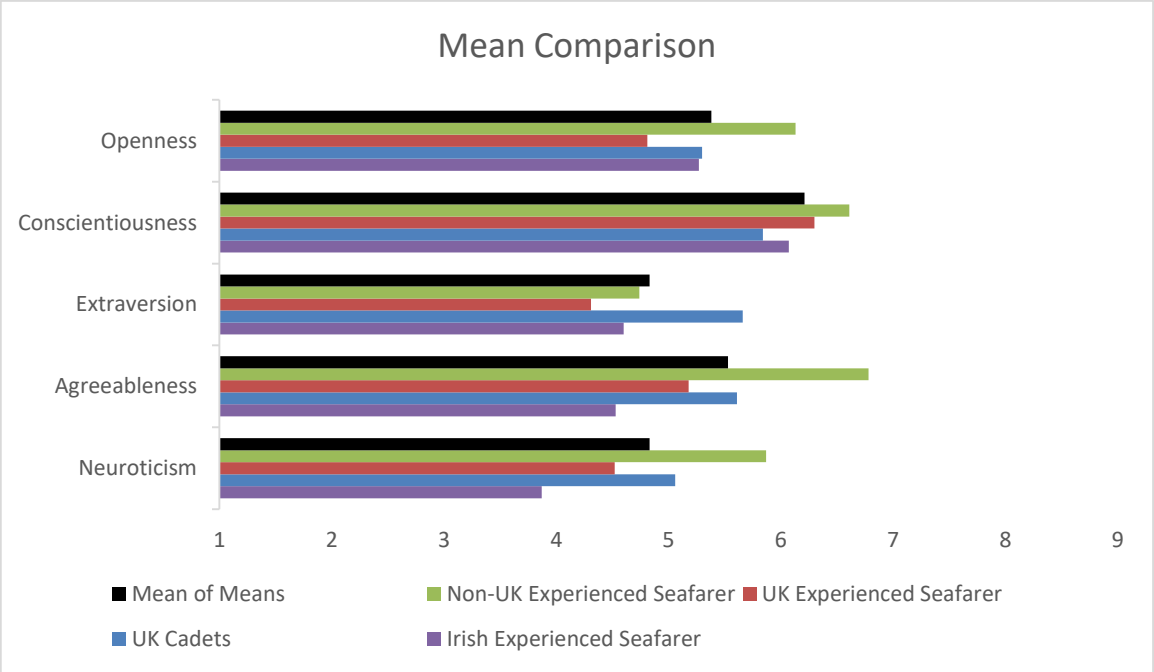



**Figure 7.11 Mean of means**

In comparisons to the mean of means it is clear that the UK cadets are furthest from this value in the extraversion trait and similar in the other traits. The non-UK

seafarers evidence the same pattern as described above, and are away from the mean values in three of the traits.

### 7.3 Profile of each group of respondents

The following data includes the responses of each group with regards to their identifying characteristics. The questions asked were based on:

- Current rank
- Preferred ship type
- Preferred voyage type
- Age
- Gender identifier
- Highest Academic qualification
- Years at sea
- Age expected to move to a career ashore

The results are presented as percentages across each respondent group.

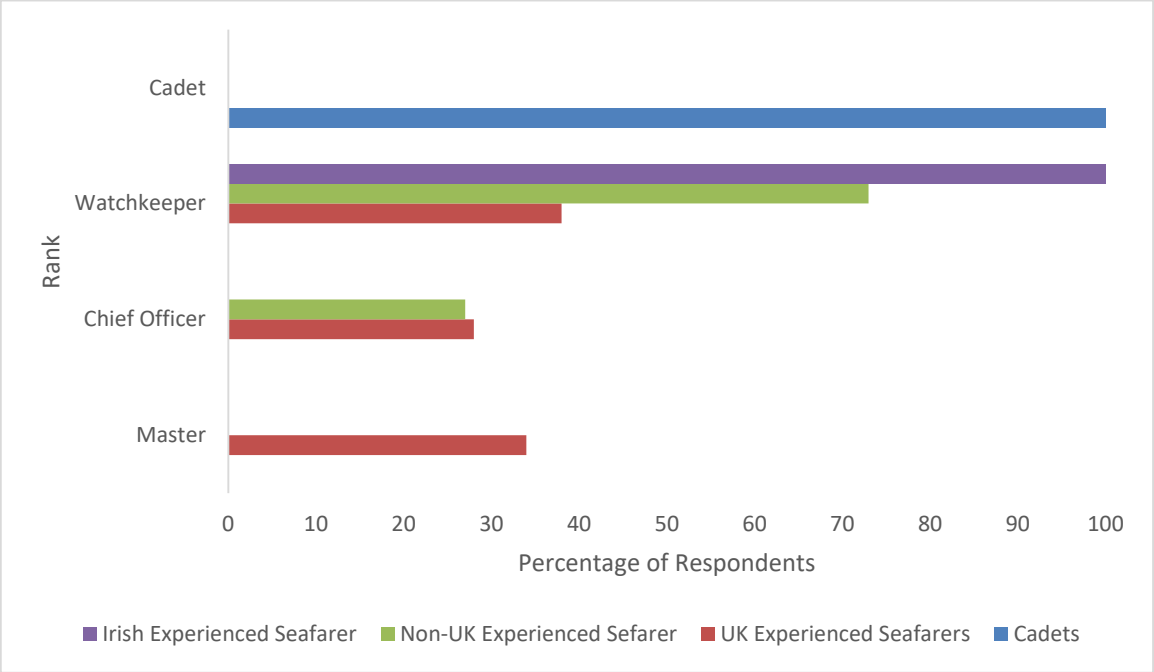



**Figure 7.12 Rank**

Responders were asked to give their current rank and it can be seen that the UK experienced seafarers show the greatest variation in this with roles from watchkeeper to master.

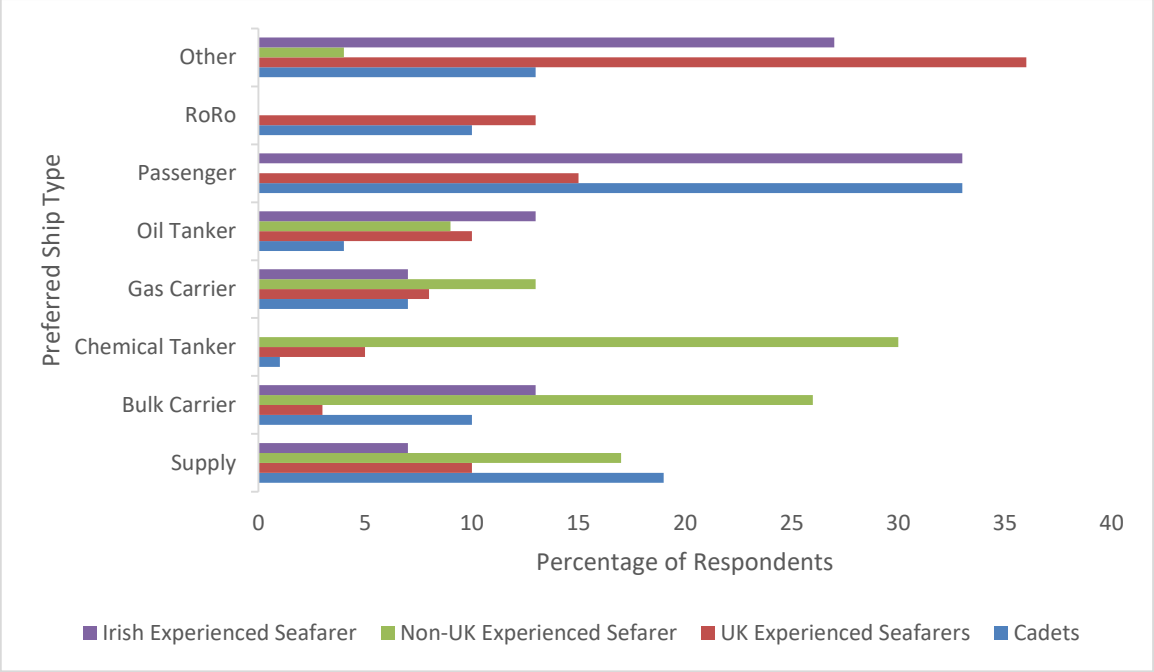



**Figure 7.13 Preferred ship type**

Responders were asked their preferred ship type and all samples showed a spread across all of the options offered. The high results in 'other' can be explained by the omission of container/general cargo from the options given. It is noted that the cadets score highly against passenger and supply.

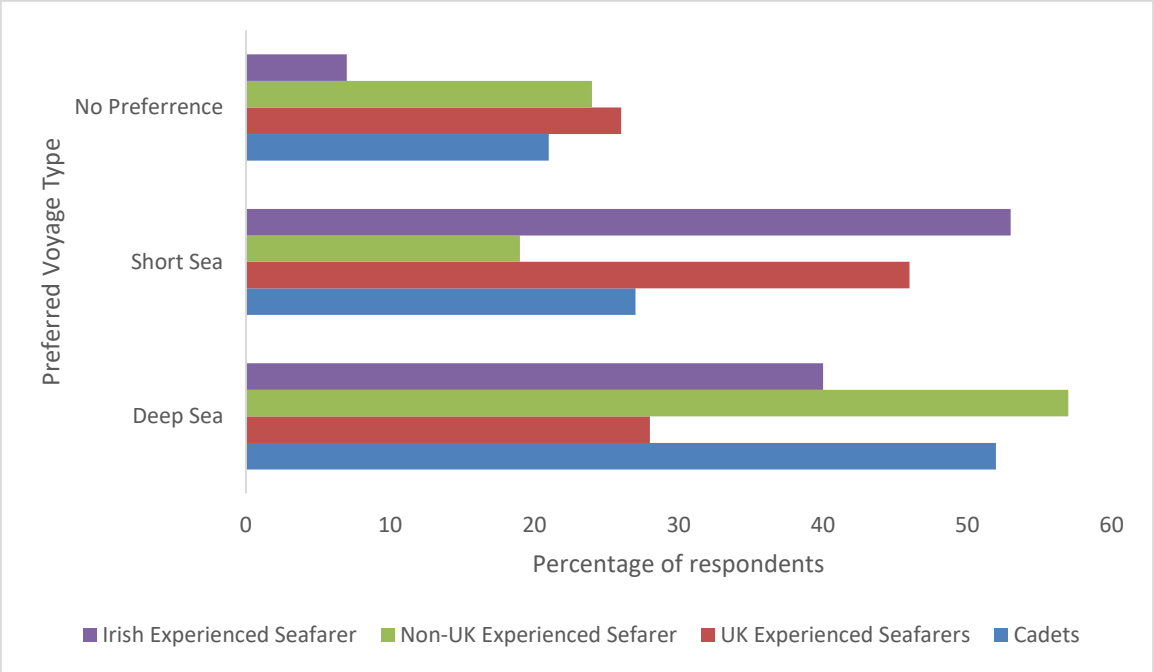



**Figure 7.14 Preferred voyage type**

Responders were asked about their preference for deep/short sea and the cadets scored high in deep sea and low in short sea where the UK experienced seafarers scored high in short sea and low in deep sea.

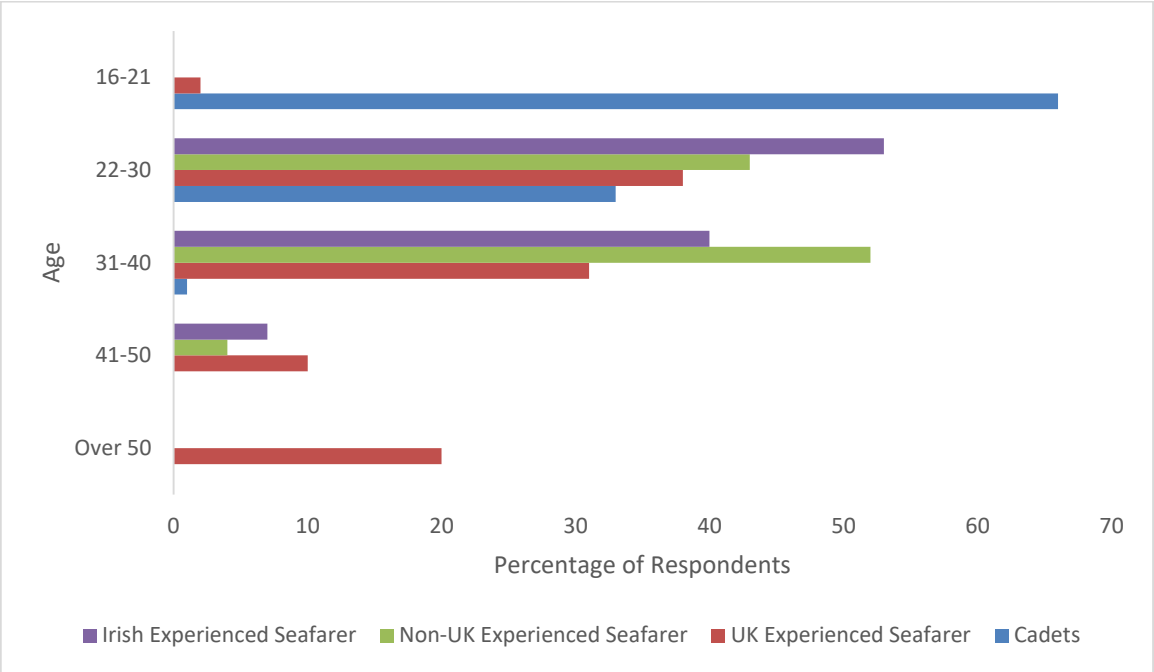



**Figure 7.15 Age**

As expected, the greatest percentage of cadet responders were in the younger age ranges while the experienced seafarers spread over a greater range. It is noted that over a third of the cadets that responded are over the age of twenty-one.

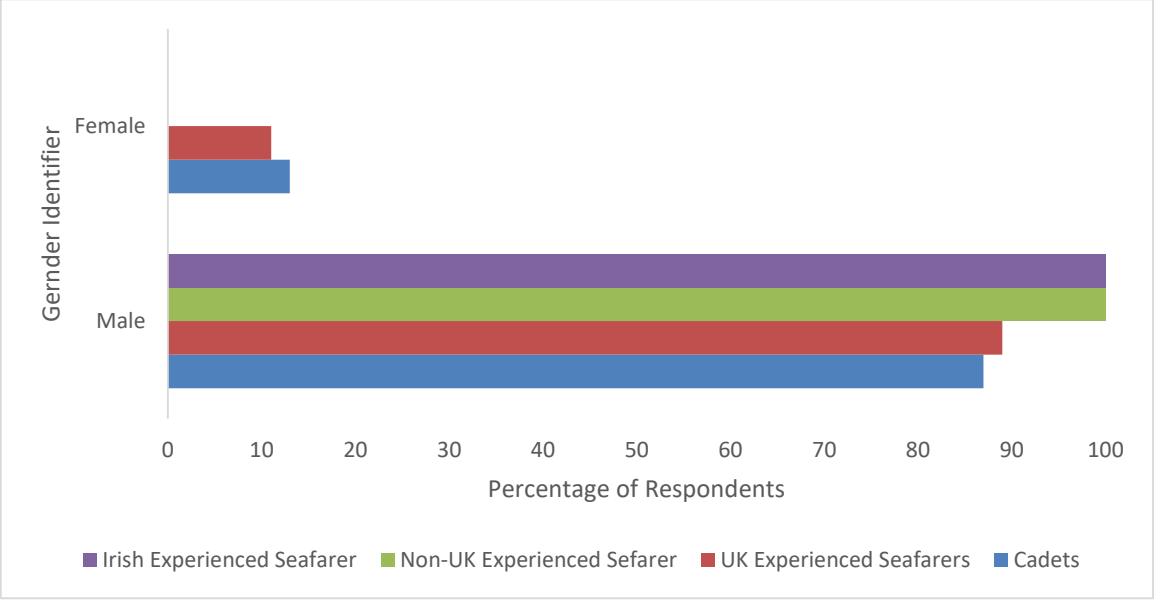



**Figure 7.16 Gender identifier**

Very few responders identify as female and these are limited to the UK samples.

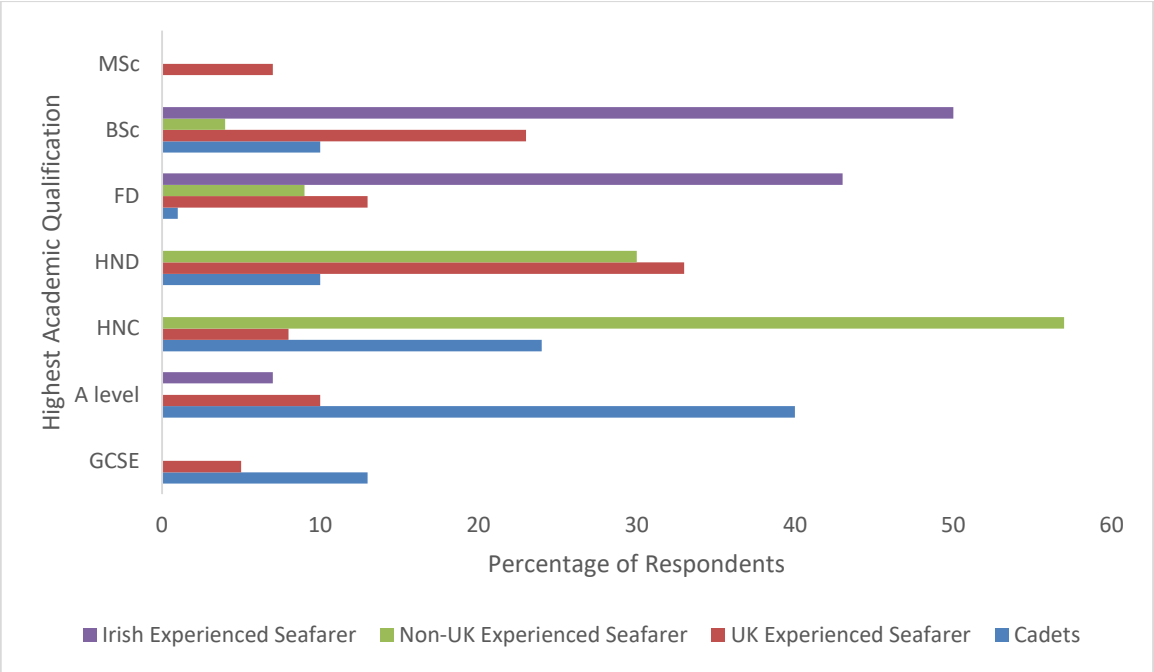



**Figure 7.17 Highest academic qualification**

The sample showing the highest academic qualifications overall are the Irish sample as aligns with their training programme. The UK experienced seafarers have a wide spread of academic qualifications, again aligned to the variations in training programmes offered in the UK system. The majority on non-UK experienced seafarers have HND/HNC, aligned with their training schemes and the UK cadets show higher percentages against the lower qualifications as they are currently in the training schemes.

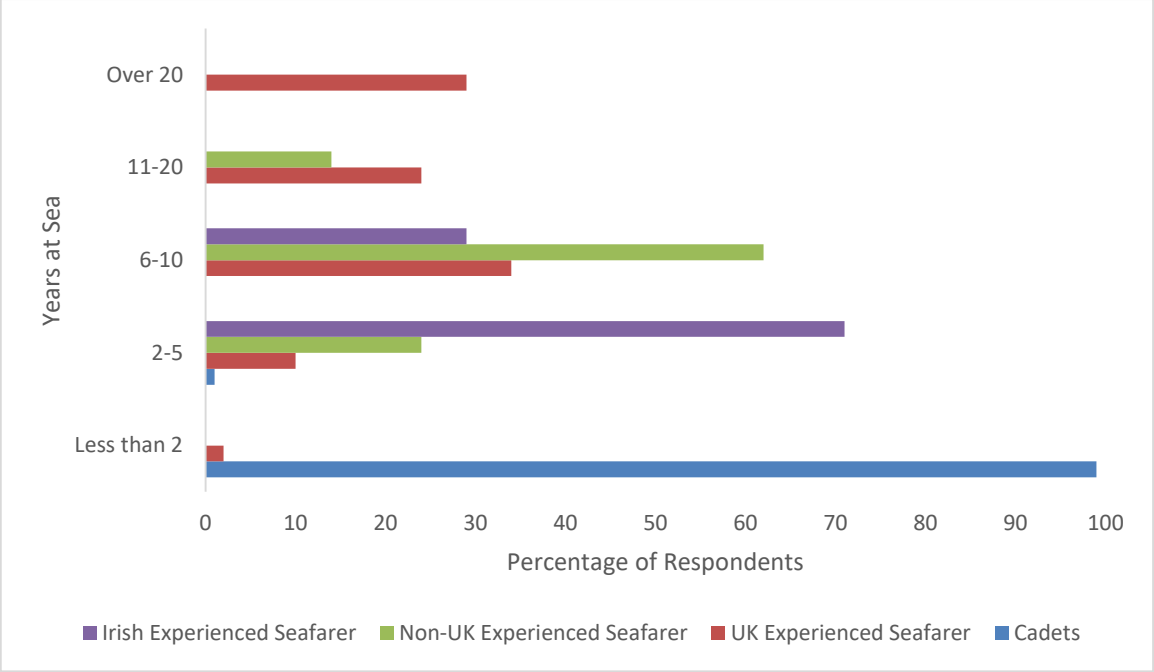



**Figure 7.18 Years at sea**

The results for the time spent at sea align with the different stages of career the responders were at, when completing this data.

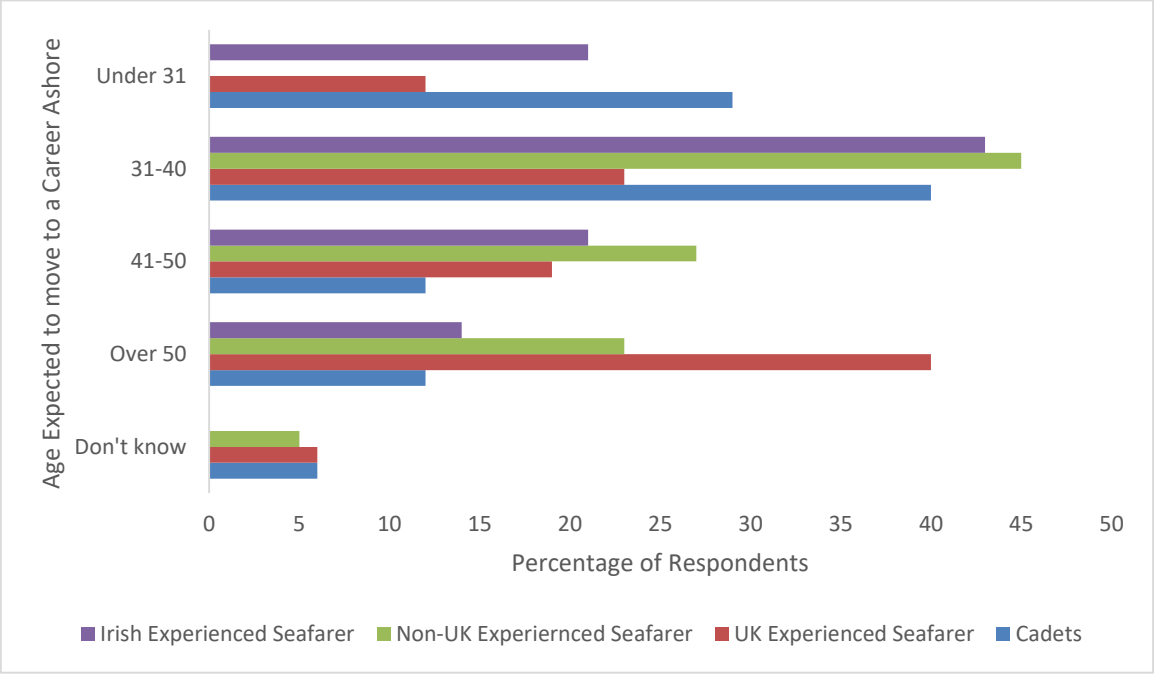



**Figure 7.19 Age expected to move to a career ashore**

Three of the four samples all have their highest percentage in the range 31-40, with UK experienced seafarers scoring their highest percentage in the over 50

option. The samples with the younger participants had small percentage scores against staying at sea to a later age.

### 7.4 Analysis

When looking at the results of the UK experienced seafarers compared to the UK cadets, the cadets have higher average scores across four of the five criteria, with a lower average only on conscientiousness. The greatest difference in scores is between the results for extraversion. It can be seen that all three groups of experience seafarers have average scores below the midpoint whereas the cadet sample have an average score above the midpoint. It is reasonable to suggest that those entering the profession need the traits associated with this area in order to be attracted to this sector and thus recruited into the industry, but that this is not a trait that would be a positive indicator of remaining at sea for the overall sample. From earlier references, the facets associated with this trait include:

- Warmth
- Gregariousness
- Assertiveness
- Activity
- Excitement seeking
- Positive emotions
- Affectionate and friendly
- Informal and unreserved around others
- Sociable; preference for company of others; “the more the merrier”
- Dominant, forceful, and socially able; take charge and assume leadership
- Prefer fast-paced life; high energy level; vigorous
- Crave excitement and stimulation; sensation-seeking
- Experience joy; laugh easily; cheerful and optimistic; high-spirited

This trait is not as dominant in those continuing in a career at sea. Craving excitement and activity based facets would point to things needed in order to make the choice to go away to sea based on perceptions. As can be seen in the results from chapter six for the most positive aspect of a career at sea, the top responses

from cadets prior to and after their first sea phase were about travel, money, experiences and theory into practice/skills attainment. Travel and experiences fit well into this facet and could indicate that cadet perceptions pre-sea match the facet in their personalities with this need. To continue in a career at sea this facet is less prominent and there is the high element of sociability within the attributed facets that could be argued as difficult to attain on board most vessels at sea.

It is also evident within the results that over fifty percent of responses from cadets indicate they have a preferred ship type of passenger or supply vessel. Both these sectors would have a higher element of social contact either through the number of persons on board with passenger ships or with the higher time in port or within communications ranges in the supply sector. This would all indicate that extroverted people are likely to be recruited, but less likely to stay in the career unless they continue in specific sectors.

The other result that requires comment is related to the scores for conscientiousness. This is the only trait where the experienced UK seafarers scored higher than the cadets, though both scores were above the midpoint. There is also very little variance from the mean of means across all groups. The facets from earlier references associated with this trait are:

- Competence
- Order
- Dutifulness
- Achievement striving
- Self-discipline
- Deliberation
- Sense that one is adept, prudent, and sensible
- Neat, tidy, and well-organized; methodical
- Governed by conscience; ethical; fulfil moral obligations
- High aspirations and work hard to achieve goals; driven to succeed
- Ability to begin and carry out tasks, self-motivating; persistent
- Ability to think carefully before acting; cautious and deliberate

As in all categories, the overall average results show no extreme indicators against the midpoint, but this trait indicates all groups have a positive average towards

these facets and that this continues through training into a continued career. This could easily be related to the requirements of a career at sea with the particular reference to competence which is the measurement associated with all levels of training within the sector. The facets can also be related to another common phrase associated with employment on ships and this is ‘risk averse’. The final phrase of ‘Ability to think carefully before acting; cautious and deliberate’ is something that is favoured in the sector where assets could be worth hundreds of millions of pounds and companies comment that control of this asset must be with personnel who are risk averse.

Some other noteworthy results are in the gender distribution. There is very little difference in the percentage of respondent identifying as female in the experienced seafarers against the cadet sample. This could indicate that any efforts made to increase this percentage have not yet had an effect on the recruitment pool.

The other interesting results is in the age expected to move to a career ashore. Over two thirds of the male cadets and one hundred percent of the female cadets, expect to move to a career ashore by the time they reach the age of forty, while fifty-nine percent of UK experienced seafarers expect to be over forty before moving to a career ashore. This element relates strongly to the current direction of research within the sector looking at a wider career across the maritime sector and in up-skilling trainees in order to prepare them for transition to employment ashore.

There is a difference in the results of preference for short sea voyages against deep sea voyages. Twenty-seven percent of cadets preferred short sea voyages while twenty-eight percent of UK experienced seafarers preferred deep sea voyages. This balance is reversed for the non-UK experienced seafarers as nineteen percent of this sample preferred short sea.

There is a relationship here in that the higher the rank, the higher the preference for short sea. In going back to the original data and breaking down the results for rank against preferred voyage type the results are:

**Table 7.1 Rank and preferred voyage type as percentage**

| Rank | Deep sea % | Short sea % | No preference % |
|---|---|---|---|
| Master/Chief Engineer | 23 | 64 | 13 |
| Chief Officer/Second Engineer | 23.5 | 53 | 23.5 |
| Watchkeeper | 35 | 26 | 39 |
| Cadets | 52 | 27 | 21 |

This then shows that those in senior ranks have a higher preference for short sea vessels than deep sea vessels, and when the cadet results are compared, the preference moves further again towards deep sea. This is a complex issue and will be discussed further in the next chapter.

There is also a positive relationship between those identifying as female and high score for question three on extraversion.

The responses to all of the questions were extracted from the original data against females:

**Table 7.2 Identifying as female scores**

| Sample | Q1 | Q2 | Q3 | Q4 | Q5 |
|---|---|---|---|---|---|
| UK experienced seafarers | 5.0 | 6.9 | 6.3 | 5.1 | 4.4 |
| Cadets | 5.7 | 5.0 | 6.4 | 5.1 | 5.6 |
| Combined | 5.35 | 5.95 | 6.35 | 5.1 | 5.0 |

These averages are very similar to the averages for the overall samples except in question three ‘Extraversion’. This is a significant finding in that the overall average for experienced seafarers was 4.3 compared to the average for female experienced seafarers of 6.3. Unfortunately, the female sample forms only eleven percent of the overall sample so the numbers responding is small. This is still interesting to note; as shown above there is already a difference overall between cadets and experienced seafarers in the response to this question, but then a higher score with both sets of females.

The results show that none of the female UK experienced seafarers had a higher academic level qualification than a Foundation Degree, where the overall sample had thirty percent of the respondents showing as having an academic qualification above Foundation Degree level. The female sample is very small so the result may

not represent this population overall. The Irish experienced seafarers have fifty percent above Foundation Degree which aligns with the earlier section showing their move towards a different training structure than the UK system.

Of the non-UK and Irish experienced seafarers, it is seen that all of their scores were above the midpoint except for the extraversion score.

From the analysis of this data, there are multiple discussion points which will be developed in the next chapter, but the main personality traits that are evidenced as different in the experienced seafarer sample are extraversion and conscientiousness. The extraversion trait scores lower for males in the experienced seafaring group, but high for females. The conscientiousness scores high across both gender sets. The outcome is that at applicant stage, a test should be used that focusses on these traits and looks for profiles in applicants that match these trait profiles.

### 7.5 The final stage

After identifying the personality traits that evidence potential to continue in a career at sea, the next stage of the current work is to refine the FFM test to isolate the questions on the traits identified, conscientiousness and extraversion, and then to use this test to see what information it can provide. As given in the methodology, the selected test was refined against the two highlighted personality traits, and is attached in Appendix V. The questionnaire was used with first phase cadets as this sample represents the population where use of the test would allow additional support to be given where needed. In the test used, some of the responses are reversed against the scale used, so these results were adjusted before being presented below. The first ten questions were related to extraversion and positive responses are represented as scoring above three. The second ten questions were related to conscientiousness and positive responses are represented as scoring above three. The individual results of these tests are given in Appendix VI, and a summary table of the results is given below:

**Table 7.3 Results of first phase cadets to pre-sea test**

| Student | Age | Do you identify as a female? | Ship type you will work on | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | N | C | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 5 |
| 2 | 17 | N | NS | 4 | 5 | 5 | 5 | 4 | 4 | 3 | 5 | 2 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 | 1 | 5 | 5 |
| 3 | 16 | Y | P | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 3 | 5 | 4 | 4 | 3 |
| 4 | 17 | N | P | 2 | 4 | 4 | 4 | 3 | 1 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 | 5 | 3 | 4 | 4 | 5 |
| 5 | 20 | Y | C | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 5 | 3 | 4 | 4 | 3 | 5 | 4 | 5 | 5 |
| 6 | 19 | N | O | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 2 | 4 | 3 | 3 | 3 | 3 | 2 | 4 |
| 7 | 21 | N | T | 1 | 4 | 2 | 4 | 2 | 2 | 2 | 2 | 1 | 1 | 3 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 |
| 8 | 19 | N | S | 2 | 4 | 5 | 5 | 3 | 4 | 4 | 5 | 3 | 4 | 1 | 4 | 1 | 2 | 1 | 2 | 1 | 3 | 2 | 4 |
| 9 | 18 | N | P | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 5 |
| 10 | 21 | Y | T | 2 | 5 | 4 | 5 | 4 | 2 | 3 | 5 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 2 |
| 11 | 23 | N | C | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 4 |
| 12 | 33 | N | O | 1 | 4 | 3 | 4 | 1 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 5 | 3 | 4 | 5 | 5 | 5 | 5 |
| 13 | 19 | N | O | 3 | 5 | 4 | 5 | 2 | 4 | 3 | 4 | 1 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 1 | 2 | 2 | 5 |
| 14 | 18 | N | T/ P | 4 | 5 | 5 | 5 | 3 | 4 | 5 | 4 | 3 | 5 | 4 | 5 | 2 | 4 | 4 | 3 | 5 | 5 | 2 | 3 |

The expected outcome of a test such as this, if used with UK experienced seafarers, would demonstrate a pattern associated with a continued career at sea and would evidence scores below midpoint for the first ten responses for males and above midpoint for females. All groups should evidence above midpoint for the latter ten questions. In the main questionnaire the midpoint point was five on a one to nine scale, and the average result for experienced seafarers and conscientiousness was sixteen percent above the median point and for extraversion was nine percent below the median point for males and sixteen percent above the median point for those identifying as female. In order to align with these values, the responses to the final test should ideally be 3.64 for conscientiousness and 2.64 for extraversion in males and 3.64 for those identifying as females, to reflect the values of the continuing UK seafarers. For this final test, the midpoint is three.

**Table 7.4 Summary of test results for pre-sea cadets**

| Student | Extraversion average score | Conscientiousness average score | Ship Type | Gender Identifier | Age | Comments |
|---|---|---|---|---|---|---|
| 1 | 3.5 | 3.9 | C | M | 20 | Reasonable profile for this sector, some support could be given for the high extraversion score. |
| 2 | 4.1 | 4.3 | NS | M | 17 | High extraversion and no sector given. Support needed. |
| 3 | 4.7 | 4.1 | P | F | 16 | Very high extraversion and very young, but female and passenger. |
| 4 | 3.7 | 3.9 | P | M | 17 | Reasonable profile for this sector. |
| 5 | 3.2 | 4.2 | C | F | 20 | Extraversion score low for female in this sector. Support needed. |
| 6 | 3.4 | 3.0 | O | M | 19 | Conscientiousness score low, and extraversion high. Support needed depending on sector. |
| 7 | 2.1 | 4.4 | T | M | 21 | Excellent profile for this sector. Extraversion a little low against standard value, but tanker sector very isolated. |
| 8 | 3.9 | 2.1 | S | M | 19 | Conscientiousness very low and extraversion high. Support needed |
| 9 | 3.7 | 3.8 | P | M | 18 | Reasonable profile for this sector |
| 10 | 3.7 | 3.6 | T | F | 21 | Reasonable profile for this age, gender and sector. |
| 11 | 2.3 | 4.8 | C | M | 23 | Excellent profile for this sector. |
| 12 | 2.3 | 4.4 | O | M | 33 | Excellent profile depending on sector. |
| 13 | 3.5 | 3.8 | O | M | 19 | Reasonable profile depending on sector. |
| 14 | 4.3 | 3.7 | T/P | M | 18 | High extraversion and mixed sectors. Support needed. |

C=Container, NS=Not Specified, P=Passenger, T=Tanker, S=Supply, O=Other

As can be seen from the results in the first part of this chapter, the traits most appropriate for testing, that are most relevant to a continued career at sea are extraversion and conscientiousness. The sample above responded in these areas as shown in the table above. It is clear that there are variations in the patterns of responses and that some of these student would need support to prepare them for their first sea phase.

If the test had been used with this group at application stage, and the same results had been obtained, then student eight would provide sufficient concern to consider not making an offer of a cadetship.

## 7.6 Summary

The main data results have been presented in this chapter and the results found in the first part indicated that extraversion and conscientiousness are significant personality traits in those seafarers that remain in a career at sea. A FFM test was then adapted to measure these traits against first phase cadets in order to see which of these cadets were suitable to recruitment, would benefit from further support or would suit a specific ship type or sector. These results were then presented and will be discussed in the next chapter.

# 8.0 Discussion

## 8.1 Introduction

This chapter will refer to the findings throughout this body of work and discuss the issues raised against the various factors leading to practices in recruitment and retention onto Deck Cadet programmes in the UK Merchant Navy.

When reviewing the literature available within this area, it was evidenced that retention is an ongoing issue within the training period of deck cadets within the UK Merchant Navy, though no direct figures are available to specify the extent of this issue. It was also evidenced that there are insufficient numbers being recruited into the sector to support the future employment needs within the sector.

There is a direct link between these two issues in that the lack of trained seafarers to fill employment needs in the future is a combination of not recruiting sufficient numbers, but also in not retaining trainees once in the system. Although there are many factors that contribute to the lack of recruitment being achieved, there is also a discussion point on the characteristics of those recruited and their suitability to the training phases on board ships.

## 8.2 Recruitment and retention

The current recruitment practices for deck cadets are based almost entirely on academic profiles of applicants. If the potential cadet has sufficient entry qualifications at GCSE or A level they will normally move to interview by a shipping company or training company. This is a reasonable approach as it aligns with most training or academic programmes in requiring a base line to demonstrate ability to be able to cope with the next level of academic programme. It is the point of interview that raises more questions for discussion. Responses from companies suggest that questions at interview allow a judgement to be made based on the previous experiences of the applicant and their knowledge of the requirements of the training. Shipping companies want to recruit cadets who will complete their training because it allows strategic planning on human resource available over a longer period. It also means they can plan compliance with Tonnage Tax requirements and receive SMarT payments. Training companies want to recruit cadets who will complete their training as this improves their business with shipping

companies, and provides their income stream over a longer period. The SMarT funding does not result in zero cost to shipping companies in the training of cadets and there is also a company incentive for the cadets to complete training to justify this cost. Some of this cost is supported by the trainee working on board ships for twelve months of their training and providing labour on board at low cost.

The UK Government continues to support this sector through SMart funding and through additional allocation of budgets to widen recruitment activity particularly targeting female recruitment. The targets for recruitment of cadets has doubled over the last ten years following various reports suggesting shortfalls in qualified personnel in future years.

All of this should suggest that numbers should be increasing, but the targets set are not being met.

### 8.3 Recruitment targets

The recruitment pool for cadets is based on those with a minimum academic profile. Other than this, the target group is school leavers. Two distinct groups then exist against the profile of cadets against age at commencement of training. For the lower academic programme the recruitment target age is sixteen, while for the higher academic programme the target age is eighteen and above.

This is currently a discussion point within the sector as recruiting at sixteen requires targeting a group who are focussed on vocational training and generally will be looking at all apprenticeships on offer, with some career based knowledge and inclination. The Merchant Navy then needs to place itself against other vocational sectors to encourage selection of a Merchant Navy career against other vocational choices. Although making this choice at the age of sixteen shows the applicant already has some level of emotional intelligence, there are still questions about the suitability of applicants at this age to cope with the harsh environment that will be presented to them at sea. Their perceptions of this would need to be very closely investigated at interview stage to ensure the applicant has a clear idea of the expectation of the training required to achieve deck officer qualification.

A further option would be to better prepare the recruit to enable them to better understand the requirements of sea going phases and to manage their perceptions

while on their college phase so that the sea phase meets more realistic expectations.

An additional discussion point here is that employment law related to sixteen year olds is different to that for eighteen year olds. This reinforces the argument about the suitability of sixteen year olds to go on sea phases. The additional employment law exists to protect younger trainees as they are seen as more vulnerable and require more protection in the workplace.

When recruiting at eighteen, the target group has additional options they will be considering. An eighteen-year-old with A level qualification has the option of continuing into higher education before making a definite career choice. Since the majority of eighteen year olds will have a HND or FD incorporated into their training programme, the target group then becomes those eighteen year olds with lower A level points, or those who have not achieved A level points as they can then progress to training programmes incorporating HNC using their GCSE results.

It is assumed that a potential applicant with higher tariff points would be more focussed on how to maximise the use of those so would not be looking at opportunities on offer with low tariff requirements. Why go through two years of A level study, achieving say 112 points to then choose a course that only requires an entry tariff of 48.

This was focussed on in developing BSc programmes with higher tariffs, but these programmes were not supported by most shipping and training companies so have very limited availability with only one offering of this programme still available in the UK. These programmes were seen as too expensive and companies worried that there would be lower retention once the cadet was qualified as they would have more options on employment with the higher academic qualification.

This form of training is used in other countries, and there is data included in this work for Ireland, where this structure of training programme has had some success as it allows companies to recruit at a later stage in the process and thus obtain trainees that are older, motivated by initial investment in the programme and cost effective because they are still only with the company for a training period of three years.

A further small recruitment pool that has emerged in recent years has been the recruitment onto these programmes of applicants who already have degrees or partial completion of degrees in other areas. This is a group that have already gone through the choices above but have then reached the point of career choice and decided they want to go away to sea. These are highly motivated students, older and more focussed by a definite choice after seeing a broader reality of what is available. In some instances, there have been cohorts where fifty percent of the students already have some form of higher education. The lack of cost to the student for the cadetship is very attractive at this point.

A further suggestion to address this issue is the development of a FE programme to attract sixteen year olds onto programmes that will begin their preparation for a career at sea, but will not schedule seatime until they are eighteen. This seems to address some of these issues and could increase recruitment of suitable applicants but without the attrition caused by sending young cadets away to sea. It doesn't address the issue of selecting suitable candidates and could just move the attrition to a later stage in the programme. It would allow a longer adjustment period and time for expectations to be managed. This form of recruitment already exists with the use of pre-sea cadetships, where the school leaver moves onto a Maritime course in the hope of improving their academic achievements and then being sponsored by a company onto a standard cadetship.

From the research in this work the Foundation Degree is suitable for training deck cadets, with an age of entry of eighteen. The weakness in this route is that is does not attract students with higher level A levels. A reasonably straight forward solution to this is to articulate this to a BSc(Hons) that incorporates competency for Mates so is completed following SMarT Plus seatime. In the UK system, it is common practice for those with FD to return for a short college phase when they have sufficient seatime to qualify for their Chief Mate CoC, since the STCW content is included in the FD during the cadetship. Inclusion of the Mates preparatory course as content of a top-up to BSc allows for a single college phase for completion of the Mates CoC and a BSc(Hons) course. This presents a clear progression route to potential applicants with higher level academic achievement as part of their career progression.

The second pathway that would aid recruitment and retention is the HNC route. This work would support the use of testing of all applicants to check their suitability to going away to sea. It is clear that applicants of sixteen years of age may be well suited to the industry, but there are still many obstacles to their working on ships. The solution to this is to enrol sixteen year olds onto an alternate programme that incorporates part of the level four STCW content and modules incorporating skills development including technology and digital skills. This extended period at college should also include the simulator course currently being developed and could incorporate RYA courses and short courses. The extended college phase could be used to manage expectations of the students. The first sea phase would then be scheduled to take place on the training ship if available or in a protected coastal environment if not. The cadet could then return to college and complete STCW learning towards their HNC before going on their second sea phase. By this point, all entrants onto this route will be eighteen, and more suited to the standard sea phases currently available. The funding for this would need to be government based, aligned to current progression of sixteen year olds moving to further education. The companies would not need to be involved until the end of the first college phase where the companies could then move the cadets onto the SMarT scheme and fund short courses and simulator training.

A pre-cadetship course already exists for those applicants who do not have sufficient GCSEs to be accepted onto the HNC. If developed carefully, this group could be integrated onto the course above where the first year is within a standard post sixteen education programme developing all of the additional areas prior to moving to the HNC.

One discussion point associated with the programmes offered above is in the target group and their academic level on entry. The FD with articulated progression to BSc could be promoted as the gold standard with reference to career progression ashore. The larger question is then about recruitment of those with lesser academic qualifications and if there needs to be any alignment between STCW college courses leading to OOW and level four and five in our FE/HE system. This is outside the scope of this work, but if courses are reviewed for cadet training and the suggested sixteen to eighteen college course is widely adopted as the first stage of training, then part of that review needs to be to look at the levels of the

programmes on offer and the current academic requirements associated with them.

In interviewing the Colleges, points were raised related to this area. Colleges agree that they do not recruit and that academic indicators are sufficient to support their needs for appropriate recruitment onto their programmes. The current training programmes suit academic structures in matching against HE/FE levels, but representatives from colleges comment that this may detract from those potential applicants who may be more practically inclined. The suggestion of the alternative programme for sixteen year olds may allow for less academically supported applicants to move into this career. If the academic requirement for entry is changed from what is currently used then there will need to be further discussion with colleges to ensure the levelness of these programmes against recognisable academic levels. If the entry requirements do not include GCSE then colleges would need to ensure sufficient support is available to ensure the cadets progress to appropriate levels at each stage of training. When access courses such as this have been used in the past, feedback presented to the industry suggested that they allow for the development of emotional intelligence and for more thorough selection processes to assess suitability for going away to sea. Tests used have generally related to skills rather than traits so there could be an opportunity for the use of an additional test to identify those with suitable traits to allow them to complete the seagoing training element. One of the problems that can exist with access courses of this type is if all of those on the course do not move into the sector of employment attached to the programme. Recruitment to the courses can be reduced by non-progression into employment from those electing to take the course. Colleges have then been very keen to present all of the students on the courses as ‘suitable’. A test for traits could be used to identify those students who may struggle with the isolation or fatigue elements of the sea phase and could allow aid in guiding them to the most suitable sector for them or in targeted support to ensure they are prepared for the challenges.

College incomes from these programmes are traditionally tied to the provision of cadets by company allocation. This then means that the college may focus on the needs of the company before the needs of the students. Access courses and the possible new version at sixteen entry could remove this dependence on the

companies at the earlier stages of the programme. This is the model that has been adopted in Ireland, but has not been successful in the UK as it is too difficult to attract students onto the programmes at their own expense while companies are offering alternatives with the increased demand for cadets.

### 8.4 Who is the right person to recruit?

In data collected from companies recruiting these students, the general practice is that an applicant is reviewed as academically able and then invited to interview to assess suitability to going away to sea as part of their training. As supported in general recruitment theory, decisions in these cases are generally based on experience from previous recruitment instances so will follow the same structure as what the interviewer will see as a tried and tested approach. The shipping/training company may have berths available in different sectors so may try to identify which sector would be preferred by the applicant, or which sector they think the student will be more suited to. This will involve questions related to the social structure the applicant currently favours such as a keen interest in team activities or time spent doing isolated activities such as hill walking or playing computer games. Questions at interview can also identify the applicant's usual social practices and need to integrate with others on a regular basis. Of course, the answers can be falsified by the applicant, but an experienced interviewer should be able to determine if an applicant has strong inclinations either way, and it would be unclear at this stage to the applicant which trait would be better suited. A test at this stage could therefore allow an extension of this decision making process to allow the interviewer to categorise the applicant with certain traits that may make them better suited to ships with large numbers of personnel against those with few people on board. It may also identify those applicants more suited to voyages in coastal regions where there is more variation in daily activity and more continuous links with home with more accessible communications available.

Some interesting comments from companies reflect the need of the cadet to be able to deal with the long stretches at sea with few crew to talk to and limited communication with shore. The applicant then needs to demonstrate the ability to be able to deal with isolation and boredom. If the applicant shows signs that their current practice is a high level of social activity and team based structures, then it is more likely they would succeed in a similar environment at sea such as on a

passenger vessel. There are still considerations to be given to cadets going on passenger vessels, as they will still be separated from their home environment and have limited communication opportunities, but the ship board environment will support social interaction more closely aligned with their normal experiences. Some company comments seem to want the applicant to be able to demonstrate they can deal with all of these scenarios including boredom but have high social skills.

Unfortunately, recruitment practices in this sector follow traditional methods and so continue to attract applicants from the same groups. The applicants are predominantly male and white as was previously referred to, and one of the criteria used in recruitment in this sector is knowledge of the sector through someone already employed in this area. Since the majority of the employees are male and white, recruitment continues to reflect this.

As demonstrated in the main body of the work, there are various projects in place to try and increase the number of females recruited, but this has yet to be reflected in the numbers taking on the role of cadet.

The age of those recruited is also relevant to the interview process in that the companies will each have their own policy on which age is more suitable or meets their strategies more closely as argued above. It is also very difficult to classify this age group against social preferences given their very limited life experiences to this point.

In the questionnaire asked of newly recruited cadets prior to their first sea phase, it is noteworthy that the three most frequent responses to negative criteria they thought would apply to their sea phase were:

- Away from home
- Isolation
- Relationships

This then indicates that those being recruited have some knowledge of the social factors that will be significant in going away to sea.

After the first sea phase, when the cadets were in a more informed position the three highest negative responses were:

- Away from home
- Fatigue
- Lack of communications and news

Although this is a small sample it is worth comment that there is no discussion on measurement of applicant's ability to cope with fatigue at interview stage. Another relevant comment is that until the cadet has experienced these things they cannot quantify the effect in these different areas.

In the main questionnaire, the results show that the experienced seafarers have a lower score for extraversion than the cadets, and it is argued that recruitment should focus on recruiting those with a lower score for this trait as the results indicate that those able to continue in a career at sea have a lower need for social interaction. Though the sample of females is small, it is also an interesting result that this result is reversed with the females surveyed and there may be different results that are suited to female recruitment.

The lower scores in extraversion show the ability of experienced seafarers to deal with the challenges related to time at sea with time away from home and support networks through minimum communications. The question though is why those identifying as female and continuing at sea have high scores in this trait. A reasonable argument to put forward for this could be in the limited number of females recruited. The career for a female at sea is still very different to that of a male at sea, and the challenges presented may require different personality traits to allow these different challenges to be met. It could be argued that it still requires a different level of determination to commence a career at sea as a female.

The conscientiousness score also provides interesting discussion in that in many areas of employment there would be an expectation that any applicant is motivated and keen to complete tasks asked of them. The higher score in this trait for those continuing in a career at sea can again be related to the unique challenges of being at sea. Working patterns are difficult onboard as the vessel works twenty-four hours a day seven days a week. This can often lead to fatigue as indicated in the responses from the first trip cadets. There is also limited social interaction to allow rationalisation of the working practices and so to allow continued motivation. In this harsh work environment, there is also limited support from those onboard for

anyone who is not committed to all of the activities required to keep the vessel operating. This is a very difficult issue to deal with if you are a cadet on your first trip and lack conscientiousness.

The COVID lockdown may have allowed for some emotional development in this area, with young people having to develop strategies to be able to cope with varying degrees of isolation and changes in social activity. Increased interaction through social media has enabled continued remote socialising, but again depending on ship type, these developments may not be translated to ships with low communication support.

### 8.5 The Test

From the results in this work it is evident that a simplified test could be used to measure the traits of an applicant. As demonstrated with the responses received, those personnel that stay at sea show a median score for openness and agreeableness, with lower than the midpoint for extraversion and neuroticism and higher for conscientiousness. If a very short form version of the test were used it would be unreasonable not to expect a large variation in responses for an individual. A test using the longer version for evaluating conscientiousness and extraversion would be more useful in identifying applicants with the ability to be able to cope specifically with sea going requirements. The higher score in conscientiousness to be able to deal with the challenging work environment, and the lower score in extraversion to be able to cope with the challenging social environment.

In the results from the cadets pre-sea and post first voyage, applicants need to be clear that they will be away from home, but dealing with fatigue becomes a main part of meeting the requirements of this training. This indicates that a higher conscientiousness score is needed.

Any test used would not replace an interview, but may aid in decision making processes on choosing who is suitable. The test could also aid in identifying those students who would cope better in a cargo environment compared to passenger, and in deep sea versus short sea.

A short version of the test was used in this research to increase the number of participants, but a longer form could be used with applicants as they would be

individually incentivised to complete what was requested of them by a potential employer.

The NEO Personality Inventory, which is often used in a short version called the NEO-FFI, could be utilised as this has been well researched and has been utilised using separate domains to highlight facets within personality testing.

In the theory of personality testing it is often discussed that traits may be variable with time and that over a lifetime we develop experiences that may influence our responses to the tests and so produce different outcomes. This could be argued as relevant to this work, especially when considered against the age of recruitment. From the results of this work, it is not suggested that individual scores against factors are seen as evidencing a good or bad applicant. The results here indicate that the results to any test be evaluated against the pattern they present. For all samples of seafarers staying at sea, scores were higher for conscientiousness and for males, lower for extraversion.

A highly significant discussion point here though, is in whether the companies recruiting cadets are looking at a longer term strategy of attracting applicants that will stay at sea, or those who they think will complete their cadetships and allow the company to meet their Tonnage Tax training commitment.

### 8.6 The sea phase

The seatime requirement for OOW qualification is dictated by STCW. For deck cadets following an approved training scheme this is currently twelve months, with a requirement that cadets complete a training record book whilst at sea. In their first phase at college, cadets are prepared for life on board a ship, and on the training they should complete while on board a ship. For those cadets on FD programmes there will also be a credit bearing work based learning project to complete while they are on board.

Students will be guided in how the training should be managed and in the activities they should be involved with while on board.

The cadets may then find that everything is as they expected when they join a vessel and then they will only need to cope with the changes in their situation such as being away from home, working shift patterns, and cultural changes.

Often the reality does not reflect perceptions and this then means that the cadet has to adapt to further challenges. An example of this could be fatigue. A cadet can be informed about shift work and the requirement to keep ships moving constantly, but that may not prepare them for the level of fatigue they feel once in this environment. There is guidance from the MCA on this, but again the theory of this may not prepare the cadet for the reality. An example of this could be in the training now needed by cadets in order to be competent in security issues on board ships. Cadets are required to have a basic level qualification in this, but commonly are trained to the next level at their company's request. This is slightly more expensive, but then means that the cadet is qualified to take a gangway watch while in port. This may then mean that instead of leisure time when the vessel is in port, the cadet may find themselves on twelve hour shifts ensuring the vessel is meeting security procedures. The cadets are prepared in college for the likelihood that they will be asked to complete tasks that may lighten the load on other crew members, and this is often required as in their TRB, but they also expect that there will be a balance in their training needs against the ship needs.

This is a difficult enough balance to try to maintain in a hierarchical management structure, but alongside the extreme social isolation, cultural differences and dietary changes this can place a lot of stress on a cadet at a very young age with little external support such as contact with family and friends. Again there is training offered in how to deal with these situations, but the reality may be very different to the theoretical training given in college. In addition to this, the cadet is often managing their on board training and trying to complete tasks within their TRB and completing work based learning projects.

As can be seen in the responses from the pre-sea/post first sea phase questionnaires, students felt prepared for their sea phase as they could see they had been given information on how to deal with these issues, but a few responses summed this up better by stating 'how can you prepare someone for their first trip to sea'.

From this research it is clear that many issues related to retention arise during the sea phase and that there is a need to ensure cadet perceptions of this phase are clear and that they are given the support needed to allow them to deal with the issues as they arise. To reduce attrition for a first trip cadet, they should be in the

most protected environment the company can offer, with minimal cultural changes, shore communication facilities and staff onboard that understand the training scheme and the role of the cadet. The training ship option would allow for this slower integration into the sea going environment. All companies do not have the option of allowing an ideal environment for a first trip cadet, and some companies support the idea of placing the cadet in the harsher environment on their first trip as this will then inform them of the cadet's ability to cope and likelihood of completing training.

A difficult aspect to manage is in the deep sea/short sea option for a first trip. Deep sea allows longer trips and quicker completion of seatime. This option is preferred by a higher percentage of cadets and watchkeeping officers than those in management positions. The deep sea option usually means that the daily requirements on board are less, so fatigue is less of an issue. Deep sea often means that the cadet travels to more places, often places they would not normally travel to for holidays. The deep sea option also places the cadet away from support and less communication facilities will be available to maintain contact with home and to use support mechanisms through the company if needed. The passenger vessel offers the deep sea experience but without the same level of isolation.

There is also the issue of the level of control available to the training company of the practices on board the ship. The MNTB maintain that there is always a direct connection, with a level of control in the event of complaint or support being needed by the cadet. In interview the MNTB did concede that this may not always be immediate because of communication systems and the complications of different employers representing different personnel on board.

### 8.7 Wider strategies

A main discussion point that has developed throughout this work has been the intervention of shore side maritime employment decisions in the training of cadets.

The Maritime industry presents a wide employment sector that provides a strong lobbying voice to government on the continuation of support for training to ensure a skilled workforce across the sector. Traditionally, many sectors of employment ashore such as ports, superintendents, education, MCA and many business sectors such as shipping companies, charterers, insurance and technology

development all have a preference for some experience at sea when employing to certain positions ashore. The traditional argument is that without the experience of dealing with the daily issues of running a vessel at sea, it is difficult to foresee the difficulties and problems that may be developed throughout contracts or operations when decision making ashore. The adaptability and problem solving skills of those who have held management positions at sea is also seen as highly desirable. Working in an international environment with limited support structures in place provides unique management skills alongside the management of personnel within this environment. As presented in the main body of this work, the shoreside industry is highly influential in the development of training schemes and support for these, as from a wider strategy view, they are the ultimate employers of these trainees in the future and their businesses rely heavily on the training in the sector to provide for its future needs. All of the reports commissioned to research in this area have found that there needs to be this consideration in any support structures put in place for the training of these personnel.

In more recent reports, the link is seen as essential and resources are constantly targeted at developing strategies to map out career paths for those taking up cadetships and to further discuss the need for skills within the shoreside sector. In the most recent report from Maritime UK, further research is suggested in the level of sea going experience needed in those moving to jobs ashore and in the widening of recruitment to balance shoreside teams having some with seagoing experience and others with alternative experience in say technical or management skills. This may then reduce the continued demand on sea going employees to fill vacancies ashore.

Another major discussion point in this area is in which skills the potential employees should have to move ashore, and in how these should be incorporated into their career path. A current European research project, SeaSkills is currently developing the areas for skills development, the training requirements associated with these, and suggestions for the levelness of these so that they can be incorporated into seafarer training schemes at the appropriate point of their training.

All of this meets the ongoing requirements of employment ashore and will ultimately contribute to the choices available to sea going personnel to further develop skills to allow them alternative career paths. The fundamental question

associated with this is where in their training, seafarers should be exposed to this additional skills development.

The current working group in the UK is looking at this issue and the first direction they are looking at is the inclusion of additional training in the cadet programme and in a total review of cadet training schemes.

In the wider strategy discussion this will provide support for the shore side sector and it is perceived that this will be more attractive if clear in the recruitment process of cadets. In this research it is evidenced that the majority of cadets will move to a career ashore since the majority of these questioned responded that they will not be at sea above the age of forty. They will then need these additional skill sets to be attractive to employers ashore.

There are three major issues with this argument:

- Firstly, is there really an awareness of skills deficit among those being recruited?
- Secondly, international requirements drive training structures within the UK and may not support the inclusion of this additional training.
- Thirdly, the question remains of who is paying for it.

The wider strategy has been well researched with regard to the support for the maritime sector through seafarers moving to shoreside employment. Some restructuring of this requirement in the future may ease the demand on this sector.

Government support for training cadets is influenced by the wider sector employment statistics, and this has provided separate funding for cadet training which has had a positive influence on recruitment numbers. This training is linked to the Tonnage Tax, which again has boosted economic development and sustainability within the wider maritime sector, alongside the imposition of training number requirements on those companies taking advantage of this beneficial tax regime. This then argues in favour of maintaining a wider strategic viewpoint in the training of cadets as it provides financial support, and a continued increase in the numbers recruited.

The counter argument is related to the actual training programme and the narrower viewpoint of the actual training of cadets for their employment as officers on board ships.

The training programme content is dictated by STCW. This provides for consistent content in the training of ships' officers worldwide and for the ability of all nations to be able to rely on minimum standards of those with qualifications enabling their employment as ships' officers. Because this is an international convention, developments in content and the inclusion of changes aligned with things such as technology enhancement are very slow. There is also a requirement to have agreement across all nations for these changes.

The UK sees this training as part of a wider strategy for employment into the wider maritime sector. As pointed out by the ICS, they see the content of STCW as no longer suitable for purpose because of this lack of development of content and the time required for any changes to be implemented. It is likely that the working party looking at the training programmes for cadets will ask that the MCA review their current interpretation of the requirements of STCW to allow for some changes to the curriculum content of the training programmes.

The EU in commissioning the SeaSkills research project are indicating the need for further development of seafarers beyond the minimum STCW requirements in order to equip them for career choices at different stages of their life employment.

Companies already add elements of training in excess of the STCW minimum requirements and joint organisations such as BIMCO consistently lobby for inclusion of further elements of training to ensure all ship board requirements are met. This includes movement to onboard auditing of training to ensure safe operations and that minimum STCW elements are supported in training elements ashore. This movement uses terminology that is aligned to the human element skills incorporated into the STCW Manila amendments, but this could also be developed to reflect the input of shoreside on the lack of transferrable skills of sea going personnel when they move ashore.

The next step is then to consider how all of this relates to the actual training of cadets. The premise that much of the strategy is based upon is that the cadets will end their careers ashore and that to attract further applicants for cadetships, they

need to be clear on the paths available to them throughout that career. This can be evidenced as a supported view within the maritime sector and with government bodies, but there is no evidence that those applying for cadetships require this information or are looking this far ahead at the point of deciding to go away to sea.

The cadets enter a very demanding training programme enabling them to qualify as ships' officers. The content of the programme is dictated by STCW and includes wide content already that needs to be included alongside shipboard training phases in order to allow then to achieve their CoC. There are also many other elements that need to be completed in the form of short courses for STCW and further company training and MNTB training elements seen as essential for health and safety for those working onboard ships. All of this also needs to be completed within thirty-six months to comply with SMarT funding requirements. The proposal of incorporating additional elements to this training to allow additional skills development for employment ashore is yet to be justified against the needs of the cadet at that stage of their career or at stages where further intense programmes need to be followed for higher CoC attainment.

The question of payment is also still open for further discussion. Those shore companies such as Lloyds who have contributed to the training of cadets see the wider strategy of supplying their needs for shore employment of highly trained sea going personnel. This is a clear strategy for an organisation that is clear in its need for ship going experience in certain positions within their shoreside employees, but this is less clear when looking at the wider maritime sector. It is difficult to draw limitations against those who benefit from the training of seafarers by bringing them into their organisations at latter stages of their careers. Recommendations that shoreside companies provide voluntary contributions have led to further discussions on who should be making these contributions. This is all still wider strategy based and does not impact on the cadet training except in the lobbying strength given to these companies in the elements of training included in these training programmes. The cadets seem to be subject to the additional elements placed on them, without any voice as to their inclusion or not. The greatest loss of trainees is on their first sea phase, but instead of limiting the demands placed on the cadets it seems that the only changes suggested would be to include further requirements. The latest suggestion in this area is that shoreside companies

should sponsor students at different stages of their training and include their additional requirements through company based funding and training. This is only a very slight deviation from models that currently exist.

### 8.8 Retention

When looking at the general literature on retention, the standard factors that influence employees' decisions are not all applicable to those going away to sea as cadets.

As given by Hausknecht et al. (2009) the requirement for a work place to be near home or for relationships with co-workers to be strong do not apply in a straightforward way to those following a career at sea.
The two factors that do translate to the issues raised in this work are organisational justice, where the perceptions of fairness in rewards, policies, procedures and interpersonal treatment are significant in this decision process. The second is organizational prestige which relates to the degree to which the organization is perceived to be reputable and well regarded.

The standards on board ships during training phases may cause cadets to question fairness, and depending on the ship they are sent to may also lead to them questioning the reputation of the company they work for. This increases the importance of the connection of the company with the ship providing the sea time, and oversight from the MCA/MNTB for the vessels authorised to provide the seatime.

Cadets have indicated that they are keenly aware of their treatment on board ships and of the support offered by their company when it is needed.

In the sea going research completed by the WMU (2015), the theme continues with highlighted factors such as:

- Support for training
- HR resources such as shore leave, food, communications
- Criminalisation of seafarers – international regulation breaches lead to imprisonment of seafarers
- Increased regulations limiting shore leave and increasing paperwork requirements

- Technology development means the job is more mundane and has reduced crew sizes.
- Ships remain highly dangerous work environments and weather conditions can often lead to increased fatigue and thus increased accident rates
- High profile piracy and hijack incident present negative images of working at sea

It was also found that remuneration is not the most significant factor, employee friendly organisational culture is.

Their findings specifically related to cadets include physical confinement, restricted diet, separation from family and unsupportive attitudes and hostility from mentors on board. Much of this is also against the expectations of the cadet when recruited into the industry.

The solutions proposed by the WMU are:

- Reducing long periods at sea and proportionately matching it with vacation periods without resorting to reduced salary
- Improving internet access
- Improving accommodation on board
- Encouraging and increasing female presence onboard ships
- Enhancing job security through improved social security initiatives

Again the majority of these relate to improving the conditions associated with sea phases. Maintaining an atmosphere on board that more closely relates to cadets' life experiences ashore is given as a major contributor to retention throughout sea phases. A cross-section of personnel by gender, ethnicity and social class would contribute to this, but simpler solutions can also be managed by looking at the accommodation on the ship being used, the type of food that is served, or the cultural practices on board may all aid in making the situation more 'normal' for a first trip cadet. This again argues to support for the use of a training ship in the earlier part of training to allow cadets to adjust to the change in environment while maintaining some normalities in social structure.

One conclusion of the paper by the WMU was that expectations need to be managed and employers need to know the kind of people they are recruiting in

order to effectively manage their expectations. This ties in very well with the recommendation of testing applicants to see those that are most suited, but also to identify those who would benefit from additional support to allow them to adapt to the changes once at sea.

In the first questionnaire results in this work, it is interesting to see the change in vocabulary for negatives after the first sea phase. Words like trapped and missing events are significant terms and cadets could be prepared for these, but those feeling trapped may not have suitable personal characteristics to cope with this feeling.

### 8.9 The Gender Issue

The gender question is also not resolved. More females on board ships would provide a more familiar social environment. Research supports positive action to increase this number and to support females during training. The resistance to this is entrenched. Multi-national crews with varying gender outlooks makes this a continuing problem in this sector.

The industry claims that females do not stay at sea, but there is no evidence to support this. There are recommendations from studies on how to retain women but little evidence that this is being done. The UK Government have provided funding and resources to encourage the recruitment of more females into the Merchant Navy but there is little evidence that this is providing any difference in the numbers recruited. There is little to be gained in changing the minds of women on this, and as the letter in the Telegraph evidences, the minds of men need to change. This is difficult enough within the UK system, but when female cadets are sent to sea on vessels with crew having completely different cultural approaches to women in the workplace the difficulties for the cadet are magnified. Again, the solution proposed would be to ensure females are protected from these issues as far as possible, especially on their first trips to sea. This is very difficult to manage in reality and frequently just supports the negative attitudes because of the special treatment they require. Companies may be able to demonstrate their inclusive recruitment policies, but they cannot support their implementation with numbers of females recruited. It still appears that the recruitment process has bias built in using measures that are easier demonstrated by males rather than females. The companies are very aware that employing females will bring difficulties when trying

to place them at sea in looking for a supportive environment and suitable accommodation. The only way that any of this will change will be in changing the minds of men in their expectations of an environment on board a ship. The integration of women to this workplace should lead to a more ‘normal’ environment and all of the normal issues associated with daily life. There needs to be a zero tolerance for bullying and harassment while attitudes are adjusted. This would be a far easier process with the younger generation then the older, and developing this aspect in training could help to change attitudes where both male and female engage in a zero tolerance approach to language and practices on board.

Again the complication in changing attitudes in this area are that it is both the work and social environment that needs to change, and there is no opportunity for employees to step away from the workplace at the end of the day and to talk through issues with their social circle. Increased communication links with support circles ashore would help with this issue in allowing things to be talked through as they would at home, outside of the workplace.

From the interviews and wider industry comment, it is more telling that companies ashore see qualified officers as almost unemployable because of their inability to integrate with HR and management systems ashore. This speaks volumes on the current environment experienced on board ships. Things that are acceptable on board ships would not be tolerated ashore. This is an extremely difficult proposition for a first trip cadet, particularly if they belong to a community other than white, male, or sexual orientation other than heterosexual.

The gender issue highlights this factor very well. Tolerance for harassment and bullying are being addressed through MLC and MNTB advice on training and in STCW amendments on human element training, but clearly this is still not being dealt with sufficiently.

Again it needs to be highlighted that when interviewed, one college representative stated that there was sufficient diversity on current courses.

## 8.10 COVID-19

With the outbreak of COVID-19 there have been massive changes across the shipping sector. The majority of passenger vessels have either been sent to anchor or are slow steaming offshore awaiting changes to the prevalence of the disease and restrictions on travel. Cadets are still training on these vessels if it is safe to travel to them and if they are allowed access. It could be argued that the training environment is improved as staff onboard have more time to allocate to training tasks, but negative aspects are that cadets are not experiencing a true commercial environment and are not getting the navigational experiences of multiple port calls. Other vessels may still be operating as normal, but it is difficult for cadets to travel and gain access to ports in order to join and leave vessels. There is also the question of increased risk associated with this and so some companies are not willing to expose cadets to this risk and prefer they wait until the risk is reduced. It is currently unclear when that risk will be at an acceptable level and so companies are reluctant to recruit above Tonnage Tax numbers. Recruitment for September 2020 is down by twenty percent (MNTB) though there seems to be evidence of more applicants in the system. It is also likely that next year will be worse as companies continue to recruit against their minimum Tonnage Tax commitment where they have been in excess in some areas over the last few years. If there is a continued lack of confidence in economic recovery associated with the COVID-19 pandemic and with Brexit, and current fleet sizes reduce, this may bring down employee numbers and therefore training commitment requirements, thus again reducing numbers recruited. This may lead to greater competition for highly skilled individuals across the Maritime sector and the pressure from the shoreside sector may increase further and cause retention at sea to again be reduced.

All of the Government funding, working parties moving things forward, and development of better training courses is still in motion, but it is difficult to see how much investment will be maintained within these systems if the sector moves into economic difficulty following COVID and Brexit.

In the short term there is also an issue for those already in the system, with uncertainty about seatime with travel restrictions in place and the risks associated with sending trainees to ships. This could mean that many cadets in the system at the start of this pandemic will not be completing their training in time and there will

be additional costs if these are extended beyond the thirty-six month funding period allowed. Some concessions have been offered against funding extended programmes, but not enough to cover the increased cost of these extended training periods. This uncertainty could also be contributing to the reduced recruitment in 2020.

Any reduction on the passenger sector will also influence the choices available to cadets for their training and will lead to an increase in cadets being sent to harsher environments with the likely result of increased attrition.

# 9.0 Conclusions

The aim of this work was to develop a testing method to allow the evaluation of personality characteristics most suitable in the recruitment of Deck Officers into the UK Merchant Navy to promote retention in a continued career at sea.
It has been clearly evidenced through the available literature that there is a shortage in the number of deck cadets being recruited and retained in the UK Merchant Navy.

It is also supported by the literature available that testing in recruitment is a well-established practice, though testing in the Maritime sector has not been common practice and has traditionally been aptitude rather than personality based.

When assessing stakeholder views on this, it is evident that there is a lack of clarity on which personality traits are most desirable in an applicant for a deck cadetship in the UK Merchant Navy. The primary data in this work evaluated those traits in experienced seafarers and compared these to traits in cadets currently in training.

## 9.1 Testing

This work was designed to allow a comparison between the traits of those who remain at sea compared to the traits of deck cadets, to establish any differences between the groups and to identify those traits that should be looked for at recruitment stage to improve retention and a continuation through a cadetship into a career at sea.

Personality traits used as predictors when recruiting is well researched and there is support for the use of NEO-FFI for this. It provides valid and reliable data. The research completed here has established the most applicable results in this testing to identify those most suited to a continued career at sea. There are two significant sub-categories of the test that should be focussed on, as those continuing in a career at sea score away from the median in characteristics associated with the difficulties of being away at sea. It is then concluded that identifying similar trait profiles across applicants would support a prediction that the applicant would continue in a career at sea if employed.

The results show that males staying at sea score highly on conscientiousness and below midpoint on extraversion. Females score highly on conscientiousness and above all other groups on extraversion.

It is a conclusion of this work that a test at recruitment point evaluating the applicants' traits in the areas of conscientiousness and extraversion would allow for improved retention and continued careers at sea for those being recruited.

It is also a conclusion of this work that the results of the test could also be used to identify the most suitable sector for seatime against the scores for extraversion of any of the applicants. The test could also identify those students that would benefit from support prior to their seaphase to ensure they will be able to cope with the realities of going away to sea.

The test to be used would be a standard test already in use in this discipline and supported in the literature as suitable to use in a recruitment environment.

In recruiting to these training programmes, there will be some applicants who are aware of the career structure and are looking at long term prospects, but the majority will be making a choice to 'go away to sea' which must be the focus of the recruiter at this stage. The selection process must be aimed at ensuring that applicants have the correct traits to allow them to cope with the challenges of a career at sea, and the completion of a test to assess conscientiousness and extraversion would allow the applicant to be evaluated as suitable to go away to sea, suitable to a certain sector or in need of additional support to develop coping mechanisms to be able to deal with factors such as fatigue and social isolation.

A reduced version of the NEO-FFI would be suitable at recruitment stage, focussing on the sections for extraversion and conscientiousness, and seeking male applicants with below median score on extraversion but with above median score in conscientiousness.

Seeking female applicants with above median scores in both conscientiousness and extraversion.

The expectations of all pre-sea cadets need to be managed in their first college phase so that the realities of the challenges they are to face can be processed prior to joining a ship.

## 9.2 Retention

The next major focus of this work was on the structure of deck cadet training programmes and on their suitability to promote retention.

It is an accepted part of the structure of the Maritime sector that those working at sea will be useful employees in the wider sector ashore, and this broader sector of the industry has a strong lobbying voice in generating funds for this sector of training, but also in the structure of the training programmes

Even with the introduction of SMarT Plus, the link between recruitment onto cadetships, and employment on ships as officers is still not as clear as the link between recruitment and Tonnage Tax requirements.

The training programmes for deck cadets also need to be reviewed, to align with most relevant academic levels against the target group, and ensure training is current and relevant. The focus of the training programmes should be in providing all of the training and development needs of a cadet in moving towards their Certificate of Competence. The strategy of the sector is to ensure sufficient seagoing personnel are available to move into shore jobs, and cadet responses indicate that the majority expect to move to a career ashore before the age of forty, but the cadet training programme should not be designed to try to include all of the possible future outcomes for these cadets. Retention on these programmes is clearly linked to the sea phases, where the cadets already have many issues to deal with, and should be able to focus on clear outcomes for the training element of this. Providing separate training routes could aid in providing those with clear career aspiration a high attainment progression route through their career, and those with the view of going away to sea, a less congested programme with a clear focus on CoC only. They can then develop to higher levels if they see that as suitable in their career progression. The proposed pre-sea courses are seen as an improvement in the programmes available, as they allow more time to present all of the STCW content and to prepare students for sea. This form of programme will offer a widening access opportunity that could lead to an increase in diversity on board vessels. The students on these programmes would present the best opportunity for the use of a recruitment test to allow improved selection from a group of candidates, but also as a diagnostic to allow support to be offered and

allow better preparation of potential cadets with a realistic job preview prior to selecting a career in the Merchant Navy.

As with all educational programmes, the design should include alignment to levels that would enable a student to transfer with recognised credits at different stages. Some better alignment of the programmes could also free up some resource to allow better skills development of those involved, and more time spent on preparing students for the challenges of the sea phase.

The STCW content of programmes can be reviewed nationally and changes made to the depth at which some areas are currently assessed. This would leave time available for the development into areas such as technology.

The age at which recruitment is targeted is also a major issue to be considered. There are many sixteen year olds with the correct traits to allow them to have a successful career at sea, but legislation is driving the age of placing a cadet at sea as being eighteen, for health and safety reasons.

The sea phase is the key element in retaining trainees to completion of cadetships. Continued support for a training vessel is supported by this work, as it allows for an easier transition through the changing environment of going away to sea, and would support retention.

### 9.3 Recruitment

Changes in recruitment practices are needed to ensure fairer practices across the industry. Continuing to recruit from the same limited pool will mean that current practices are continued by the next generation of seafarers. Justification for this practice is often given as using tried and tested methods will provide predictable outcomes. The gender issue provides a strong example in this sector, as there is little movement in the recruitment of females as companies frequently state they will leave the industry earlier than men, but there is no evidence to support this. There needs to be far greater reform in this with zero tolerance processes adopted and acted on in all cases of discrimination on ships, in colleges and in training institutions.

# 10.0 Recommendations

Further research needs to be done regarding the use of a test with applicants to establish if those identified as most suitable through testing are the ones who are retained in the profession. This would allow data from an applicant group to be evaluated and for levels to be set against outcomes of this testing against the specific sample this would be utilised with. Further time and resources would be required to move to the next stage.

The review of cadet training should include the needs of the cadets alongside the needs of the companies and the wider maritime sector with regard to finance and STCW requirements.

Data should be collected on retention at stages of cadet training to ensure focus is given to the correct factor influencing retention figures.

More data should be collected looking at characteristics and the gender differences for those continuing in a career at sea.

Stakeholders offer opinions that we only ask those who have applied why they chose this career. There is a need to ask those not applying, why this is not a career they would chose and what could be done to make it more attractive. This would require access to sample groups outside of the maritime sector so would be more difficult to achieve.

**Limitations**

Research in this area continues to be carried out, but primarily among those already in the system. If this research had only been engaged in by those identifying as male, the test recommended would be looking for applicants with results in extraversion that score lower than median. The test would then only look for this and this would then likely lead to the exclusion of females as those who responded in this research scored highly in this trait.

Suggestions on recruitment would then continue with current bias. Unfortunately, even this statement is limited by the fact that very small numbers of those identifying as females responded to the questionnaire in this study. Alternate methods of collecting data across different sample groups is needed in order to widen any participation in this sector.

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Appendix I

# PARTICIPANT INFORMATION SHEET

## LIVERPOOL JOHN MOORES UNIVERSITY
## Participant Information Sheet for Officers/Cadets in the UK Merchant Navy

**LJMU's Research Ethics Committee Approval Reference**: **19/MME/009**

**Title of Study**: The development of a recruitment tool to improve the process of selection and ongoing retention of deck cadets in the UK Merchant Navy.

You are being invited to take part in a study. Before you decide it is important for you to understand why the study us being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for taking the time to read this.

1. **Who will conduct the study?**
   This research will contribute to PhD studies being completed by Barbara Kelly in the Department of Maritime and Mechanical Engineering.

2. **What is the purpose of the study?**
   To evaluate the current recruitment and training of deck cadets into the UK Merchant Navy and allow the selection of deck cadets who have the skills and attributes to continue in a career at sea.

3. **Why have I been invited to participate?**
   You have been invited because you are currently an officer/cadet at sea and will be able to provide responses that allow evaluation of factors that contribute to a continued career at sea.

4. **Do I have to take part?**
   No. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep. You can withdraw at any time by informing the investigator without giving a reason and without it affecting your rights.

5. **What will happen to me if I take part?**
   The response you provide to the questionnaire will be evaluated against other responses to look for correlations.

6. **Are there any possible disadvantages or risks from taking part?**
   None

7. **What are the possible benefits of taking part?**
   There are no direct benefits to you, but the research will contribute to recruitment and retention practices within the UK Merchant Navy.

8. **What will happen to the data provided and how will my taking part in this project be kept confidential?**

   The information you provide as part of the study is the **study data**. No study data from which you can be identified will be collected.

9. **What will happen to the results of the study?**

   The investigator intends to publish the results in a PhD thesis.

10. **Who is organising the study?**

    This study is organised by Liverpool John Moores University.

11. **Who has reviewed this study?**

    This study has been reviewed by, and received ethics clearance through, the Liverpool John Moores University Research Ethics Committee (Reference number: **19/MME/009**).

12. **What if something goes wrong?**

    If you have a concern about any aspect of this study, please contact the relevant investigator who will do their best to answer your query. The investigator should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you wish to make a complaint, please contact the chair of the Liverpool John Moores University Research Ethics Committee (researchethics@ljmu.ac.uk) and your communication will be re-directed to an independent person as appropriate.

13. **Data Protection Notice**

    Liverpool John Moores University is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Should you choose to contact the receiver and provide personal data, Liverpool John Moores University will process your personal data for the purpose of research. Research is a task that we perform in the public interest. Liverpool John Moores University will keep identifiable information about until the study is completed.
    Your rights to access, change or move your information mean that you may ask for the deletion of your personal data at any time.

    You can find out more about how we use your information at by contacting secretariat@ljmu.ac.uk.
    If you are concerned about how your personal data is being processed, please contact LJMU in the first instance at secretariat@ljmu.ac.uk. If you remain unsatisfied, you may wish to contact the Information Commissioner's Office (ICO). Contact details, and details of data subject rights, are available on the ICO website at: https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/

14. **Contact for further information**

    Barbara Kelly contact details are b.kelly@ljmu.ac.uk

**Thank you for reading this information sheet and for considering to take part in this study.**

*Note: A copy of the participant information sheet should be retained by the participant.*

Appendix II

# LIVERPOOL JOHN MOORES UNIVERSITY

## IAMI Interview

Title of work

The development of a recruitment tool to improve the process of selection and ongoing retention of deck cadets in the UK Merchant Navy.

Researcher Barbara Kelly Maritime and Mechanical Engineering, FET

1. Can you please indicate your role in the training of UK deck cadets?

2. Can you please identify your relationship with the MCA?

3. Can you please outline the inclusion of STCW within your policies?

4. Can you please outline your relationship with the standards set for UK deck cadet training?

5. Are skills profile of entrants suited to completion?

6. Which processes of your organisation contribute to recruitment and retention of UK deck cadets?

7. Do you think that the current sequencing within deck cadet programmes is most suitable for success?

8. Do you think that the current structures support students in progressing from deck cadet through to captain?

9. Do you think that the college phase provides suitable support to the deck cadets?

10. Do you think that the forms of assessment that are currently used on deck cadets programmes are suitable?

11. Do you think that the forms of assessment that are currently used on mates and masters' programmes are suitable?

12. Do you have any further comments to make on the current recruitment and retention of deck cadets into the UK Merchant Navy?

# LIVERPOOL JOHN MOORES UNIVERSITY

## College Interview

Title of work

The development of a recruitment tool to improve the process of selection and ongoing retention of deck cadets in the UK Merchant Navy.

Researcher Barbara Kelly Maritime and Mechanical Engineering, FET

1. Do you contribute to the recruitment of deck cadets into the UK Merchant Navy?

2. Do you participate in company recruitment of deck cadets?

3. Do you think the system would be better with direct recruitment?

4. Would you be using different techniques to the companies?

5. Would skills mapping be of benefit?

6. Would other testing methods be considered?

7. Are there any attributes that you think make an applicant more suited to a career in the merchant navy?

8. Would you question the current suitability of UK cadets to support the future needs of the MN?

9. Would you differentiate between skills suitable to college/sea phase?

10. Do you think the industry supports widening participation in recruitment?

11. Do you have any particular retention issues with deck cadets?

12. Do you think there is/should be a secondary level to recruitment that would allow colleges to refuse cadets supplied through sponsors?

13. If so, what criteria would be used in the decision making process?

14. Do you have any further comments to make on the current recruitment and retention of deck cadets into the UK Merchant Navy?

# LIVERPOOL JOHN MOORES UNIVERSITY

## MCA Interview

Title of work

The development of a recruitment tool to improve the process of selection and ongoing retention of deck cadets in the UK Merchant Navy.

Researcher

Barbara Kelly Maritime and Mechanical Engineering, FET

1. Can you please indicate the role of the MCA in the recruitment of UK deck cadets?

2. Do you think that the current structures of the training programmes are suitable to retain deck cadets through to OOW?

3. Do you think that the current structures of the training programmes are suitable to retain deck cadets through to higher ranks?

4. Do you think that recruitment supports widening participation?

5. Do you think that the skills profile of entrants is suited to completion to OOW?

6. What standards are used to measure the suitability of a Company engaged in training?

7. What standards are used to measure the suitability of a college engaged in this training?

8. What measures are used to ensure that programmes meet the needs of students?

9. Is SMarT the most suitable mechanism to support training of deck cadets?

10. How do you facilitate change within these programmes?

11. Do you have any further comments to make on the current recruitment and retention of deck cadets into the UK Merchant Navy?

# LIVERPOOL JOHN MOORES UNIVERSITY

## MNTB Interview

Title of work

The development of a recruitment tool to improve the process of selection and ongoing retention of deck cadets in the UK Merchant Navy.

Researcher

Barbara Kelly Maritime and Mechanical Engineering, FET

1. Percentage of cadets with Shipping Companies or Training Companies?
   Don't know
2. Is there a close enough link between the Company and ship?
   Yes, but is there enough control
3. Are all UK cadets with the SMarT scheme?
   No some are not UK citizens
4. What is your view on the suitable age for recruitment and first trip to sea.?
   16-18 course needed as some ships won't allow 16 year olds on board IAMI

   Not pre-cadetship but SMarT or alternative government funding.

   Different marketing approach. Getting bright ones, for those not moving onto A levels
5. Is there any data on ethnicity or social class of recruits?
   No
6. Why did recruitment not improve once further funding was available?
   Implementation didn't understand funding and didn't really see way to recruit additional figures – related to SMarT Plus
7. Have recruitment numbers increased/reduced during COVID?
   Drooped by 20% 529 for dropped 111 cadets. Companies won't recruit above core training as they currently do. As fleets reduce then core training commitment will go down so further reductions.
8. Why is the shoreside industry so influential in the training of cadets? (Current working group?)
9. Is there any evidence to support the premise that applicants need to see a career path?
   Mix responses from questionnaire to cadets giving response to immediate needs and value of what they have been offered

10. Is it appropriate for cadets to take on training outside of their competence needs for the OOW qualification?

11. What is more significant to the industry, recruiting sufficient numbers, or retaining those in the system.

12. Do you think there are fair recruitment practices across the industry?

13. Does the MNTB support the proposal for a training vessel?
    Yes

14. Is the Irish model for training cadets more suited to recruitment?

15. Is there any data on retention, and on reasons/phases for cadets leaving programmes?
    Retention bad again

16. Has SMarT Plus had any impact on recruitment?

Discussion point 1 - wider maritime inclusion in strategy for training and funding.

Discussion point 2 - simulator time replacing seatime.

Appendix III


Cadets New to Industry 2016

This research will contribute to PhD studies being completed in the subject area of cadet recruitment and retention.

Your involvement will be anonymous but could contribute essential information to the study.

Any personal details you supply will only be used in the analysis of the overall data and will be disposed of on completion of the work. A personal email address is requested so that a follow up questionnaire may be sent to you following your first trip to sea.

If you would like to offer more information beyond this then please contact me on 0151 2312063 or by email on b.kelly@ljmu.ac.uk

Thank you in advance for your contribution.

***"I have read the information sheet provided and I am happy to participate. I understand that by completing and returning this questionnaire I am consenting to be part of this research study and for my data to be used as described in the information sheet provided"***

Name

Age

Gender

Email

Company

Course

Home town

School

Number and subjects of A levels obtained (or equivalent)

Number and subjects of GCSE/BTec obtained

What influenced your choice of a career at sea?

State the three most positive factors that you expect to experience as a result of going away to sea?

State the three most negative factors that you expect to experience as a result of going away to sea?

Do you think you have a clear picture of the life you will experience at sea?

Do you think you will have a clear picture of the life you will experience at sea by the time you complete your first college phase?

Cadets New to Industry 2016

This research will contribute to PhD studies being completed in the subject area of cadet recruitment and retention.

Your involvement will be anonymous but could contribute essential information to the study.

Any personal details you supply will only be used in the analysis of the overall data and will be disposed of on completion of the work. A personal email address is requested so that a follow up questionnaire may be sent to you following your first trip to sea.

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***"I have read the information sheet provided and I am happy to participate. I understand that by completing and returning this questionnaire I am consenting to be part of this research study and for my data to be used as described in the information sheet provided"***

Name

State the three most positive factors about going away to sea.

State the three most negative factors about going away to sea.

Were you fully prepared for the lifestyle you experienced on board ship?

Did life at sea meet your expectations?

Appendix IV

Set up online

Profile

- Rank
- Ship type/sector of most sea service
- Deep sea/Short sea in current employment
- Nationality
- Age
- Years at sea
- Age you expect to leave seagoing employment
- Academic qualification when you started at sea
- Academic qualification gained during cadetship

**The single item measure of personality (5 items in total)**

Woods, S.A. & Hampson, S.E. (2005). Measuring the big five with single items using a bipolar response scale. *European Journal of Personality*, 19, 373-390. doi: 10.1002/per.542.
In the following 5 items there are a pair of descriptive statements related to each one. If both statements describe you equally well, then select the middle number (5). If description 1 represents you then select a number from 1 to 4 as appropriate (1 = strongly to 4 = slightly). If description 2 represents you then select a number from 6 to 9 as appropriate (6 = slightly to 9 = strongly). This test will give you a little flavour of the larger five-factor model and will be helpful if you complete it in advance of the session (will only take a few minutes). We will not ask you to divulge your scores during the session. You will note that there are 4 concepts in each description (corresponding with 1-4 in description 1, or 6-9 in description 2). You might like to ask someone close to rate you later.

Generally, I come across as:

**Item 1.**

Description 1: Someone who is a practical person, who is not interested in abstract ideas, prefers work that is routine and has few artistic interests (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who spends time reflecting on things, has an active imagination and likes to think up new ways of doing things, but may lack pragmatism (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 2.**

Description 1: Someone who doesn't necessarily work to a schedule, tends to be flexible, but disorganised and often forgets to put things back in their place (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who likes to plan things, likes to tidy up, pays attention to details, but can be rigid or inflexible (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 3.**

Description 1: Someone who is a reserved, private person, doesn't like to draw attention to themselves and can be shy around strangers (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who is talkative, outgoing, is comfortable around people, but could be noisy and attention seeking (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

**Item 4.**

Description 1: Someone who is forthright, tends to be critical and find fault with others and doesn't suffer fools gladly (1 = Strongly to 4 = Slightly). Or,

Description 2: Someone who is generally trusting and forgiving, is interested in people, but can be taken for granted and finds it difficult to say no (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8

**Item 5.**

Description 1: Someone who is relaxed, unemotional, rarely gets irritated and seldom feels blue (1 = Strongly to 4 = Slightly). Or,

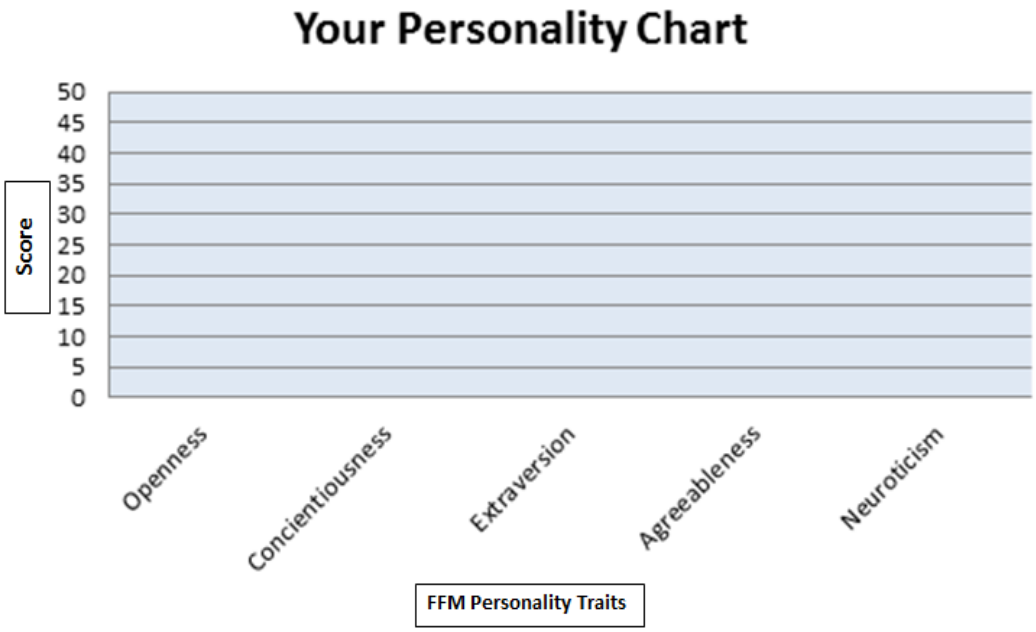
Description 2: Someone who is sensitive and excitable, and can be tense (6 = Slightly to 9 = Strongly).

Please encircle your response: 1 2 3 4 (5) 6 7 8 9

Here are some guidelines on scoring the measure (the order below corresponds with the order above). In the column below, you can multiply each score you gave yourself by 5 (1 = 5, 2 = 10, 3 = 15, 4 = 20, 5 = 25, 6 = 30, 7= 35, 8 = 40, 9 = 45), and then mark these (x) as appropriate on the chart.

| | Score (x 5) |
|---|---|
| Item 1 - Openness to Experience | ……. |
| Item 2 – Conscientiousness | ……. |
| Item 3 – Extraversion | ……. |
| Item 4 – Agreeableness | ……. |
| Item 5 – Neuroticism | ……. |

The midpoint score for each item after converting scores is 25. Therefore, a score above 25 is toward Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. A score below 25 is therefore in the opposite direction.




If you would like to use the fifty-item version of the Five Factor Model of personality (freely available) please email me and I will send you this along with the scoring guidelines:

d.mcilroy@ljmu.ac.uk

## Appendix V

On the following pages, there are phrases describing people's behaviours. Please use the rating scale below to describe how accurately each statement describes ***you***. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the appropriate number.

**Response Options**

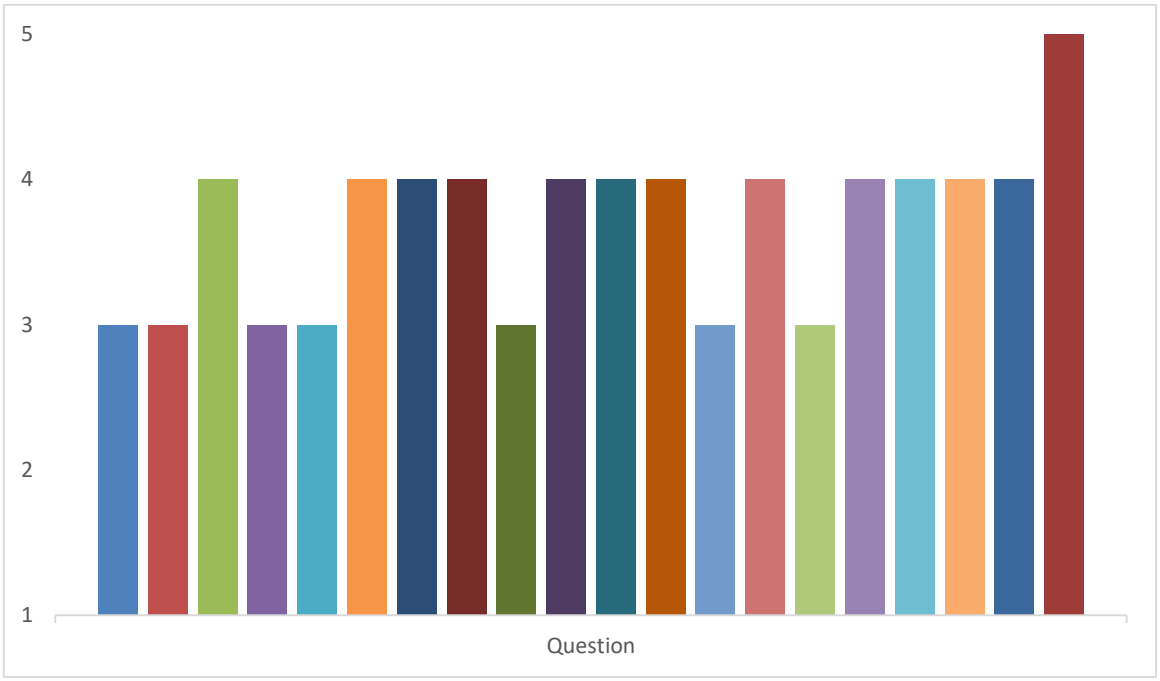
**1**: Very Inaccurate
**2**: Moderately Inaccurate
**3**: Neither Inaccurate nor Accurate
**4**: Moderately Accurate
**5**: Very Accurate

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | I am the life of the party …… | **1** | **2** | **3** | **4** | **5** |
| 2. | I feel comfortable around other people …….. | **1** | **2** | **3** | **4** | **5** |
| 3. | I start conversations ……..... | **1** | **2** | **3** | **4** | **5** |
| 4. | I talk to a lot of different people at parties …… | **1** | **2** | **3** | **4** | **5** |
| 5. | I don't mind being the centre of attention …….. | **1** | **2** | **3** | **4** | **5** |
| 6. | I don't talk a lot …….. | **1** | **2** | **3** | **4** | **5** |
| 7. | I keep in the background …… | **1** | **2** | **3** | **4** | **5** |
| 8. | I have little to say ……..... | **1** | **2** | **3** | **4** | **5** |
| 9. | I don't like to draw attention to myself …….. | **1** | **2** | **3** | **4** | **5** |
| 10. | I am quiet around strangers …… | **1** | **2** | **3** | **4** | **5** |
| 11. | I am always prepared …….. | **1** | **2** | **3** | **4** | **5** |
| 12. | I pay attention to details …… | **1** | **2** | **3** | **4** | **5** |
| 13. | I get chores done right away …….. | **1** | **2** | **3** | **4** | **5** |
| 14. | I like order …….. | **1** | **2** | **3** | **4** | **5** |
| 15. | I follow a schedule …….. | **1** | **2** | **3** | **4** | **5** |

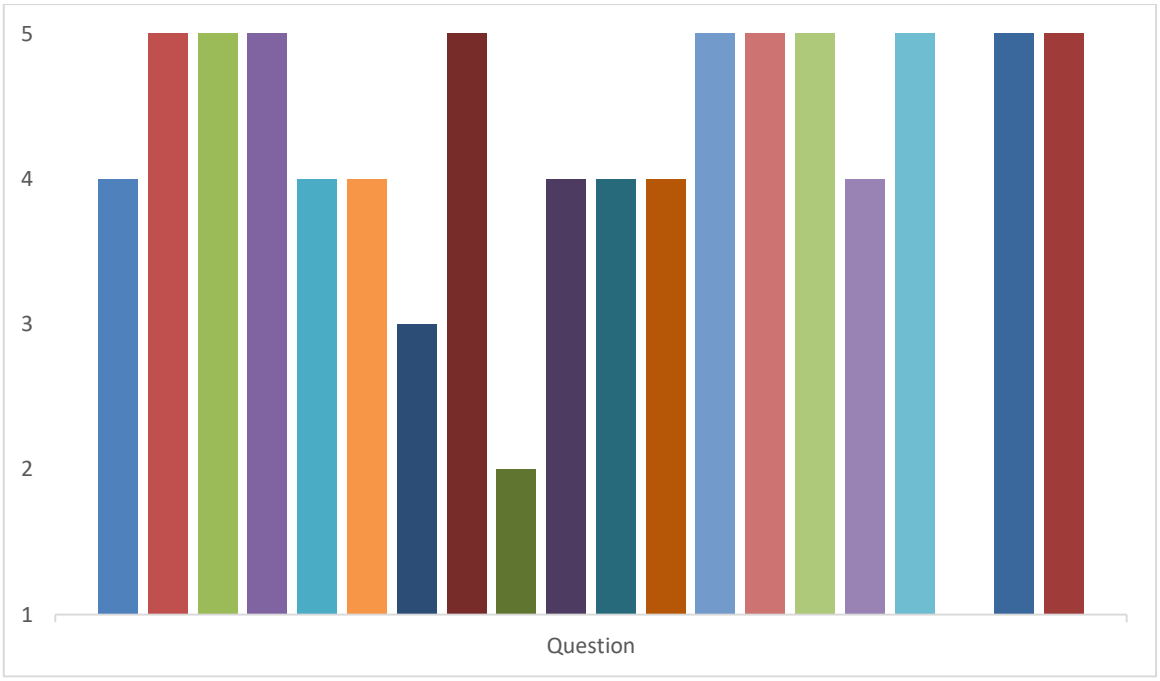
| | | | | | | |
|---|---|---|---|---|---|---|
| 16. | I am exacting in my work …….. | **1** | **2** | **3** | **4** | **5** |
| 17. | I leave my belongings around ……. | **1** | **2** | **3** | **4** | **5** |
| 18. | I make a mess of things …….. | **1** | **2** | **3** | **4** | **5** |
| 19. | I often forget to put things back in their proper place …… | **1** | **2** | **3** | **4** | **5** |
| 20. | I shirk my duties ……. | **1** | **2** | **3** | **4** | **5** |

Appendix VI

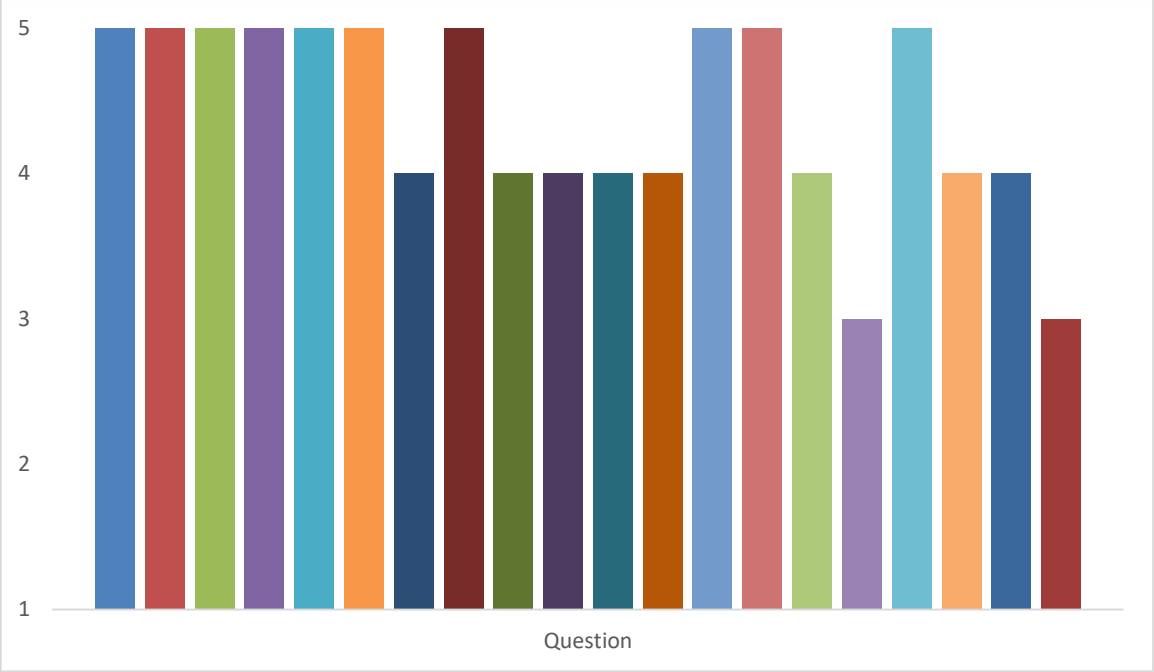
Test results for cadets in first college phase:



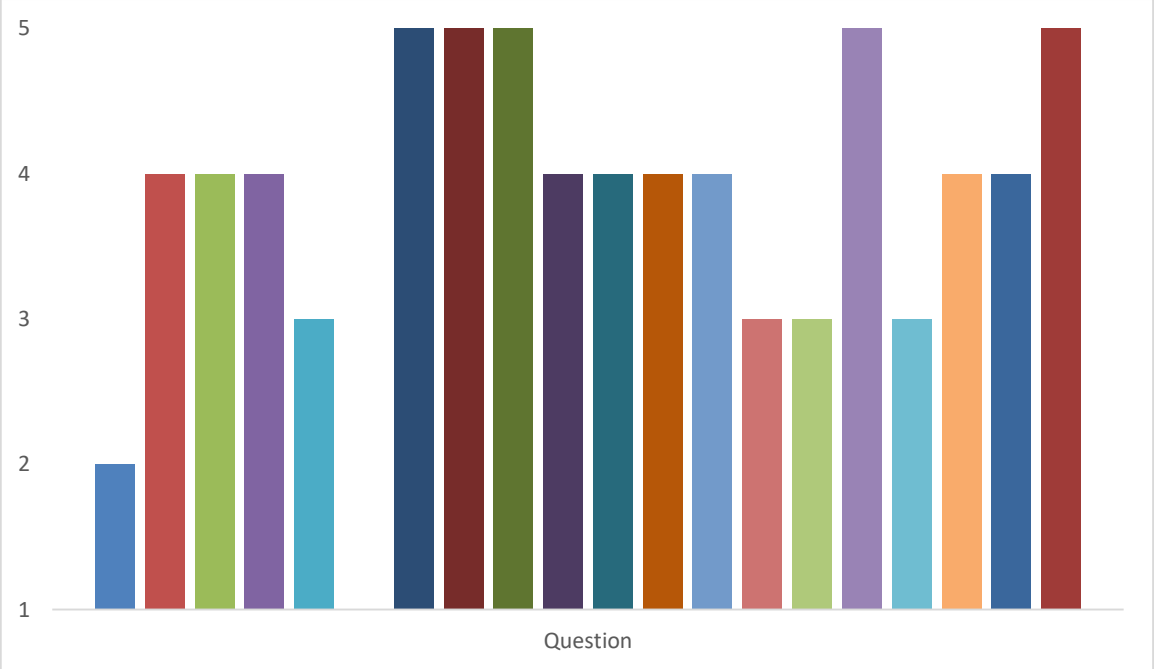

**Respondent one**



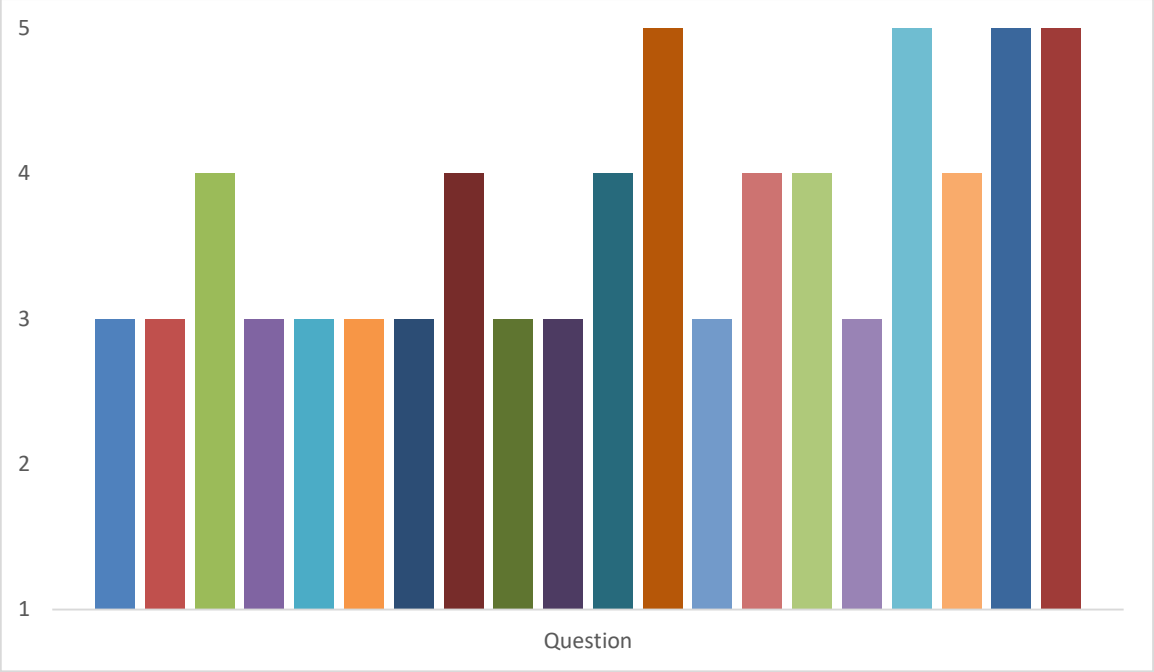

**Respondent two**



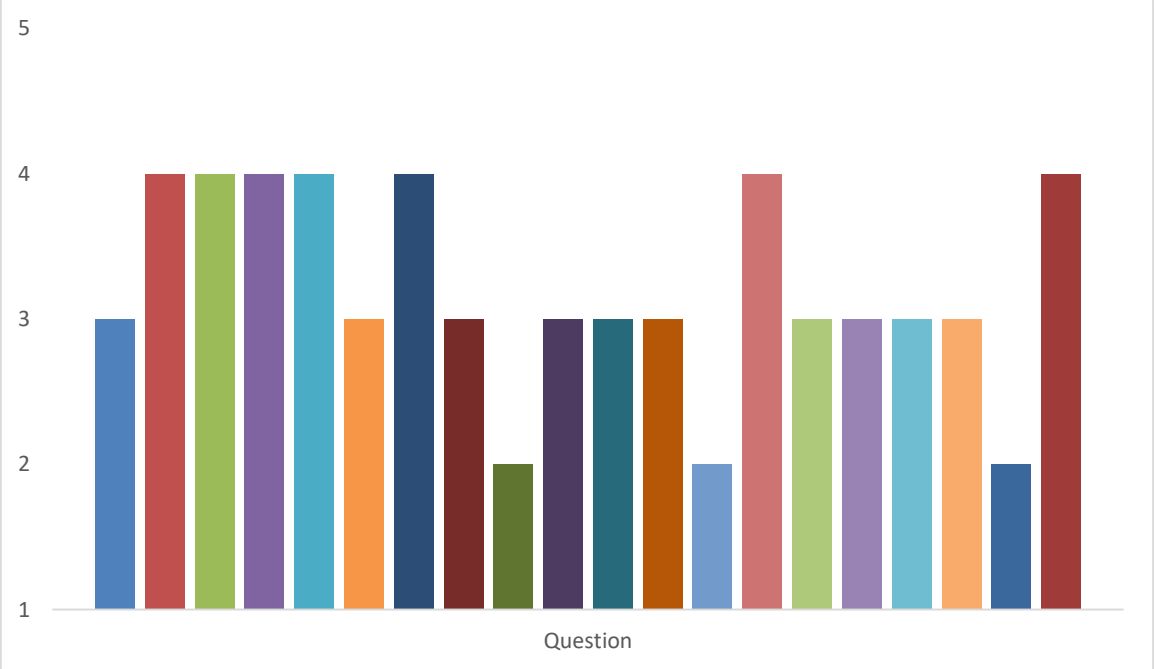

**Respondent three**



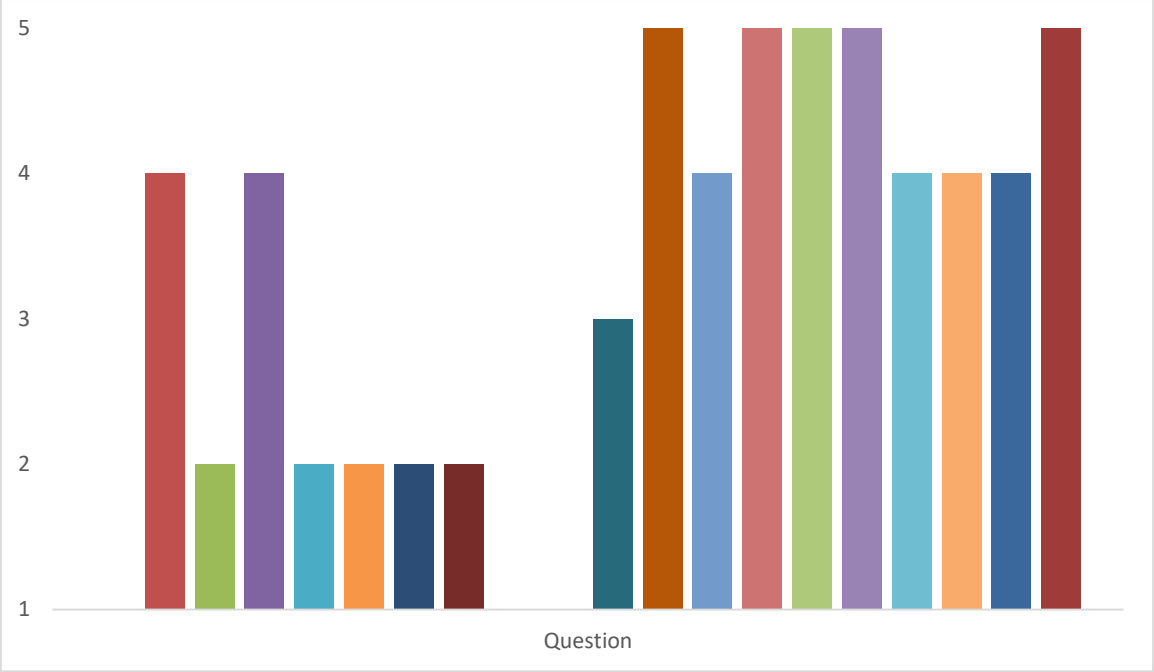

**Respondent four**



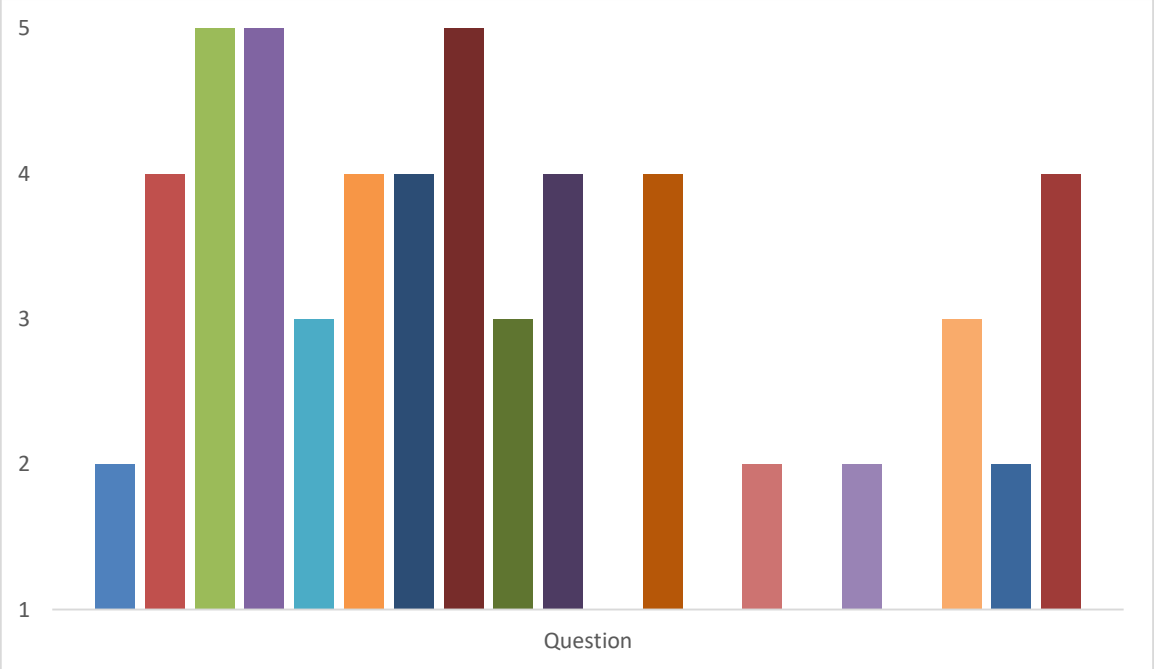

**Respondent five**



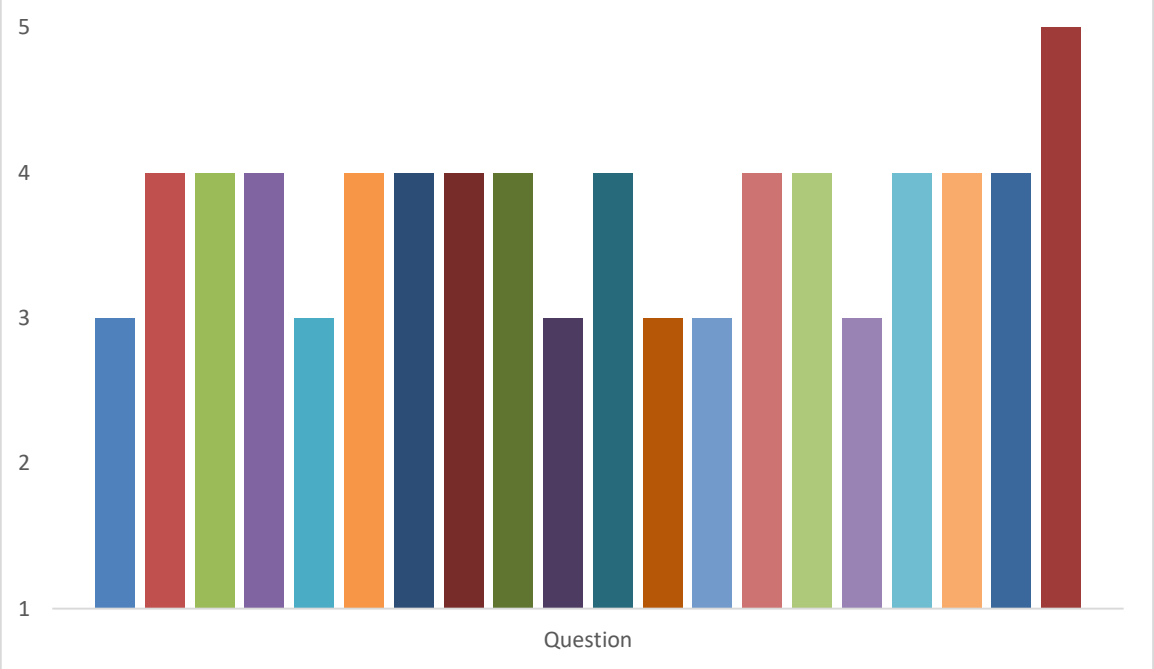

**Respondent six**



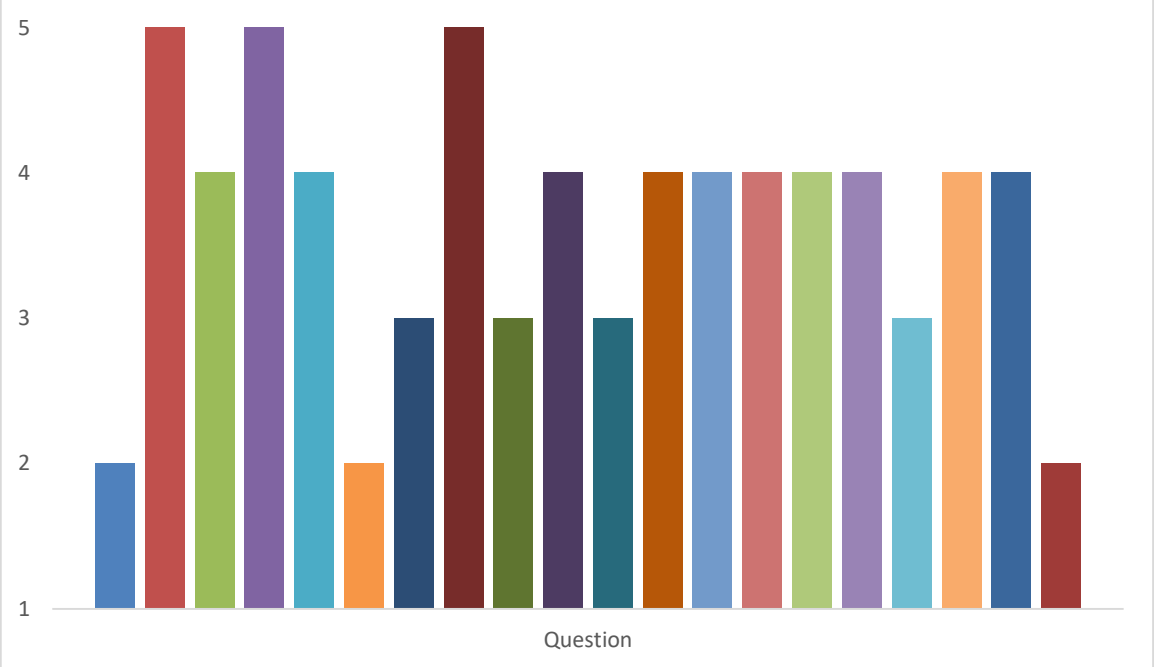

**Respondent seven**



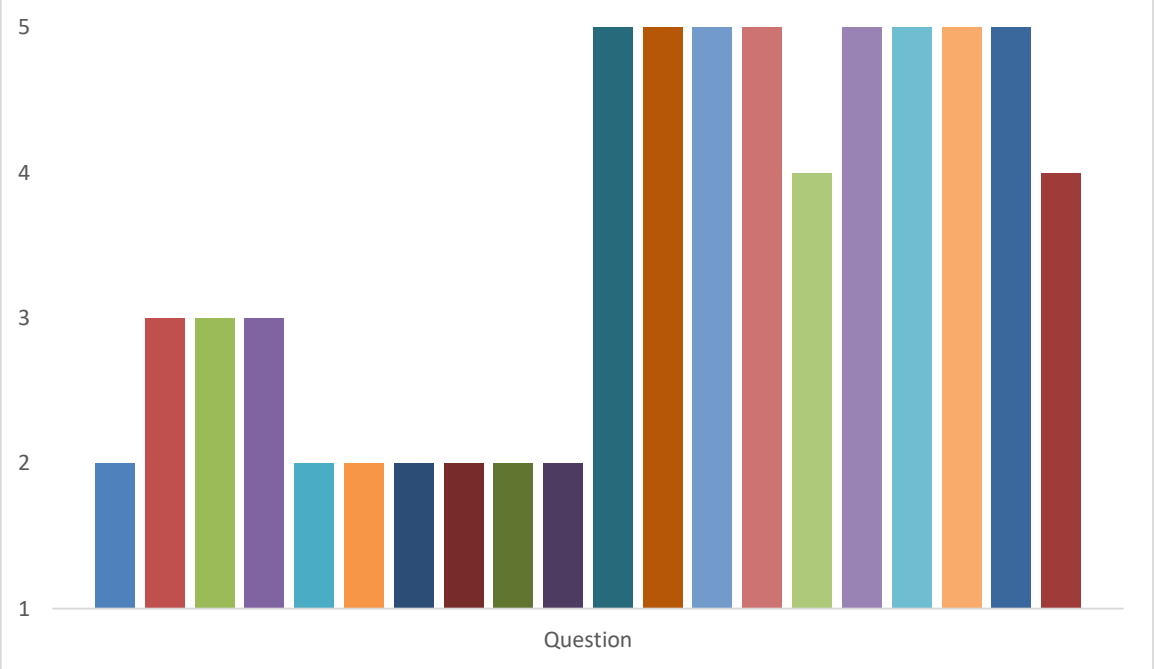

**Respondent eight**



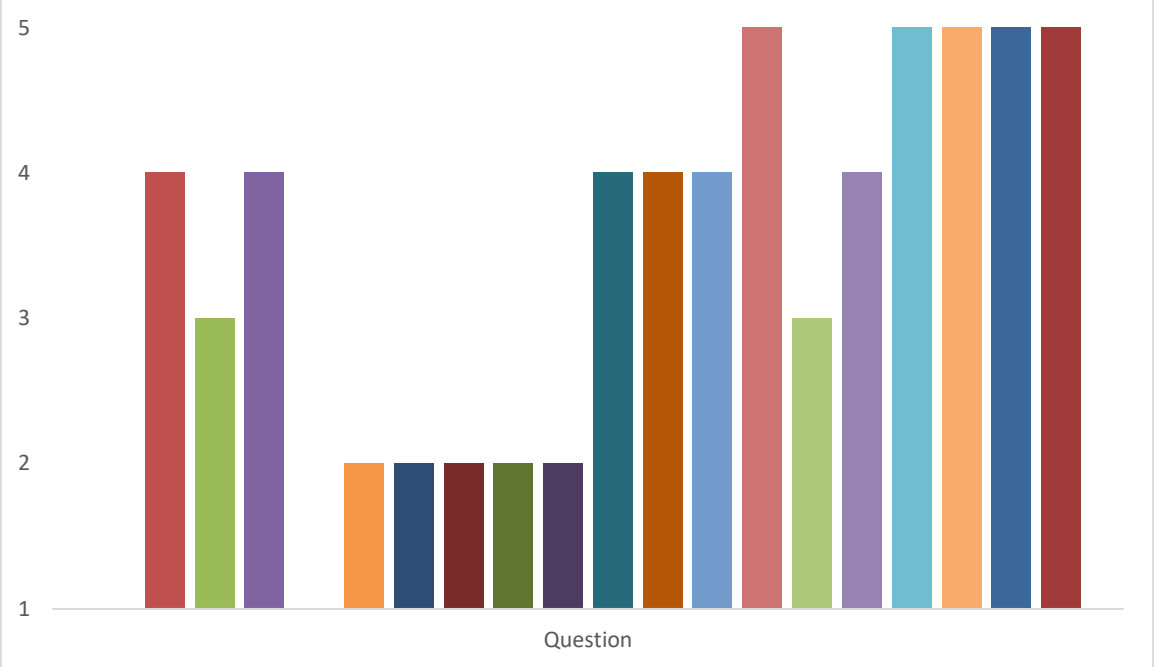

**Respondent nine**



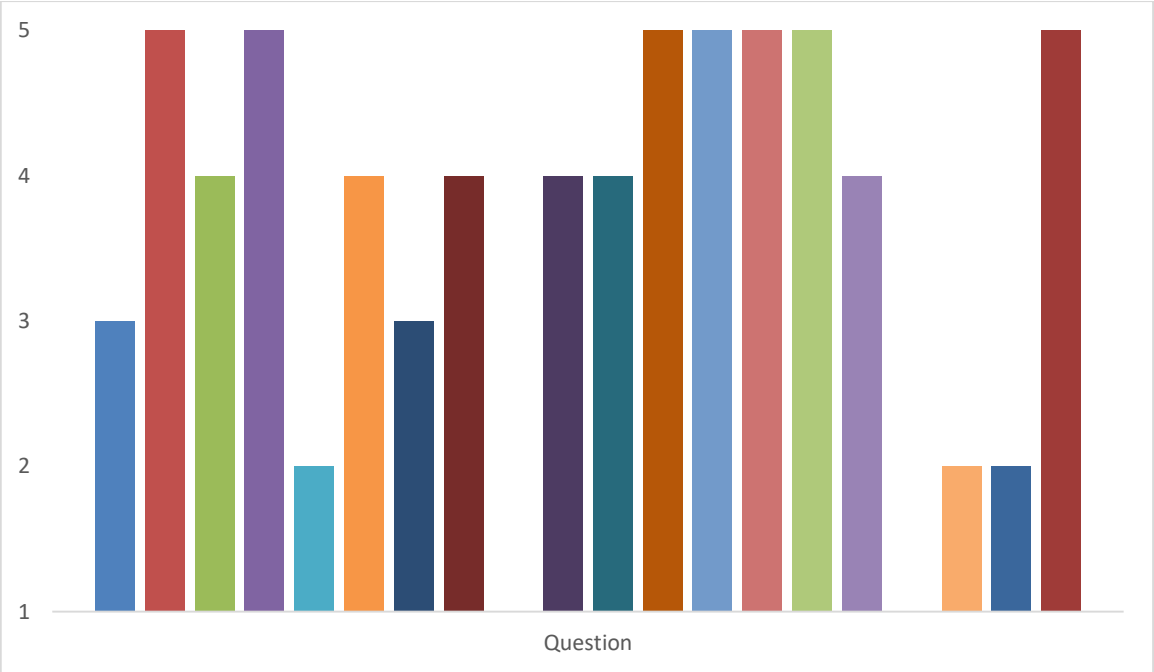

**Respondent ten**



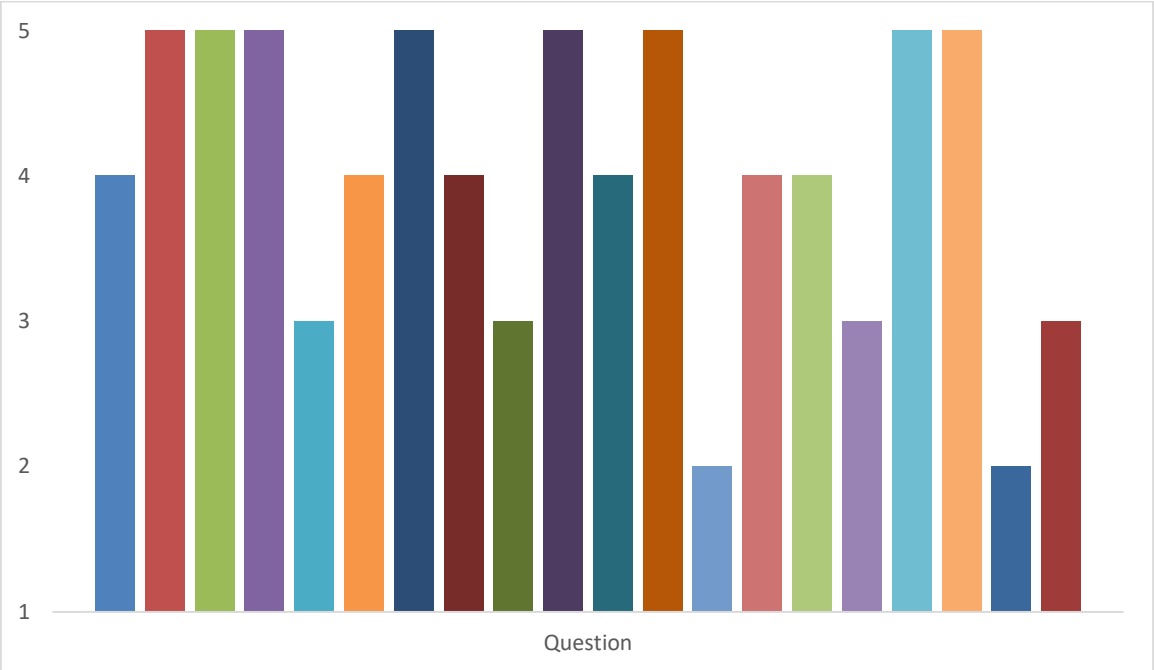

**Respondent eleven**




**Respondent twelve**




**Respondent thirteen**




**Respondent fourteen**