



# CHALMERS

---



## **Sex segregation in the maritime industry Why are there so few women?**

Bachelor thesis in Marine engineering

Jon Ståhl

Rickard Hermansson



# Sex segregation in the maritime industry

## Why are there so few women

Bachelor thesis in Mechanics and Maritime Sciences

JON STÅHL

RICKARD HERMANSSON

Department of Mechanics and Maritime Sciences

*Division of Division name*

CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden 2018

Sex segregation in the maritime industry: Why are there so few women

JON STÅHL

RICKARD HERMANSSON

© JON STÅHL, 2018

© RICKARD HERMANSSON, 2018

Bachelor Thesis 2018:44

Department of Mechanics and Maritime Sciences

Chalmers University of Technology

SE-412 96 Gothenburg

Sweden

Telefon: + 46 (0)31-772 1000

Cover:

<https://openclipart.org/detail/268086/brain-organic>

Printing /Department of Mechanics and Maritime Sciences  
Gothenburg, Sweden 2018

Sex segregation in the maritime industry: Why are there so few women

JON STÅHL

RICKARD HERMANSSON

Department of Mechanics and Maritime Sciences

Chalmers University of Technology

## Abstract

This study examines why there are fewer women than men in the maritime industry, how students perceive their education and if it is possible to obtain a typical personality profile of the students. Data was collected using semi-structured interviews and personality assessment based on the five-factor model. The participants consisted of female students at Chalmers University of Technology. The interview material was analyzed by means of thematic analysis where 5 main themes with 13 sub-themes emerged. The result shows that the lower representation of women at sea may be due to several factors such as lack of knowledge about the profession in general, worse reputation as a workplace, and the complexity of combining family life with a life at sea. Somewhat surprising was the emergence of the perceived lack of response from the school to complaints or reports of harassment from the ship-related internships. Something that should be investigated further.

No conclusion could be drawn from the personality assessment due to a low response rate.

**Keywords:** sex segregation; maritime industry; personality; interest; harassment

## Sammanfattning

Den här studien undersöker varför det är färre kvinnor än män inom den marina industrin, hur studenter uppfattar sin utbildning och om det är möjligt att få fram en typisk personlighetsprofil av studenterna. Data samlades in med hjälp av semistrukturerade intervjuer och personlighetstest baserat på femfaktor modellen. Deltagarna bestod av kvinnliga studenter vid Chalmers Tekniska Högskola. Intervjumaterialet analyserades med hjälp av tematisk analys där 5 huvudteman med 13 under teman framkom. Resultatet visar att den lägre representationen av kvinnor till sjöss kan beror på flera faktorer. Såsom brist på kunskap om yrket i allmänhet, sämre rykte som arbetsplats och att det är komplicerat att kombinera familjeliv med ett liv till sjöss. Något överraskande var framkomsten av den upplevda bristen på gensvar från skolan på klagomål eller anmälningar av trakasserier från den fartygsförlagda praktiken. Något som borde undersökas vidare.

Ingen slutsats kunde dras från personlighetstesterna på grund av allt för låg svarsfrekvens.

**Nyckelord:** könssegregation; maritim industri; personlighet; intresse; trakasserier

## **Acknowledgments**

We would like to acknowledge all the respondents in this study for their participation and a special thanks to our mentor Monica Lundh for her support.

## Table of Contents

<b>Abstract .....</b>	<b>i</b>
<b>Sammanfattning.....</b>	<b>i</b>
<b>Acknowledgments.....</b>	<b>ii</b>
<b>Nomenclature .....</b>	<b>vi</b>
<b>1 Introduction.....</b>	<b>1</b>
1.1 Purpose .....	2
1.2 Questions .....	2
1.3 Delimitations .....	2
<b>2 Background.....</b>	<b>3</b>
2.1 Difficulties women face in the maritime industry .....	3
2.2 Physical and psychological work environment onboard .....	4
2.3 Sex segregation in the maritime industry .....	5
2.4 Sex segregation in occupation and education.....	6
2.5 Interest differences between women and men .....	7
2.6 Psychometric Assessments.....	9
2.7 The Five Factor Model or the Big Five.....	10
<b>3 Method.....</b>	<b>13</b>
<b>4 Results.....</b>	<b>15</b>
4.1 Why do women choose to pursue a career in maritime studies? .....	15
4.2 Identified factors that influence the psychosocial environment negatively .....	16
4.3 Identified strategies used to cope onboard .....	18
4.4 How are complains and negative feedback handled. What consequence can it have for you? .....	19
4.5 Factors that can help explain why there are so few women in the maritime industry... ..	21
<b>5 Discussion.....</b>	<b>25</b>
<b>6 Conclusion .....</b>	<b>28</b>
<b>7 Bibliography .....</b>	<b>29</b>
<b>8 Appendices.....</b>	<b>33</b>
8.1 Appendix 1: Interview main questions .....	33

Figure 1: Percentage of women in first grade in the marine sciences at Chalmers. .... 7





# Nomenclature

LADOK	Local Electronic data processing based documentation system
SIR	Standard Incidence Ratio
STEM	Science Technology Engineering Mathematics

# 1 Introduction

Female students are today very underrepresented in the marine engineering and nautical studies at Chalmers University of Technology and in the overall shipping business. (Kitada, Williams, & Froholdt, Maritime Women: Global Leadership, 2015). Similar trends, as at Chalmers, are seen at e.g. Shanghai Maritime University (SMU) so this is not only a phenomenon seen in Sweden. A small percentage (2%) of female nautical graduates from SMU work at sea, (Zhang & Zhao, 2015). A number that corresponds well to the overall global percentage of women seafarers which is about 2% as well (Basak, 2015).

Women have different reasons why they choose a career at sea. Some have parents or other relatives that have been or are in the maritime business which influence their choices. Other wants to be able to choose where to live and since the maritime business is global your work does not hold you in one place. Some women want to improve their life and get a well-paid job, and some appreciate the time off which comes with working at sea in combination with relatively high wages (Kitada, Williams, & Froholdt, 2015; Prinsén, 2011; Bicok & Strand, 2012).

It is known that people have different personalities. Many studies have been made with focus on five specific traits, also known as the big five. One of reasons why The Big Five is popular to use when it comes to personality test is that it is viable across cultures, (Schmitt, Realo, Voracek, & Allik, 2008; Lippa, 2010b), and have been developed for several decades (Digman, 1990).

There are few examples of this sort of personality studies performed on female maritime students with focus on their career choice. Since managers' value personality nearly as much as mental ability in hiring decisions, and since your personality may predict your behavior at work across time it is of interest to investigate the personality type of the women working at sea (Barrick & Mount, 2005). Knowing what type of personality, you are looking for could be a tool, together with "Högskoleprovet"<sup>1</sup>, for recruitment of students to the schools. Which of course could be used not only for recruiting women but men as well. A report from 2015 indicates that the maritime business will have a shortage of 147 500 officers by the year 2025, consequently, the training and recruitment of officers must increase to meet with the commanding demand. A large proportion of these officers could, and hopefully, will be women (BIMCO; International Chamber of Shipping, 2015).

It is not unusual for companies to use personality tests even before they meet with the applicant as a first step of sorting people out (Sjöberg L, 2000; Stabile, 2002). According to other occupations as the police and military also have tests to find the best people suited for the jobs (Zolotas, Kalafati, Tzannatos, & Rassias, 2017).

---

<sup>1</sup> The Swedish equivalent of the SATs.

## **1.1 Purpose**

The main purpose of this study is to investigate why female students choose a career at sea, how the female maritime students perceive their education and why they are so few. The secondary purpose is see if the students have a typical personality profile and investigate if there are any correlation or common denominator between their reasons for entering the maritime science education and/or their personality traits.

## **1.2 Questions**

The questions this study will try to answer are as follows:

- Main question: Why are there so few female seafarers?
- Sub-question: Why do female students choose a career at sea?
- Sub-question: How do female maritime students perceive their education?
- Sub-question: What personality do they have?
- Sub-question: Is there any correlation between their personality traits?

## **1.3 Delimitations**

This study has its focus on female students at Chalmers in Gothenburg. The participants are studying either to marine engineer or nautical officer.

The personality test used in this study is based on “the Big Five” personality traits divided into ten aspects, two for each trait.

## 2 Background

### 2.1 Difficulties women face in the maritime industry

Previous research of women in the maritime industry identified three main issues for women that they must cope or contend with in their life as seafarers. The issues that needs more attention according to Kitada (2009) is the work related absence, the onboard culture and home societal culture.

#### ***Work related absence***

Working in the maritime business onboard ships usually means a long-time absence from home. This can have a large impact on family relations. Especially for women that already have children, but it is also a concern for women who does not yet have children. As some of the women previously have expressed not only in Kitada (2009) but also in Prinsén (2011) and Bicok et al. (2012). They see the combination of working at sea and have a stable family situation to be one of the largest issues to solve. In another study women reported that the family situation and finding a better job ashore were most likely to be the reasons for quitting their seafaring careers (Dragomir & Surugiu, 2013).

#### ***The onboard culture***

Since the shipping industry is very male dominated and the perception of a stereotypical seaman is harsh, tough and strong. There can be a harsher jargon that can be expressed in a macho kind of way where you are trying to assert yourself. By using your muscles instead of lifting tools or by making sexual jokes (Kitada, 2010). These are environments that can be discouraging och undesirable for most people but especially for women. Since they also may experince discrimination and prejudgement of their abilities just because they are women (Kitada, 2010). This culture is sometimes toned down or none existing on some ships and not all male colleagues act in a disrespectfull way (Kitada, 2010; Prinsén, 2011).

How then does one cope in an environment like this. Kitada (2010) indetified four different identity-management strategies women used to cope with the onboard culutre. The strategies she defined as “negotiators”, “constructors”, “maintainers” and “reproducers”.

Negotiators for example, as described by Kitada (2010), ususally modify their behavior on the spot, to not cause any trouble, to fit in and assure that they are the “same” as everyone else. Further more, according to Kitada (2010), the constructionist either use the sameness strategy or the difference strategy in order to fit into the groups depending in the situation. While maintainers does not care so much about others expectations and they tend to be more or less them selves. Reproducers on the other hand redefines their identity and how they percieve themselves and find comfort in that. According to Kitada (2010) the women she studied have gone through multiple of these technices, often starting as negotiators and ending as reproducers.

In another study by Hodge & Widerström (2017) they found that the individuals onboard tried to adjust their behaviour and adopt to the present environment in order to cope with harrassments. They suggested that this could expose the individuals to more stress due to emotional and cognitive dissonance.

### ***Societal culture***

Some women can experience certain pressure from the society or even from close family members. The preconception is that women should not work with mechanical or technical things and especially not be seafarers because they will be terrible mothers (Kitada, 2010; Prinsén, 2011; Bicok et al. 2012). Dealing with this and at the same time have the pressure in making a career must be a considerable strain for some women.

## **2.2 Physical and psychological work environment onboard**

### ***Physical work environment***

The physical working environment onboard vessels are somewhat different from the environment on land. It is physically challenging, like not being able to walk straight on your daily routines, trouble moving heavy objects like spare parts, narrow and steep ladders increasing the risk for slips and falls are some of the problems among Swedish engine room personnel. Some other risks mention by the engine crew was exposure to chemical and cleaning agents, also temperature and ventilation had an impact on the working environment (Lundh, Lützhöft, Rydstedt, & Dahlman, 2011).

In the Swedish merchant fleet there have been more reports on the work environment onboard. The noise exposure level was especially high for the people working in the engine room 89% and for the deck personnel 52%. As for vibrations from the hull, 50% on the deck and around 63 % in engine. The crew that was exposed to noise and vibrations also had more health problems like pain or discomfort from the back, hips and knees. Long term disposal to noise leads to tinnitus and impaired hearing. (Forsell et al., 2017)

Other undesirable health aspects found among seafarers are cancer. The standard Incidence ratio (SIR) for cancer among Danish seafarers where 1.26. This is probably due to the exposure to chemicals, oils and exhaust gases (Kaerlev, Hansen, Hansen, & Nielsen, 2005; Nilsson et al., 2004; Boffetta et al., 2001). Another Danish study showed that Danish seafarers has a six-fold increase mortality rate compared to people working ashore. (Borch, Hansen, Burr, & Jepsen, 2012)

### ***Psychological work environment***

The risk of being exposed to harassment is heightened onboard a ship and is expressed both verbally and physically (Forsell et al., 2015; Hodge et al., 2017). The reasons for this heightened risk can be explained by several factors. Such as the isolated environment, long periods of time onboard or the lack of leadership (Hodge et al., 2017). In a study by Forsell et al. (2017), about 25 percent had experienced harassment and 49 percent of the respondents listed their foreman as the source for the harassment. The leaders moral and ethical compass plays a role in the work-related environment. Employees have shown to react positively on leaders' moral integrity and their display of fairness (Vianello, Galliani, & Haidt, 2010).

Women are running a greater risk of being exposed to harassment. In Forsell et al. (2017) the risk was double for women compared to men. Women experienced highest exposure to harassment in the engine department according to (Forsell et al., 2015).

## 2.3 Sex segregation in the maritime industry

Humans have a long history of traveling the seas and countless of ships have crossed the seas in purpose of exploring, conduct trade or warfare. The sailors have mostly been male with a few exceptions. This is an exception that have not changed even up until today and the shipping industry remains a male dominated industry. Of the total number of seafarers in the world only about 2% are women (Basak, 2015).

This underrepresentation of women in the maritime sector is noted by the International Maritime Organization (IMO) and they are working actively on getting more women to the industry. The IMO's program on the integration of women in the maritime sector is an initiative to meet the UN Millennium Development Goal 3 to "Promote gender equality and empower women" (Technical Cooperation Committee, 2013).

According to Sweden Shipowners' Association the gender proportion was 29% female to 71% male seafarers in 2015, including temporary hired personnel not from Sweden. (Swedish Shipowners' Association, 2016). According to statistics from the UK government out of 25 360 seafarers, 3640 were women and represented about 14% of the total work force. A small proportion of these women 405 or 11% were certified officers in the deck- or engine department. It is not possible from these statistics to get an exact number on how many of the total number of women work in the hotel, catering or other areas. The numbers of uncertified officers and ratings were not specified in the report. The numbers only showed the percentage distribution between the sexes (Department for transport, 2017). A similar sex distribution seems to be the case for Swedish seafarers. In a report from 2010 it was stated that women represented 12% in the deck department, 1% in the engine department and among certified officers in both the deck- and engine department they represented 3% (Sjöfartsverket, 2010).

It is the deck- and engine departments where the women are mostly underrepresented as stated above especially in the officer ranks. For example, see the same statistics from the UK government. The representation of women officers in the engine department was 1,1% and in the deck department they represented 4.1%. (Department for transport, 2017)

According to recent released, 29 of august 2017, statistics from European Maritime Safety Agency (EMSA) the women representation of master and officers holding a valid certificate of competence (CoC) was 2,15%+-0,13% in 2015, on data provided from 24 EU member states. A large proportion of these women worked in the deck department, about 88%. (EMSA, 2017). These numbers seem to represent the maritime industry well when comparing statistics from across the world.

## 2.4 Sex segregation in occupation and education

### *Occupation*

The maritime industry is not the only technical or male dominant sector that is having problems with attracting women to their workforce. Other occupational areas such as motor vehicle mechanics or repairers, maintenance mechanics, electrical engineers and electrical technicians are examples from Sweden where women are underrepresented (SCB, 2017). These occupations represent well the type of work done in the engine department. Where a lot of repairs, maintenance and electrical work is done in different systems supporting the propulsion of the ship. In other occupations such as nurses, preschool teachers, finance assistants and accountants' women are overrepresented in Sweden (SCB, 2017).

### *Education*

When comparing these workforce statistics with men and women's choice of education, similar figures appear. Men and women in Sweden prefer and choose different educations. Where the largest differences between the sexes is in nursing, 87% women, and in computer engineering, 80% men (Dryle, et al., 2016). This is not only true in Sweden but in several other European countries as well.

In Barone et al. (2011) eight other European countries were studied and the result is quite clear. The gender segregation between e.g. the engineering and humanity fields in these countries is large and have been so for the past three decades with no clear trend break. In fact, it seems like the more equality oriented a country is the more segregated the education fields get. The most equal countries in the world like Finland, Norway and Sweden have the least percentage of women STEM graduates compared to several other countries, like Turkey, Italy, Greece or Vietnam. Using a mediation analysis (Stoet & Geary, 2018) suggested that overall life satisfactory played a role in the disparity between the sexes. Even though other factors also contributed. Such as boys showed even greater interest in science than the girls in more gender equality countries. Or the other way around, girls were shown to be less interested in science in high gender equality countries.

The representation of women on maritime education programs such as marine engineer and nautical officer in Sweden is low compared to men (Fig.1). Notice that the Y-axis is shortened in the graph and it does not represent the number of women actually taking their degree. This underrepresentation at Chalmers has been stable since registrations started to be stored in Ladok (Bicok & Strand, 2012) and it has continued up until now and it will most likely continue in the future as well.



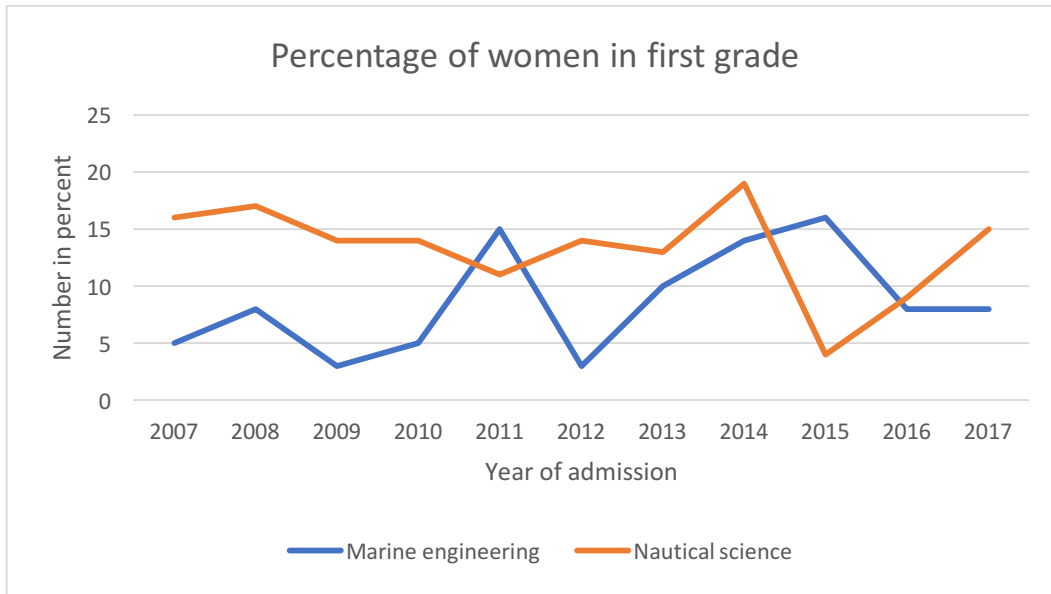


Figure 1: Percentage of women in first grade in the Maritime sciences at Chalmers.

The Universities in Sweden have been imposed by the Swedish government to implement a gender equality plan. To help the universities with this plan the Swedish Secretariat for Gender Research at the University at Gothenburg have been asked to act as support in this effort. One goal for Chalmers is that in 2030 all programs shall have a 40/60 distribution between men and women in all programs (Chalmers plan för jämställdhetsintegrering 2017-2019). With the current stability of the of the gender segregation in the maritime education this seems like a big challenge.

In Sweden you can choose whichever education in the field that you are interested in if you have the necessary previous knowledge. There are no other real boundaries to get a higher education in Sweden. There are however other personal boundaries that may interfere with your preferred education choice. Such as family expectation or lack thereof. Or earlier lack of motivation in school that will cause you to not have the required knowledge to begin at a university. We have equality of opportunities in Sweden but in other countries this is not as obvious.

Take China for example and the Shanghai Maritime University where women are not allowed to study at the marine engineer program and they also have a higher tuition fee. The male students are subsidized by the state and they pay half of the tuition fee because they are expected and required to work at sea. (Zhang P & Zhao M, 2015). It is no doubt that there are some structural problems or expectations in terms of choosing your education but that is not the only problem. Interests and personality itself may as well be a large contributing factor.

## 2.5 Interest differences between women and men

### *Things vs People*

A factor that could explain the disparity in education and occupation preferences between men and women is interest. It is commonly said that women in general is more interested in working with people rather than things when compared to men.

In a meta-analysis from 2009 they found that there in general are large differences in interest between men and women that effected, not only, their occupation choices but also the disparity in the STEM fields as well (Su, Rounds, & Armstrong, 2009). The study found for example that 46,9% of the interest between men and women overlap on the Things versus People scale. In other words, this meant that up to 82.4% of the men had stronger interest in careers that is more thing-oriented than the average woman. They concluded that the preference for people over things suggest why there are fewer women in some sciences and engineering fields.

This difference in interest have shown to be consistent across different cultures and that men usually prefer typical male jobs, such as car mechanic, builder or electrical engineer (Lippa, 1998; Lippa, 2010b). The interests is sometimes measured in a six dimension scale called, RIASEC, and it has been found that men and women differs most in the people versus things scale than in data versus ideas scale. The differences has not shown to be smaller in gender-egalitarian countries (Lippa, 2010a).

### ***Culture consumption in Sweden***

Other factors that can shed some light of individual disparity in interest is what kind of culture we consume, what do we do with our leisure time. The leisure habits of the Swedish population have been studied for several years (Myndigheten för Kulturanalys, 2016). They measure how often people go to the movies, read a book or visit a rock/pop concert, just to give a few examples. From the survey they later draw conclusions of what culture the general population consume on their leisure time.

The survey showed that women tend to be culturally more active than men. Especially when it comes to writing, drawing or reading books. The only activity men do more than women are internet-based activities like playing games or listening to radio shows online.

When it comes to reading books the disparity between men and women was largest in the ages 16-29. Where only one young man in six said they had ever read a book compared to one young woman in sixteen.

A similar survey that measured what children and teenagers was more likely to do in their leisure time showed similar results. Where girls in general read more than boys, especially blogs and fiction. Boys tended to play more video games on the computer and TV. While there was no significant difference in playing mobile games, except that boys played more often (Myndigheten för Kulturanalys, 2017).

In a study from 2000 on the culture consumption in Sweden. They found that the sex differences in culture consumption were significantly stable over time. The study could not find any evidence that socio-economic factors, like level of education, age, family status or income had anything to do with the differences between men and women's consumption of culture (Bihagen & Katz-Gerro, 2000).

What then can explain our behaviour and/or our interests. Eric Turkheimer summarized the behaviour genetics into three formal laws:

- First law: All human behavioural traits is heritable
- Second law: The effect of being raised in the same family is smaller than the effect genes.

- Third law: A substantial portion of the variation in complex human behavioural traits is not accounted for by the effects of the genes or families (Turkheimer, 2000, s. 160).

In his book (Pinker, 2002/2016) summarizes the three laws of behaviour genetics and what affects our behaviour as follows:

A handy summary of the three laws is this: Genes 50 percent, Shared Environment 0 percent, Unique Environment 50 percent (or if you want to be charitable, Genes 40–50 percent, Shared Environment 0–10 percent, Unique Environment 50 percent). A simple way of remembering what we are trying to explain is this: identical twins are 50 percent similar whether they grow up together or apart. Keep this in mind and watch what happens to your favorite ideas about the effects of upbringing in childhood. (ss. 380-381)

## 2.6 Psychometric Assessments

There are thousands of personality tests circulating the market and it is a multimillion dollar business (Stabile, 2002). They are widely used by companies, both in the private and public sector, in the recruitment process for new employees. The main reason for using personality tests is to predict future work performance of an applicant (Larsson & Engström, 2015). Since it can be quite expensive or sometimes even impossible to replace someone, companies want as good information as possible to make a well-grounded hiring decision (Stabile, 2002).

There are multiple other types of psychometric assessments that companies use to find the right people for the job and some tests are used more than others depending on the size of the company and in which part of the world you operate (cut-e, 2015/2016). Companies in China tends to use more “Competency-based interviews”, “Personality Questionnaires” and “Interests inventories”. While companies in Sweden tends to use more “Ability testing” and “Assessment- and Development centres”. Overall there has been a decline in the use of “Personality questionnaires” while there has been an increase in “Assessment- and Development centres”. A reason for that could be that “Assessment Centres” (A.C) can include a type of personality test (cut-e, 2015/2016).

There is a factor that is most significant when it comes to interviews, A.C and job performance. General Mental Ability or cognitive ability is most significant in above mentioned situations (Sjöberg S. , 2014; Jensen, et al., 2012). Regarding the interview and A.C performance a higher score in cognitive ability could improve your understanding of what it was they were looking for and there by change your behavior to your advantage. This could be seen as faking the interview and the A.C test but one must consider that high scores on these tests also predicted higher job performance (Jensen, et al., 2012).

### ***Are the best psychometric assessments in use?***

Companies are not always using the best tests for finding the best people and according to (Sjöberg S. , 2014) and are using less economic solutions for hiring because employers are to some extent using hiring assessment test that is out of date in terms of progress that have been made in the research field. Sjöberg L, (2000) argues that the tests that was used by some Swedish companies in the hiring processes at that time did not have enough validity and should not be used by the companies. Unfortunately, some companies still use these tests both in the private sector and the public sector in Sweden (Larsson & Engström, 2015).

In the (cut-e, 2015/2016) survey Swedish companies answered that supplier validation data or that you are able to manage the assessments yourself was more important than that the tests were quality tested by a third party or even had defendable data in litigation. The survey also showed that validity and reliability was important, but it was less important that the test had a scientific research basis that followed the last trends in research.

### ***Job performance***

S. Sjöberg (2014) argues that based on the current research, on general mental ability and personality that can predict job performance, it is strange that tests that measure this is not more used. Since the tests combined can be implemented to a low cost, have a strong predictability of future job performance and a wider applicability compared to other methods like interviews or assessment centres.

In personality tests based on *the big five*, conscientiousness is a trait that best can predict job performance but not as good as general mental ability (Sjöberg S. , 2014) . General mental ability and personality can even predict career success over a life time (Judge, Higgins, Thoresen, & Barrick, 1999).

## **2.7 The Five Factor Model or the Big Five**

The five-factor model personality tests are based on a questionnaire where you rate certain questions or statements depending on how much you agree with them and thus estimating your personality (Digman, 1990). In order to get an even better prediction of your personality the five personality traits have been divided in ten aspects, two for each trait (DeYoung, Quilty, & Peterson, 2007).

The traits with the underlying aspects are as follow:

- Extraversion: Enthusiasm and Assertiveness
- Neuroticism: Withdrawal and Volatility
- Agreeableness: Compassion and Politeness
- Conscientiousness: Industriousness and Orderliness
- Openness to Experience: Openness and Intellect

(DeYoung et al., 2007)

### ***Extraversion***

Extraversion is a personality trait that express in general how socially adaptive you are and is related to the ability to experience positive emotion. People high in extraversion tend to be outspoken, optimistic and may appear somewhat dominant in their approach (McCrae & John, 1992). Extraversion is a marker for leadership emergence and to a smaller extent for leadership effectiveness (Judge, Ilies, Bono, & Gerhardt, 2002).

Personality factors have previously been studied to see if there was any correlation between them and handling of the ship. They did find some correlation between extraversion and passing distance. Extraverts high in neuroticism tended to have the smallest margins when passing other ships, for example (Hagart & Crawshaw, 1981). However the study was small, no conclusion could be drawn from the study and further research was recommended. This results does however relates to the findings that some facets of extraversion can be a predictor for higher risk taking (McCrae & Costa, 1990) .

### ***Neuroticism***

Neuroticism is an indicator of emotional stability. Individuals with high score in neuroticism tends to be more sensitive to depression, have low self-esteem and poor control of impulses (McCrae et al., 1992).

Higher scores in neuroticism may indeed affect your academic performance negatively. In (Moutafi, Furnham, & Tsaousis, 2006), they showed that people with higher anxiety did get a lower test result than people with low in anxiety. It even affected their intelligence test score in the same way. However, a study from (Rosander & Bäckström, 2014), showed that higher neuroticism could in some circumstances have a positive effect on academic performance. They argued that it could be the fear of failing that could be driving the students to study harder. The study showed that the facet *Self-consciousness* in the neuroticism domain had the highest correlation with academic performance. However, they measured neuroticism together with the conscientiousness trait.

### ***Conscientiousness***

Conscientiousness is a good predictor for achievement success. A higher score reflects self-control when you are engaged in something and you do not react on impulses to easily (Weisberg et al., 2011). Conscientiousness and agreeableness are the traits that is classically thought of as the predictors for “good” versus “evil” or “strong-” versus “weak will” personalities among individuals (McCrae et al., 1992).

As mentioned above conscientiousness is a good predictor of job performance. It has also been shown that conscientiousness is a good predictor for educational performance as well (Poropat, 2009). In a longitudinal study of students, that stretched over three years in Sweden, also indicated that conscientiousness is a good predictor academic performance over time (Rosander & Bäckström, 2014).

### ***Agreeableness***

Agreeableness reflects how well you get along and cooperate with other people and maintain social harmony (Weisberg, Deyoung, & Hirsh, 2011). Higher score of agreeableness tends to give personality characteristic of altruism and nurturance. A person with high agreeableness appears more humane (McCrae et al., 1992).

### ***Openness to experience***

Openness to experience is a trait that predicts how open you are to new ideas and concepts and the need for variation. It also reflects your creativity, curiosity and artistic interest (McCrae & John, 1992; Weisberg, Deyoung, & Hirsh, 2011).

### ***Personality and seafarer's health***

In a study on merchant navy officer's they discussed that higher levels of conscientiousness and extraversion in combination with low neuroticism. Gives the officers a better ability to get along with subordinates and the ability to handle difficult situations better onboard (Lipowski, Lipowska, Aleksandra, & Jeżewska, 2014).

The traits extraversion, conscientiousness and openness to experience could predict the officer's engagement in improving their health and agreeableness the encouragement to partake in health improving activities and behaviors despite the harsh working environment they endure (Lipowski et al., 2014). They emphasized the importance of physical activities for

reducing stress related symptoms, both physical and psychological. The quality of life has shown to be high for polish seafarers (Jeżewska, Leszczyńska, & Grubman-Nowak, 2013). The study measured the correlation between their personality and quality of life. They found that higher scores in extraversion and lower in neuroticism predicted a higher quality of life.

### 3 Method

The data used in this study were collected by interviews and a personality test. The analysis procedure were done both manually, with pen and paper, and with the help of a quality analysis program called "nVivo". Instructions on how to do the thematic analysis were provided in Braun & Clarke, (2008). The respondents were informed of and approved the ethics used in this study.

The participants in this study were 8 female students from Chalmers University of Technology. They studied either Nautical Science (NS) or Marine Engineer (ME) and range from second grade to the last grade in school (NS=6, ME=2). The participants age ranged from 23 to 29 years old. Their average age is 25 and the standard deviation is 5.

#### ***Interview and analysis***

The interviews were conducted face to face and was semi constructed according to Denscombe (2014/2016) with nine main questions (see Appendix.1 for main questions). The interviews were recorded, and short notes was taken for a summary afterwards. To be able to separate the NS from the ME four control questions were asked, in addition to the main questions, that checked for age, current education, grade and at which school they attend. This differentiation is made because personality can shift with age as Weisberg et al. (2011) showed and to see if there are any significant differences between the participants studying NS or ME.

The interviews were thematically analyzed using the method described by Braun & Clarke, (2008). We searched for reoccurring themes and patterns across all data from the interviews. In Braun & Clarke, (2008) method of analysis there are certain frames you are supposed to choose before you start with the analysis. Even though you are not constrained within these frames it is good to have some guidelines on how to think when you are searching for themes. The frames are used to either intepret the respondets in a constructionist way or interpret them in what they actually said. In this study the non-constructionist way were used and we looked for themes in what the respondents actually said and did not try to fit what they said in certain constructionists axioms.

#### ***Personality assessment and analysis***

For the personality measure a five-factor model internet-based assessment was used called Understandmyself (<https://www.understandmyself.com/>). This test measures the individual's position on the five personality traits Neuroticism, *Extraversion*, *Openness to Experience*, *Conscientiousness* and *Agreeableness* with two underlying aspects to each of the main traits (see Table 1 below.) The personality assessment is based on the work of DeYoung et al. (2007). The test consists of 100 self-report questions formed as phrases where you will give a score depending on how well you agree with the statement of the question. The result is compared with 10 000 other participants, who have taken the test online as well, and will be given as a percentile of 100 people. The participants printed the results and handed them in.

The personality assessments was compared manually and any correlation between the traits and aspects was searched for. Both similarities and disparities between students in the same program and between the marine engineers and nautical science students. Since the result of the assessments is already compared with about 10 000 other participants. It could

be possible to draw some conclusions if correlations or disparities between the participants are found. For example, if the trait *Agreeableness* of the nautical science students rank *High* to *Exceptionally High*. One could make the argument that nautical science students seems to be more agreeable than the average person.

**Tabell 1: Personality traits with aspects**

Traits	Aspects
<i>Neuroticism</i>	<i>Withdrawal and Volatility</i>
<i>Extraversion</i>	<i>Enthusiasm and Assertiveness</i>
<i>Openness to Experience</i>	<i>Openness and Intellect</i>
<i>Conscientiousness</i>	<i>Industriousness and Orderliness</i>
<i>Agreeableness</i>	<i>Compassion and Politeness</i>



## 4 Results

The analysis of the data resulted in five main themes with 13 sub-themes and are presented below. An analysis of the personality assessment could not be done due to the lack of data. Only 50 percent of the personality assessments were handed in.

Tabell 2: Themes of the analysis

Main theme	Subtheme
4.1: Why do women choose to pursue a career in maritime studies?	<ul style="list-style-type: none"><li>- Interest</li><li>- The nature of the work</li></ul>
4.2: Identified factors that influence the psychosocial environment negatively.	<ul style="list-style-type: none"><li>- High expectancy as a cadet</li><li>- Utilized due to lower rank</li><li>- Discrimination based on sex</li><li>- Harassments</li></ul>
4.3: Identified strategies used to cope onboard	<ul style="list-style-type: none"><li>- Tougher attitude</li><li>- Withdrawal</li></ul>
4.4: How are complains and negative feedback handled. What consequence can it have for you?	<ul style="list-style-type: none"><li>- Ignored and excluded onboard</li><li>- Lack of response and follow-up by the school</li></ul>
4.5: Factors that can help explain why there are so few women in the maritime industry.	<ul style="list-style-type: none"><li>- Marketing</li><li>- Bad reputation</li><li>- The family situation</li></ul>

All quotations have been translated by the Authors

### 4.1 Why do women choose to pursue a career in maritime studies?

#### *Interest*

The analysis of the interviews showed that the respondents had an early interest and/or experience with the ocean and the life at sea. Some had parents or relatives who shared this interest. It was common among the participants upbringing to spend much of their leisure time with the family at sea.

*"Yes, my parents are long distance sailors, so I've grown up on sailboat big parts of my childhood, so I've always felt a traction to the ocean and felt safe and at peace at sea."*

*"Ja, mina föräldrar är långfärdsseglare så jag har vuxit upp på segelbåt stora delar av min barndom så jag har alltid känt mig, en dragning till havet och känt mig trygg och tillfreds till sjöss."*

*"Yeah, I grew up at the sea, so we had like a boat in the family during upbringing. So, it was, well there it was born. "*

*" ja jag är uppväxt vid havet så vi hade liksom båt i familjen hela uppväxten och så. Så det var väl där liksom som det föddes."*

Some had a previous education in the shipping business and wanted to develop themselves further. It is possible to get an education in high school or through the Navy. The certificate granted from these sectors is not usually enough to procure a job in the

maritime industry. There is high competition for work on board. To get a regular job as a rating in the Swedish fleet usually requires a college education.

*"Hmm, it was a further education, after high school and I studied to motorman. Even before that, I was interested in it, but not quite sure if it suited me. But after the first internship, motorman training, I was completely stuck. Oh, and then I continued that track. There was not a lot of work as motorman. Then I thought, I take the opportunity to go in and study."*

*"Det var väl en vidareutbildning efter gymnasiet och jag läste till motorman. Redan innan det så var jag intresserad av det men var inte helt hundra på att det hade passat mig. Men efter första praktiken, motormanspraktiken så var jag helt fast vid det och sen fortsatte jag bara på det spåret. Fanns inte så mycket jobb som motorman då tänkte jag att jag passar på att gå in och läsa."*

*"It was really when I was 15 so I went with something called NavyCorps, if you know what it is? It is the kind of military that has education for young / ... / and then I applied for it and it was really fun, so I continued there for 3 years, then I got up to class 8 there. / ... / But then I felt I just must try this, maybe there is nothing special but, if I do not test then I will regret it. And I did not regret it. So that is, so that was why. It was the NavyCorps. "*

*"det var egentligen när jag var 15 så gick jag med något som heter sjövärnsskåren, om du vet vad det är? Det är typ försvaret som har utbildning för unga /.../ och då sökte jag dit och det var skitkul så då fortsatte jag där 3 år, så då tog jag upp till klass 8 där. /.../ Men sen kände jag fan jag måste bara testa såhär det kanske inte är något speciellt men om jag inte testar då kommer jag att ångra mig. Och jag ångrade mig inte. Så att de, så det var därför egentligen. Det var sjövärnsskåren."*

### **The nature of the work**

Women who had no previous experience or early association with the maritime industry or other sea related activities were attracted to the description of the education and/or the nature of the work. The variation within the profession or the broad knowledge needed. That you had the opportunity to work internationally or the possibility the settle down anywhere in the world as you like.

*"First of all, there was a very wide education and, but the biggest thing was that I knew I had the opportunity to work internationally. In fact, it was the biggest thing. One of my dreams is being able to move abroad. To work internationally and settle wherever you want, that was the idea from the beginning. Not only the leisure, which attracts, but most that it is so international that you can work anywhere and there were practical periods as well "*

*"Först och främst att det var en väldigt bredd utbildning och, men det största var att jag visste att jag hade möjligheter att jobba internationellt. Det var faktiskt det största för att en av mina drömmar är att kunna flytta utomlands... för att kunna jobba internationellt och bosätta sig var man vill, var tanken ifrån början. Inte bara den ledigheten då, vilket det också attrahera men mest att det är så internationellt att man kan jobba lite var som och att det fanns praktiska perioder"*

A large portion of the respondents stated that the leisure period which is associated with the work had influence in the choosing of their career. To work intensively for a period and then spend the same amount of time at home or traveling.

*"The leisure time attracted the most /.. / That can make a lot of money haha"*

*"Ledigheten lockade mest /.. / Att man tjänade bra med pengar haha"*

*"Because it is the attraction, it is to be away with the job and then be able to be at home and just be home."*

*"För att det är de som lockar, det är att vara borta med jobbet och även sen kunna vara hemma och va hemma."*

## **4.2 Identified factors that influence the psychosocial environment negatively**

Life at sea means an isolated environment where the crew lives close to each other and the possibilities for privacy is limited. In addition, the crew is often out for longer periods away from family and friends. The opportunity for connecting with people ashore is

limited. What happens on board is crucial to their well-being of the individual. To feel that you belong or are part of the crew is therefore very important.

### *High expectancy as a cadet*

The first internship can sometimes come as a shock to a student who have no previous experience. When first coming aboard, you are expected to take a lot of responsibility yourself to get in touch with the important people and acquire the information needed on your own.

*"Yes, to a, a level that is completely absurd and so in that situation you cannot expect a new student to take responsibility. Okay now, when it's my fourth internship, I'll be able to do that, I'll probably find the bridge, the manager's office and where I can get clothes and so on. But for a first year-old at first practice, it's absurd to expect that."*

*"Ja till en, en nivå som är helt absurd liksom alltså i den situationen kan du inte förvänta dig att en ny elev ska ta ansvar liksom. okej nu när det är min fjärde praktik så kommer jag ju kunna det, jag kommer antagligen komma hitta till bryggan liksom och bara hitta till överstyrmans kontor och bara vart kan jag få kläder typ. Men för en första årselev på första praktiken så är det absurd att förvänta sig det."*

### *Utilized due to lower rank*

The cadet rank is usually seen as one of the lowest rank on board. This means that as a cadet you can be assigned to more routine tasks or cleaning duty. It is common opinion on board that the cadet should be treated a little bit rough. The reason for this is believed to be because the supervisors themselves were treated this way and that you pass it on like a tradition. What frustrates many students is that you are not taken seriously. The cadet should not question what an officer says and just do it. Even if you convey that you have previous experience of doing a task, you are met with a low level of trust by some supervisors.

*"I am pretty sure it's very, very wide-spread as well the attitude, that students, it's going to be a bit hard because I also had it hard when I was a student and so on. It should not be easy to be a student and that is sad."*

*"jag är ganska säker på att det är liksom väldigt väldigt vitt utbrett liksom den attityden att elever, det ska vara lite hårt typ för att det hade jag också när jag var elev typ. Det ska inte vara lätt att vara elev och det är sorligt."*

*"Confidence, you have to struggle quite a bit to get. Even if you say, but yes, I have done this like 7 times before with your reliever. Well, they should still hang a little over the shoulder and really look so that you can handle it."*

*"förtroende måste man ju kämpa ganska mycket för att få. Trots att man säger att men ja jag har gjort det här liksom 7 ggr förut med din avlösare. Nämen det ska ändå hängas lite över axeln och verkligen se så att man klarar av det."*

As a student you often find yourself in a position of dependence. You are judged on many points, such as personal conduct, ability to adapt to life onboard, persistent, energy and ability to take on initiative. You are therefore very much dependent on your supervisor. Thus, a fear may arise that you do not want to say something to find yourself on your supervisor's bad side and risk affecting your grades or future employment. The maritime industry is described as a rather small market within Sweden from the respondents.

*"I cannot destroy my relationship with my supervisor because then these 3 months will not help me at all and it will affect my education and my skills as a prospective Captain. Plus, they are also in power of grades, they are in power of how much I will work, what tasks, how much I get, and how much responsibility I can take."*

*"jag får inte sumpas min relation till min handledare för då kommer dom här 3 månaderna inte hjälpa mig nånting och det kommer påverka min utbildning och min kompetens som blivande sjökaptan. plus att de dessutom sitter på maktmedel som betyg, dom sitter på maktmedel som hur mycket jag ska jobba, hur vilka arbetsuppgifter, hur mycket jag får liksom ta ansvar."*

### *Discrimination based on sex*

Another thing reported is when female students were onboard with other male cadets. They felt that they were treated differently than their male counterparts. It could be stated that the female students were not allowed to do certain tasks and that assignment was handed to the male colleague instead. So there seems to be an idea on board that women do not cope with certain types of work, like physically strenuous tasks or mucky jobs. That women are more fragile than men and thus fail to handle these tasks.

*"And I found myself to be much more taken with the "fine gloves" than he became, he got to do all the jobs and I did not have to do all the jobs. At one time, I was angry at the bosun and then I got to do it to"*

*"Och jag upplevde att jag blev väldigt mycket mer tagen med finhandskarna än vad han blev, han fick göra alla jobb och jag fick inte göra alla jobb. Det var, en gång blev jag arg på båsen så då fick jag göra det till slut"*

### *Harassments*

Many of the female participants said that they had been subjects to sexual harassments. The sexual harassments could be offers to help with a task in exchanges for a sexual favour or it could be unwanted touching on different body parts. Some also reported spontaneous visits in their cabin by co-workers. Generally, there was a condescending tone against women by some individuals. When the co-workers consumed alcohol, they became less frightened and were more likely to make unwanted actions towards the female's cadets. There was also a lack in perception on what was acceptable to say or do.

*"Yes! But he literally said once "if you kiss me, I can take that filter for you" literary like this he said straight into the engine control room."*

*"Ja! Men han sa bokstavligt talat en gång "om du kysser mig så kan jag ta det filtret åt dig" literary så här sa han rakt ut i maskinrum, kontrollrummet."*

*"It was also, it was a first engineer who was very keen when he drank. A lot of commentary, a lot about looks and things that are very uncomfortable. But he just tried once under influence of alcohol, oh, go to my cabin. But otherwise he would not be like this "touchy" when he was sober"*

*"Den var också, det var en förste maskinist som var väldigt på när han drack typ ja massa kommentera, massa om utseende och såna saker som man känner sig väldigt obekvämt med. Men han försökte bara en gång på fyllan typ gå till min hytt så men annars var det inte såhär tog eller ta på när han var nykter"*

Something that have been said by many of the respondents about their first internship, is that they were surprised at how common racist and sexist slurs were among the crew. Something that would not be consider acceptable in another line of business ashore. The views and values at sea can be expressed as a bit conservative

## **4.3 Identified strategies used to cope onboard**

There are different ways among participants to handle the tough environment onboard

### *Tougher attitude*

To be able to cope with the working environment on board, you enter a special roll, a so-called persona. Some female cadets adopted a little tougher attitude in comparison with what they usually had at home or at school. It could be expressed with a rougher reply on

nasty comment or just generally more masculine attitude. It was necessary to put things in a perspective for some people to understand that their behaviour was unacceptable. What turned out to work was to ask the person involved if it was acceptable to ask the same question or do the same thing to his daughter, spouse or mother. Which usually was met with silence.

*"Yes, if I see it all over my, all my experience at sea or what to say. So, I've got a damn much thicker attitude and that have become a way. Okay, but if I do not defend myself back they will continue to push down, so it has become a protection I have automatically built up to cope onboard"*

*"Ja som, om jag ser det över hela min, över all min erfarenhet till sjöss eller vad man ska säga. Så har jag, jag har ju fått en jävla mycket tyknare attityd och det har ju blivit ett sätt att, okej men försvarar inte jag mig tillbaka så kommer dom fortsätta att trycka ner, så det har blivit ett skydd som jag har automatisk har byggt upp för att kunna klara mig ombord."*

*"But do you have a wife or daughter or something? Yes, but I have. But is it okay that your daughter or fellow colleague then stands and tells her? /.../ Then it will be aha but yea, no, no it's not okay to call his child or wife for it. But it's okay that he calls others for it. So, I but then he became silent and I think it made him understand and get a perspective. So, it's still people he's talking about."*

*"Men har du liksom fru eller dotter eller någonting? Jo men, ja det har jag. Men är det okej att alltså din dotter eller frus kollega står och säger så till henne? /.../ Då blir det ju, aha men ja nä nä det är ju inte okej att man kallar hans barn eller fru för det. Men det är okej att han kallar andra för det. Så jag men då blev han tyst och jag tror det fick honom att förstå och få ett perspektiv. Så att det ändå är människor han pratar om."*

## **Withdrawal**

The most common behavioural changes were to hold back on opinions or values. The respondents became more apathetic when spending time onboard. If similar scenarios occurred in school they would have done or said something about it, but onboard it was of no use.

"Something, so sometimes it may be that someone is joking about something that's not great fun as well. Anything that alludes on gender or something and then usually if this happened in a classroom I would say "that was not so tasty". But when you're onboard, it's not going to be done it the same way. "

*"Nämen typ alltså ibland kan det ju vara såhär att någon skämtar om nånting som inte är jättekul liksom. Nått som anspelar sig på kön eller nånting och då kan man vara såhär i vanliga fall om det skulle ske i ett klassrum så skulle jag säga "det där var inte så smakligt" men när man är ombord så blir det liksom inte att man gör det på samma sätt."*

## **4.4 How are complains and negative feedback handled. What consequence can it have for you?**

In several of the interviews, the respondents reported a dissatisfaction in how complaints are handled aboard and especially at school.

### ***Ignored and excluded onboard***

Once complaints have been submitted on board, it can be met with different reactions. One was to reluctance to address the problem and thus ignore it altogether. Were one student brought it up in the hierarchy until someone took it with seriously. It's hard to know who to turn to and who to trust. After actions were taken the group or sections of groups bumped out the person who brought forward the complaint. This makes it even harder for the victim. But to exclude somebody doesn't appear to be rare phenomenon but it is also used as a threat or a warning to anyone who dares to questions some part of crews' opinions or conduct.

*"They were terrible so then I went on to the second engineer, he did nothing, I told the third engineer that I felt close to, he did not do anything either. In the end to the chief mate. Who was*

*very nice, and we had very good contact. Then he raised it with the captain, for this information had not gone on apparently. Then after that, they had a meeting apparently, without me, I was not in place. After that I got excluded of the whole gang, the filipin gang for a very long time. They did not dare talk to me at the food or anything, I felt very excluded. So that was tough but, but it was not the toughest boat."*

*"de det var hemskt alltså sen gick jag vidare till förste maskinisten, han gjorde ingenting, jag berättade till andre maskinisten som jag kände nära till, han gjorde inte heller någonting. Till slut till överstyrman. Som var jättetrevligt och vi hade väldigt bra kontakt då var det han som tog upp det med kaptenen för den här informationen hade inte gått vidare tydligen. Så efter det hade det ett möte tydligen, utan mig då jag var ju inte på plats. Där efter blev jag utfrys av hela gänget, filipiner gänget ett väldigt bra tag. Dom vågade inte prata med mig vid maten eller nånting, jag kände mig väldigt utfrys. Så det var tufft men, men det var inte den tuffaste båten."*

*"But then they were so they told me quite clear in the beginning to. If you tell anyone or if you come and complain we will freeze you out so, then it will not be so damn fun here. So, then it was like just okay I understand I will shut up. /.../ so, it's very indirect threat, they did not threaten with more than this. I would get excluded because they had done so before "*

*"Men så var dom såhär dom tala liksom ganska tydligt om för mig i början att om du kommer och berättar det för någon eller om du kommer och klagar så kommer vi att frysa ut dig så då kommer det inte vara så jävla kul här. Så då var det bara liksom okej jag förstår jag håller käften typ /.../ alltså det är väldigt indirekt hot, dom hotade ju inte mot såhär mer än att jag skulle bli utfrys, för dom hade gjort så innan"*

### ***Lack of response and follow-up by the school***

When students return from their internship they have short briefing with the supervisor that's responsible for the internships. Here students can bring forth complains or concerns regarding the cadet time onboard different vessels and shipping companies. The last thing to expect is that the university at least takes the criticisms seriously. Opinions about how the university has addressed the problem varies. Some report that the supervisors refers to the fact that previous students did not have anything negative to about that vessel. Other have said that it seems like the school takes it seriously and that they will contact the vessel or shipping company. But no follow-up information ever arrives. The respondent thinks this has to do with that there are so few internships and that the university is afraid to speak with the shipping company about this because they fear of losing internships.

*"I think it's going to be, a bit of school's side on this will be a bit of the same jargon. If, come on, you are supposed to be able to handle it, because everyone else who has been there has been happy there"*

*"Jag tycker det för att det blir lite skolans sida på det här blir lite samma jargong om men vafan skärp dig du ska ju kunna hantera det, nämen alla andra som har varit där har varit nöjda där"*

*"If we're going to say this to internship and cadet time, I might think that from the school side. The responsibility they have as they do not take, to follow up things when a student, gender aside, does feel like being treated badly on board, there is not. So, they do not take any responsibility at all and that's because and I've been told that's because they're afraid to get rid of the internships."*

*"Om vi ska säga det här till just praktik och elevtid, så kan jag tycka att från skolan sida. De ansvarstagandet dom har som dom inte tar, att följa upp saker när elev oavsett kön känner sig alltså dåligt behandlad ombord, det finns inte. Alltså dom tar inget ansvar överhuvudtaget och det är för att och det har jag fått sagt till mig, det är för att dom är rädda för att bli av med praktikplatserna."*

It has also been that the supervisor has booked in meetings that will be discussed, which later been canceled, and no new appointments added. It is a continuous theme among the stories that it is perceived that it is not taken seriously and that it is silenced and never follow up.

*"For example, I turned to school and said I had the problem on my first boat and nothing happened, they did nothing. They said we will book a meeting and let's see what we do. Then they cancel the meeting, so it never took place. Even if you want to report such things and come up with it, there*

*is no one you can turn to, when you know something is going to happen, they will cover everything."*

*" För jag till exempel vände mig till skolan och sa att jag haft det problemet på min första båt och det hände ingenting, dom gjorde ingenting. Dom sa aa vi bokar möte så får vi se vad vi gör, sen avboka dom mötet så blev aldrig något av. Även om man vill anmäla sådana saker och komma fram med det så finns det ingen man kan vända sig till, när man vet aa nånting kommer hända, dom sätter lock på allt."*

Something that has resulted in students taking things in their own hands. For example, if you are dissatisfied on a ship, contact and return to a previous vessel. Many students have been told beforehand by former students about what it looks like on the ships and warned that sexual harassment occurs. One tip meant that one would tune down on her personality, that one would not be as happy and eerie as a girl at the beginning when coming to a ship because it could be perceived as a flirt.

#### **4.5 Factors that can help explain why there are so few women in the maritime industry**

In the interviews the respondents were asked why they thought there are so few women in their education and in the maritime industry. Their answers resulted in the following themes.

##### *Marketing*

The respondents overwhelmingly talked about the lack of information or marketing. They felt that seafarer as an occupation did not occur to people in general. Not only of their education but of the maritime industry in general. They expressed that the maritime industry is mostly known in the coastal cities, e.g. Gothenburg, but inland the knowledge becomes limited. Especially since the industry is so small in Sweden. Your relation to the sea may be diminished the further inland you live.

*"Generally speaking, it is not a profession that's talked about very much, but it is the same for men there, too, that they do not speak really much there either"*

*"alltså allmänt är det inte ett yrke som det pratas om jättemycket, men det är ju ändå samma för män där också att det inte pratas jättemycket där heller egentligen"*

*"So, it may be the part that shipping in Sweden may not be so large, so there are not so many people who are affiliated with it, especially if you live inland. Maybe here in Gothenburg, there are more who have family and friends who work in shipping. "*

*"Så att det kan vara den delen att sjöfarten inom Sverige kanske inte är så jättestor så det inte är så många som har anknytning till den, speciellt inte om man bor inåt landet. Kanske här i Göteborg är det fler som har familj och vänner som jobbar inom sjöfarten."*

Most of the respondents did their own research and found out about the education and maritime industry as a coincident.

*"But I did not think biology was so fun, so I was like this, "hmmm, what should I do instead?" I would still like to do something about the ocean. Then it had to be a sea captain. I just googled, it was pure chance I came across it as well. So, it had to be."*

*"Men så tyckte jag inte att biologi var så kul, så då var jag såhär "hmmm, vad ska jag plugga istället?" jag ville ändå plugga nått som har med havet att göra. Så då fick det bli sjökaptan. Jag googlade bara, det var ren slump att jag kom över det liksom. Så det fick bli det."*

##### *Bad reputation*

In the interviews it appeared that the maritime industry is drawn with a bad reputation that makes it undesirable. Two types of bad reputation occurred frequently about the industry and was identified as the perception of seafarer stereotype and as a male-

dominated workplace. In the interviews the picture of a typical seafarer as a robust, macho and strong man was seen as a problem. Most young women may not relate to that and they may feel that the maritime industry is nothing for them.

*"I mean so, many think it's a macho profession. And that's a lot like this when you tell someone that you've been out for a month and so, that's often aha, but then I suppose you're drinking and behave like an ass. But that's not true today. Although mentality still exists, I would like to say."*

*"Jag menar alltså det, många tycker att det är ett macho yrke och det är mycket sånt här när man berättar typ att man har varit ute i nån månad och sådär så är det ofta aha men då antar jag att man typ super och betar sig som ett drägg. Men det är ju inte riktigt så idag. Även om mentaliteten fortfarande finns skulle jag vilja säga."*

*"But because it's like the stereotypical sailor, it's an old man, an overweight old man with a beard type and I do not think so many girls like that."*

*"Men för att det är liksom den stereotypa sjömannen är ju en gubbe, en överviktig gubbe med skägg typ och det tror jag inte lockar så många tjejer typ."*

The other aspect of the industry as a male-dominated workplace is seen as another factor that can hinder women or make them less interested. The mere notion to be isolated onboard with men you do not know anything about comes fourth as discouraging for women. Especially when the jargon is perceived as sexist.

*"As a single girl on a boat with maybe 20 other men. And strange men also if you're going on an internship. So I think it can be a bit dissuasive as well."*

*"Som alltså en ensam tjej på en båt med kanske 20 andra män. Och främmande män dessutom om du ska ut på praktik. Så jag tror det kan vara lite avskräckande också."*

*"So that I think it might be a big reason actually the whole lifestyle that comes along as well, I think that too, though it is not the world's most beautiful environment, always on boats hehe. I think it can also play, have an impact, how much the jargon and sexism and that. I do not think it attracts or it does not really attract one, but it can deter many."*

*"Så att det tror jag kan vara en stor anledning faktiskt hela livsstilen som kommer med liksom sen tror jag också att det, fast det är ju inte världens härligaste miljö alltid på båtar hehe det tror jag också kan spela ha en inverkan, hur mycket alltså jargongen och sexism och det. Det tror jag inte heller lockar alla eller det lockar väl inte nån egentligen men att det kan avskräcka många."*

### *The family situation*

Another factor that emerged in the interviews is the complication of combining a stable family relation and working at sea. The respondents think that women may feel discouraged in the face of dealing with the puzzle current family situation and possible future family situation. Many women might feel they will want to be home with their children and other people might even discourage them in that fact. It is quite understandable that the family situation can put an extra strain on the women.

*"Yea and I think many people probably think when they want to get a family that they want to be home with their children, the mothers especially. I think it has a giant, having a huge impact"*

*"Aa och jag tänker att många tänker nog när dom vill skaffa familj att dom vill vara hemma med sina barn, mammorna speciellt. Jag tror att de gör en jätte, alltså har en jättestor inverkan"*

*"I actually think it's home, away from home for longer, making many women say, is looking at this education as kind of a challenge as well. That is a reason why I think it may be difficult in a few years. To work at sea and be away from the family and children and so on, as a woman."*

*"Jag tror faktiskt det är att man är hemma, borta från hemmet längre tid som gör att många kvinnor säger, ser på denna utbildningen som typ en utmaning liksom. Det är väl också en anledning till att jag tycker att jaa kanske kan bli jobbigt om några år. Att jobba till sjöss och vara borta ifrån familjen och barn och sådär, som kvinna"*

According to the results of the analysis the respondents often expressed and felt that personal and societal pressure in the combination of being a good mother and having a



career, especially in the maritime industry, may seem too stressful and discouraging for most women. The women may not think that it is worth the trouble, even when there is proof that it can be done, when they can get a job ashore and be closer to home instead.

*"I think most like, it's like I said before that with the family lifestyle that's what's the reason. And not that people, not that women do not manage to have it because there are many who work at sea and have children and it's going great as well. But people say it will not be possible."*

*"jag tror mest som det är som jag sa förut det där med familjelivsstilen att det är det som är anledningen. Och inte att folk alltså inte att kvinnor inte klarar av att ha det så för det finns ju många som jobbar till sjöss och har barn och det går jättebra liksom. Men att folk säger att det inte kommer gå."*

### **The negative aspects of the culture are not expressed by everyone**

There is no denying that fact that the respondents have had troublesome experiences from their cadet time. However, it is important to emphasize that this is sometimes limited to a certain vessel or one person. As the respondents often expressed in the interviews the incidents were sometimes limited and did not occur on every vessel or by every person. An important factor that surfaced was that the better vessels and their crew had clear expectations on the cadet and of themselves as mentors.

*"Great indeed, I have had great internships. I have been on three ships and everyone has treated me very well. I have felt very welcome onboard, they have taken good care of me as well, they have answered all the questions and yea fine, great."*

*"Jättebra faktiskt, jag har haft fantastiska praktikplatser. Jag har varit på tre fartyg, alla har behandlat mig jättebra. Jag har känt mig väldigt välkommen ombord dom har tagit bra hand om mig liksom, dom har svarat på alla frågor och aa bra jättefint"*

*"And it was a small crew and they were quite used to students, so there were no strange things, they had a good idea of what they expected of me and what they had for themselves as well, as claiming themselves as being cadet ship, as well."*

*"Och det var ju liten besättning och det var ganska vana vid elever, så att där var det ju inga konstigheter dom, dom hade en bra uppfattning om vad dom förväntade sig av mig och vad dom hade för liksom krav på sig själva som som elevfartyg liksom."*

### **How they perceive their education**

There is a divergence in the interviews on how the respondents perceive their education. The marine engineers and some of the nautical science students did not feel that their education met their expectations, have low standard and bad organization. While some of the nautical science student express that their education meets their expectations well, they thrive and are content with the courses.

**Marine engineer student:** *"Yes definitely and even the courses. I think it's too low standard, altogether. I think it's rare, however, when reading a course-pm for a course, it sounds great as well as the course goals or what to say, but I rarely go from a course and feel like this I have learned. Very rarely."*

*"Ja definitivt och även kursmässigt. Jag tycker det är för låg standard, helt och hållet. Jag tycker det är sällan man alltså när man läser ett kurs-pm för en kurs så låter det jättebra med liksom kursmålen eller vad man ska säga, men det är ju sällan jag går ifrån en kurs och känner att det här har jag lärt mig. Ytterst sällan."*

**Nautical science student:** *"In academic terms, I think it meets very well. There is much more, as I said, then it is. Yes, you thought it was one track, but there are ten tracks you can take. So, I think it's great and fun what you get out, I get much more than I thought of that bit, but yes."*

*"Rent akademiskt tycker jag att den möter väldigt bra, det är mycket mer. Som jag sa då att det är. Ja, man trodde att det var ett spår men det är tio spår man kan gå in på. Så det tycker jag är jättekul man får ut, jag får ut mycket mer än vad jag trodde ur den biten, men ja"*

The cadet time is a stressful and demanding time of the education in the maritime sciences. The respondents' express problems in the organization and handling of the cadet time and this seems to be one of their largest concern and they express frustration in the interview, both the marine engineers and the nautical science students.

*"I've had a lot of luck with the internships, but I heard someone in the captain grade 3 now. With 9 months of residue internship and just one internship time to take it on. Because they do not get any internship this summer and it's like that up and down hehe"*

*"Jag har haft väldigt tur med praktiken men jag hörde nån som går kaptenstreaan nu som hade 9 månaders restpraktik och bara en praktik på att ta igen det på, för det får ingen praktik i sommar och det är liksom så att det, det går väl upp och ner hehe"*

*"Like, if you have quit your internship too soon or if you have too few days at sea and so on. So, in our class now we had 17 special cases before it even began to look at one's credentials list. And it feels like this, is this right to those who really study and want to be done as quickly as possible with their education. Though they cannot because there have been special cases in the way."*

*"Typ om man har hoppat av praktiken för tidigt eller om man har för lite sjödagar och sådär. Så i vår klass nu så hade vi 17 specialfall innan det ens började kolla på den här betygslistan och det känns såhär det är ju rätt taskigt mot dom som verkligen pluggar och vill bli klara så snabbt som möjligt med sin utbildning fast att det inte kan för att det är nått specialfall i vägen typ."*

This is too bad since the cadet time can be a time when you learn a lot even if that is not always so. As one of the respondents expressed.

*"And what I've learned as I think is the gold nuggets is the internships and then it's sad that the school does not take it seriously if it's something you say."*

*"Och det jag, det jag har lärt mig som jag tycker är guldklimparna är ju praktiken och då är det ju tråkigt att skolan inte tar den på fullt allvar om det är nånting som man säger."*

## 5 Discussion

The results in this study shows that female maritime student choose their education based on interest, earlier experience and the nature of the work. The interest was essentially connected to an early experience in some way or another in relation ocean activities in the form of sailing with the family for example. Parent and family members may have affected or played a role in their choosing. To our surprise only one reported that they had a parent who used to work in the maritime industry. The most significant, but not only, factor seemed to be some previous relation to the sea and ocean in different forms of activities for choosing to study maritime science. This interest has shown to be the most significant factor in previous research as well by Bicok et al. (2012). The same research has shown, as our results did, that the nature of the work with leisure time and fairly good wages also plays a role in the choosing the maritime industry as their working place.

The different interest between women and men can explain to some degree why there are fewer women than men in the maritime industry and maritime science education since women on average is less interested in things as is shown by Su et al. (2009). This difference of interest is strengthened by the study and statistics made on culture consumption in Sweden (Bihagen & Katz-Gerro, 2000; Myndigheten för Kulturanalys, 2016; Myndigheten för Kulturanalys, 2017). However, there are other typical male or male dominated occupations and educations that have larger women representation in percent than the maritime sector in Sweden. According to statistics 20.8 percent of software and system developers is women and 31 percent of the student pursuing a Master of Science degree are women (SCB, 2017; Dryle, et al., 2016).

Here marketing and the perceived bad reputation can play a part, after all the maritime industry in Sweden is rather small and not so widely known. Almost all the respondents mentioned the lack of knowledge of the industry as a contributing factor to the lack of women in maritime sciences. In the research by Bicok et al. (2012) the suggest that the education should be more visible.

The respondents described that the work can be quite heavy and physically tough, but it is still undoubtedly the psychosocial environment that is highlighted as the most difficult. This is understandable since Forsell et al. (2017) showed that women are exposed to more harassments compared to men. The undesirable environment described in Prinsén (2011) and Kitada (2010) filled with disrespect and prejudices against women does not seemed to have changed much. The results in this study showed that most of the respondents have experienced some kind of harassment during their time onboard. This will result in the bad reputation, adds to the stereotypical assumption about a seafarer and makes it even more difficult for women to relate to. Our respondents expressed this as discouraging for women and this have been shown in previous research by Kitada (2010) as well. One of our respondents mentioned the meetings they have with the new first year students. Where they talk about the internships and what to expect in forms of prejudice and harassments.

The strategies used by the students to cope with the difficult psychosocial environment seems similar to the four different identity strategies put forth by Kitada (2010). Among the respondents in our study who expressed withdrawal could fit in to the category named "negotiators" by Kitada (2010). They modify their behavior in order to not cause any trouble. Almost all respondents expressed their withdrawal except for one that would fit better under the "maintainers" category. Some of the women studied by Kitada (2010) started their

seafaring career as negotiators and progressed the different strategies and ended up in reproducers as they got more experience. Most of the women in this study have been on fewer vessels and seemed to be using the negotiators strategy. The respondent who expressed an adaptation over time to a tougher attitude had been on several vessels and had more experience. In previous research by Prinsén (2011) the women experienced that the situation onboard got better over time. There is a possibility that she already gone through a multiple of this strategies during her time as a seafarer. This kind of identity strategizing can in of itself be very stressful as Hodge & Widerström (2017) described and suggested the emotional and cognitive dissonance as the cause for that. As one of the respondents in this study expressed when she beforehand already knows that on her next internship the crew have already expressed their negative feelings toward having women onboard.

Beside the negative effects of the discouraging factors of the psychosocial environment and the perceived bad reputation of the maritime industry. The respondents in this study mentioned family situation as a complicating factor and seen as a reason for why there are so few women onboard. Combining a stable family situation with a life at sea is no simple task and this concern is shared by many as previous research have shown by Kitada (2009), Bicok et al. (2012) and Prinsén (2011). In the study by Prinsén (2011) 9 out of 10 women said they would go ashore if or when they get a child.

Regarding the personality tests we did not get enough data to begin an analysis. Out of the data collected, personality traits or aspects were missing and only half was sent in. The results were probably misinterpreted by some. The reason we believe is that it probably felt too personal and we were probably too close as being students as well. The personality assessment as a tool for recruitment is probably not an implementable solution. Maybe it can be used in another way. For example, as a compliment together with a morality test when studying the social culture onboard would be interesting.

The personality traits that would have been interesting to investigate is agreeableness and extraversion. People high in agreeableness could have it easier to adapt to the onboard culture/environment in the beginning. Because people high in this trait tend to get along with people and maintain social harmony (Weisberg et al., 2011). And individuals with low or exceptionality low would probably have a harder time to adapt to the group or feel included. The trait extraversion has shown earlier indication of playing a role in the overall quality of life for seafarers and their engagement in health improving activities (Jeżewska et al.,2017). This is something that should to be investigated further because it is very interesting to get a prediction of how well the seafarers will handle the onboard situation. At least for one self in order to know how you may react so you can be more prepared in handling a future stressful environment.

A divergence was found in how the respondents perceive their education in terms of the theoretical part. However, there was more commonality in how they perceive the handling of internships. Especially in the lack of handling complaints and negative feedback of their time onboard. Hodge et al. (2017) also found this lack of response when reports have been issued and the respondents was less inclined to report again. Which is something that need to be investigated further. Since the internships offers a great opportunity to indulge in your future workplace. As some of the respondents expressed in Prinsén (2011) and in this study as well.

## *Method*

The interviews in this study was semi structured and conducted face to face. The positive aspects of this approach are that interviews are a good method for collecting data based on respondents' ideas and opinions. Other methods like a more quantity-based approach was considered as questionnaires to reach more subjects given the sensitivity of the subject, as seen in the results. It might had generated more answers. Despite this we decided to take a more qualitative method for a richer data since our main research question was trying to get a deeper understanding on why there are fewer women than men in the maritime industry. The interviews seemed like a better alternative. The reliability in this study his fairly low due to the low number of respondents.

The semi-structure makes the interviews more flexible for the respondents to express themselves and when conducting the interviews face to face you get a better perception of the respondents. In this way you get a direct contact with the respondents and a sincerer interview for greater validity (Denscombe, 2014/2016). Face to face interviews can feel to personal and affect what they are willing to express. Another aspect is what they say may not reflect the reality of the truth since their responses are subjective and thus the validity is affected negatively. The interviewers' subjective opinions can affect the data extracted from the interviews as well.

Some of the positive aspects of the thematic analysis method brought forth by Braun et al (2006) is the flexibility and the ability to summarize a lot of data:

“Through its theoretical freedom, thematic analysis provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data.” (Braun & Clarke, 2008, s. 5)

A negative aspect of this summarization and thematization is the inability to recognize contradictions and continuities in an individual interview.

## 6 Conclusion

This study is not able to answer all the research questions inquired. However, some conclusions are possible to be drawn.

### **Why do female students choose a career at sea?**

The women's career choice was based on personal interest and the nature of the work. With leisure time, good wages and the ability to work globally.

### **How do female maritime students perceive their education?**

The overall impression of the theoretical part of the maritime sciences is good. However, it seems that the organization around the internships is lacking. In particular, how the school handles complaints or does not handle complaints satisfactorily. If this information does not pass on to the shipping companies and if they are not interested in listening. Is it then possible to get rid of the destructive aspects of the onboard culture?

### **Why are there so few female seafarers?**

Why there are so few women in shipping and education depends on many variables. We mean that it is not possible to point at one reason then you will miss the mark. In this study, we found that the following variables may play a certain role in why there are so few.

#### *Interest*

As women generally have less interest in things than for people, the selection of female students is limited and the more technology-interested women have other options than shipping to choose from.

#### *Generally bad reputation*

Shipping is preceded by a generally bad reputation in which the stereotypical sailor and male dominated culture are considered less attractive to some women. In this category, there are also the harassment risks that you may be exposed to on board.

#### *Family situation*

The difficulty in combining a stable family relationship and working at sea is a big challenge and affects a lot. It will be tough decisions to take for many. Decisions which may be easier in other programs or other jobs.

#### *Marketing*

Highlighting shipping more could help more women get the knowledge about the profession and thus raise awareness of the industry.

### **Further research**

- The morality and ethics of the leaders onboard.

## 7 Bibliography

- Barone, C. (2011). Some Things Never Change: Gender Segregation in Higher Education across Eight Nations and Three Decades. *Sociology of Education* , 157-176.
- Barrick, M. R., & Mount, M. K. (2005). Yes, Personality Matters: Moving on to More Important Matters. *Human Performance* , 359-372.
- Basak, A. A. (2015). Women's Role in the Turkish and Global Maritime Industry. In M. Kitada, E. Williams, & L. L. Froholdt (Eds.), *Maritime Women: Global Leadership* (pp. 103-111). Berlin: Springer.
- Bicok, G., & Strand, I. (2012). *Kvinnor på sjöbefälsutbildningar - Varför så få? En kvalitativ undersökning av kvinnliga sjöbefälsstudenters upplevelser av sin utbildning*. Bachelor's Essay, Göteborgs Univeristet, Institutionen för sociologi och arbetsvetenskap, Göteborg.
- Bihagen, E., & Katz-Gerro, T. (2000). Culture consumption in Sweden: The stability of gender differences. *Poetics* , 27, 327-349.
- BIMCO; International Chamber of Shipping. (2015). *MANPOWER REPORT The global supply and demand for seafarers in 2015*. London: Marisec Publications.
- Bofetta, P., Dosemeci, M., Gridley, G., Bath, H., Moradi, T., & Silverman, D. (2001). Occupational Exposure to Diesel Engine Emissions and Risk of Cancer in Swedish Men and Women. *Cancer Causes Control* , 12 (4), 365–374.
- Borch, D. F., Hansen, H. L., Burr, H., & Jespen, J. R. (2012). Surveillance of maritime deaths on board Danish merchant ships, 1986-2009. *International Maritime Health* , 63 (1), 7-16.
- Braun, V., & Clarke, V. (2008). Using thematic analysis in psychology. *Qualitative Research in Psychology* , 3 (2), 77-101.
- Chalmers plan för jämställdhetsintegrering 2017-2019. (n.d.). Göteborg. Retrieved from <https://www.genus.se/wp-content/uploads/Chalmers-plan-for-jamstalldhetsintegrering-2017-2019.pdf>
- cut-e. (2015/2016). *The Global Assessment Barometer*. Hamburg: cut-e Group Hamburg.
- Denscombe, M. (2014/2016). *Forskningshandboken : för småskaliga forskningsprojekt inom samhällsvetenskaperna* (3:1 ed.). (P. Larsson, Trans.) Lund: Studentlitteratur AB.
- Department for transport. (2017). *Seafarer statistics, 2016*. London: Department for transport.
- DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between Facets and Domains: 10 Aspects of the Big Five. *Journal of Personality and Social Psychology* , 93, 880-896.
- Digman, J. M. (1990). Personality Structure: Emergence of the five-factor model. *Annual Review of Psychology* , 417-440.
- Dragomir, C., & Surugiu, F. (2013). Seafarer Women -Perception of the Seafaring Career. *WSEAS / NAUN 2nd International Conference on Economics, Political and Law Science (EPLS '13), Advances in Fiscal, Political and Law Science*.
- Dryle, H., Inkinen, M., Amnéus, I., Gillström, P., Severin, J., Viberg, A., et al. (2016). *Kvinnor och män i högskolan*. Stockholm: Universitetskanslersämbetet.

- European Maritime Safety Agency. (2017). *Seafarers' Statistics in the EU - Statistical review (2015 data STCW-IS)*. Lisbon: European Maritime Safety Agency.
- Forsell, K., Eriksson, H., Järholm, B., Andersson, E., Lundh, M., & Nilsson, R. (2015). *Arbetsmiljö och säkerhet på svenska fartyg*. Göteborg: Sahlgrenska Universitetssjukhuset: Arbets- och miljömedicin (nr 151).
- Forsell, K., Eriksson, H., Järholm, B., Lundh, M., Andersson, E., & Nilsson, R. (2017). Work environment and safety climate in the Swedish merchant fleet. *Int Arch Occup Environ Health* , 90 (161), 161-168.
- Hagart, J., & Crawshaw, C. M. (1981). Personality Factors and Ship Handling Behaviour. *Journal of Navigation* , 34 (2), 202-206.
- Hodge, N., & Widerström, E. (2017). "En sjöman är alltid en sjöman" Kränkningar och trakasserier bland sjömän på svenska fartyg - en intervjustudie. Psykologiska institutionen. Göteborg: Göteborgs Universitet.
- Jeżewska, M., Leszczyńska, I., & Grubman-Nowak, M. (2013). Personality and temperamental features vs. quality of life of Polish seafarers. *Int Marit Health* , 64 (2), 101-105.
- Jensen, A., Melchers, K. G., Lievens, F., Kleinman, M., Brändli, M., Fraefel, L., et al. (2012). Situation Assessment as an Ignored Factor in the Behavioral Consistency Paradigm Underlying the Validity of Personnel Selection Procedures. *Journal of Applied Psychology* , 98.
- Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The big five personality traits, general mental ability, and career success across the life span. *Personnel Psychology* , 621-652.
- Judge, T. A., Ilies, R., Bono, J. E., & Gerhardt, M. W. (2002). Personality and Leadership: A Qualitative and Quantitative Review. *Journal Of Applied Psychology* , 87 (4), 765-780.
- Kaerlev, L., Hansen, J., Hansen, H. L., & Nielsen, P. S. (2005). Cancer incidence among Danish seafarers: a population based cohort study. *Occup Environ Med* , 65, 761-765.
- Kitada, M. (2009). RISKING MARRIAGE AND FAMILY: MAINTAINING WOMEN SEAFARERS' GENDER IDENTITIES. *SIRC-Nippon Maritime Conference*.
- Kitada, M. (2010). *Women seafarers and their identities*. PHD Thesis, Cardiff University.
- Kitada, M., Williams, E., & Froholdt, L. L. (Eds.). (2015). *Maritime Women: Global Leadership*. Berlin Heidelberg: Springer.
- Larsson, J., & Engström, S. (2015). *Arbetspsykologisk testning vid chefsrekryteringar: En jämförande studie om användningen inom privat- respektive offentlig sektor*. Examensarbete, Pedagogiska institutionen , Personalvetarprogrammet, Umeå.
- Lipowski, M., Lipowska, M., Aleksandra, P., & Jeżewska, M. (2014). Personality determinants of health behaviours of merchant navy officers. *Int Marit Health* , 65 (3), 158–165.
- Lippa, R. (2010a). Gender Differences in Personality and Interests: When, Where, and Why? *Social and Personality Psychology Compass* , 1098-1110.
- Lippa, R. (1998). Gender-related individual difference and the structure of vocational interests: The importance of the "People-Things" dimension. *Journal of Personality and Social Psychology* , 996–1009.



- Lippa, R. (2010b). Sex differences in personality traits and gender-related occupational preferences across 53 nations: Testing evolutionary and social-environmental theories. *Archives of Sexual Behavior*, 39, 619-636.
- Lundh, M., Lützhöft, M., Rydstedt, L., & Dahlman, J. (2011). Working conditions in the engine department - A qualitative study among engine room personnel on board Swedish merchant ships. *Applied Ergonomics*, 42 (2), 384-390.
- McCrae, R. R., & Costa, P. T. (1990). *Personality in adulthood*. New York: The Guilford Press.
- McCrae, R. R., & John, O. P. (1992). An Introduction to the Five-Factor Model and Its Applications. *Journal of Personality*, 60 (2), 175-215.
- Moutafi, J., Furnham, A., & Tsaousis, I. (2006). Is the relationship between intelligence and trait Neuroticism mediated by test anxiety? *Personality and Individual Differences*, 40, 587–597.
- Myndigheten för Kulturanalys. (2016). *Kulturvanor*. Stockholm: Myndigheten för Kulturanalys.
- Myndigheten för Kulturanalys. (2017). *Barns och ungas kulturaktiviteter*. Stockholm: Myndigheten för Kulturanalys.
- Nilsson, R., Nordlinder, R., Moen, B. E., Øvrebø, S., Bleie, K., Skorve, A. H., et al. (2004). Increased urinary excretion of 8-hydroxydeoxyguanosine in engine room personnel exposed to polycyclic aromatic hydrocarbons. *Occupational and Environmental Medicine*, 61, 692-696.
- Pinker, S. (2002/2016). *The blank slate: the modern denial of human nature*. New York: Penguin Books.
- Poropat, A. E. (2009). A Meta-Analysis of the Five-Factor Model of Personality and Academic Performance. *Psychological Bulletin*, 135 (2), 322-338.
- Prinsén, S. (2011). Women in Swedish engine rooms: A study on how female engineers experience their jobs, their careers and gender equality on board (Bachelor's Essay). Gothenburg: Mechanics and Maritime Sciences, Chalmers University of Technology.
- Rosander, P., & Bäckström, M. (2014). Personality traits measured at baseline can predict academic performance in upper secondary school three years later. *Scandinavian Journal of Psychology*, 55, 611–618.
- Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. *Journal of personality and Social Psychology*, 162-182.
- Sjöberg, L. (2000). *Personlighetstest i arbetslivet: historik och aktuell forskning*. Working Paper Series in Business Administration No. 2000:9.
- Sjöberg, S. (2014). *Utilizing research in the practice of personnel selection: General mental ability, personality, and job performance*. Department of Psychology. Stockholm: Stockholm University.
- Sjöfartsverket. (2010). *Handlingsplan för ökad rekrytering till sjöfartssektorn*. Sjöfartsverket.
- Stabile, S. J. (2002). The Use of Personality Tests As a Hiring Tool: Is The Benefit Worth The Cost? *U. PA. Journal of Labor and Employment Law*, 279-313.

Statistiska centralbyrån. (2017, Mars 8). *20 vanligaste yrkena för kvinnor*. Retrieved Februari 15, 2018, from Statistiska centralbyrån: <https://www.scb.se/hitta-statistik/statistik-efter-amne/arbetsmarknad/sysselsattning-forvarvsarbete-och-arbetstider/yrkesregistret-med-yrkesstatistik/pong/tabell-och-diagram/20-vanligaste-yrkena-for-kvinnor/>

Statistiska centralbyrån. (2017, Mars 8). *20 vanligaste yrkena för män*. Retrieved Februari 15, 2018, from Statistiska centralbyrån: <https://www.scb.se/hitta-statistik/statistik-efter-amne/arbetsmarknad/sysselsattning-forvarvsarbete-och-arbetstider/yrkesregistret-med-yrkesstatistik/pong/tabell-och-diagram/20-vanligaste-yrkena-for-man/>

Stoet, G., & Geary, D. C. (2018). The Gender-Equality Paradox in Science, Technology, Engineering, and Mathematics Education. *Sage Journals - Psychological Science* .

Su, R., Rounds, J., & Armstong, P. I. (2009). Men and Things, Women and People: A Meta-Analysis of Sex Differences in Interests. *Psychological Bulletin* , 135 (6), 859-884.

Swedish Shipowners' Association. (2016). *Svensk sjöfart: nyckeltal 2016*. Gothenburg: Swedish Shipowners' Association.

Technical Cooperation Committee. (2013). *Integration of women in the maritime sector*. IMO: International Maritime Organization.

Turkheimer, E. (2000). Three Laws of Behavior Genetics and What They Mean. *Current Directions in Psychological Science* , 9 (5), 160-164.

Weisberg, Y. J., DeYoung, C. G., & Hirsh, J. B. (2011). Gender differences in personality across the ten aspects of the Big Five. *Frontiers in Psychology* , 2, 178.

Vianello, M., Galliani, E. M., & Haidt, J. (2010). Elevation at work: The effects of leaders' moral excellence. *The Journal of Positive Psychology* , 5 (5), 390–411.

Zhang, P., & Zhao, M. (2015). Chinese Women Seafarers: Past, Present and Prospects. In M. Kitada, E. Williams, & L. L. Froholdt, *Maritime Women: Global Leadership* (pp. 235-253). Berlin Heidelberg: Springer.

Zolotas, Y., Kalafati, M., Tzannatos, E., & Rassias, D. (2017). Psychometric Assessment: A Case Study of Greek Merchant Marine Officers Usin the MMPI-2. In M. MacLachlan (Ed.), *Maritime Psychology* (pp. 201-222). Cham, Switzerland: Springer International Publishing.

## **8 Appendices**

### **8.1 Appendix 1: Interview main questions**

What made you interested in this education?

How did you find out about the education? When, where, who?

How do you feel that you are treated as a student onboard?

How many ships have you been on?

Do you feel that you have had to change your personality or how you usually meet people, to fit on board?

Why do you think so few women are applying for this education?

How do you think the education meets the expectations you had?

Why do you think there are so few women who choose shipping (more generally)?

When you finish your education will you seek a work at sea? If/if not why?