Eurasian Academy of Sciences
Eurasian Business & Economics Journal (International Refereed & Indexed)
Eurasian Academy of Sciences
Eurasian Business & Economics Journal
2023 Volume:34 S: 91- 104
Published Online November 2023 (http://busecon.eurasianacademy.org)
https://doi.org/10.17740/eas.econ.2023-V34-07

THE RELATIONSHIP BETWEEN WORKLOAD, WORK STRESS AND BURNOUT IN MASTERS AND DECK OFFICERS

Deniz Alp DOLU* Leyla TAVACIOĞLU Ali Tarık KILINÇ*****
Abbas Alipanah KORDLAR* Bayram Barış KIZILSAÇ ******

* Faculty of Maritime, Maritime Studies Master's Degree Student, Istanbul Technical University, Tuzla, Istanbul, Turkey, dolu21@itu.edu.tr, Orcid: 0009-0003-0280-6075
** **Sorumlu Yazar,** Faculty of Maritime, Maritime Cognitive Ergonomics Research Laboratory, Istanbul Technical University, Tuzla, Istanbul, Turkey, tavaciog@itu.edu.tr, Orcid: 0000-0002-9919-8226
*** Faculty of Maritime, Bachelor's degree, Istanbul Technical University, Tuzla, Istanbul, Turkey, kilinca19@itu.edu.tr, Orcid: 0009-0006-4698-256X
**** Faculty of Maritime, Maritime Cognitive Ergonomics Research Laboratory, Istanbul Technical University, Tuzla, Istanbul, Turkey, kizilsac@itu.edu.tr, Orcid: 0000-0002-7945-0914
*****Faculty of Maritime, Maritime Studies Master's Degree Student, Istanbul Technical University, Tuzla, Istanbul, Turkey abbas.alipanah@gmail.com

Received Date:13.09.2023 Accepted Date:02.11.2023

ABSTRACT
Throughout history, maritime has always been at the forefront as an element of trade, transport and political power. Today, as in every part of history, the building blocks of the maritime sector are seafarers. By its nature, maritime is a profession that requires attention in difficult sea and weather conditions as well as physical and psychological strength. Seafarers may encounter various problems such as excessive workload, unsuitable working environment, irregular and inadequate rest hours, mobbing by superiors and shipowners during their service on ships. In addition, social life and being away from their loved ones can lead to burnout, which can affect the whole organisation and create problems in ethical and human values. Psychology of uncertainty in seafarers, which is directly related to workload, work stress and burnout, was studied in this study. This study aimed to examine the impact of uncertainties and discomfort on ship personnel and explore potential differences based on age, years of service, and gender. A survey was conducted, encompassing participants of various ages, services, and both genders, resulting in a large and diverse data pool. The analysis focused on the relationship between uncertainties, discomfort, and their interactions. The findings revealed that discomfort caused by uncertainty had a greater influence on ship personnel compared to the uncertainty itself. Age and years of service emerged as significant factors in experiencing uncertainties and discomfort, while gender did not play a significant role. Pairwise comparisons further revealed differences between most theme pairs and distinct discomfort levels. Overall, this study emphasizes the substantial impact of discomfort resulting from uncertainties on ship personnel and emphasizes the importance of considering age and years of service in understanding these effects. The findings contribute to the understanding of uncertainties and discomfort in the maritime profession and support the notion that anticipating potential discomfort plays a significant role in ship personnel's responses.
Keywords: workload, burnout, uncertainties, discomfort, seafarer, analysis, interaction, maritime profession
JEL Clasifications: C12, L91, M12

1. INTRODUCTION

Emotional burnout and job dissatisfaction may occur in connection with occupational burnout of the personnel, and in addition, work efficiency may decrease and situations such as leaving the ship and the profession may occur. Loss of labour force and experience may occur when qualified personnel leave the profession due to workload, stress and burnout. In such cases, the employer also suffers serious losses. Job satisfaction and job welfare of seafarers should be

made attractive, especially for new officers. These issues are very important in terms of continuity and productivity.

The literature on the psychology of uncertainty in seafarers within the maritime industry sheds light on the significant psychological impact of uncertainty on seafarers' well-being and performance. Lazarus (1999) emphasizes the relationship between stress and emotions, highlighting the role of uncertainty as a stressor. Tavacioglu (2019) If an employee uses derogatory expressions and exhibits a sarcastic attitude towards his/her colleagues and the people he/she serves, there are feelings of alienation and defensiveness underlying these behaviours arising from personalisation. Emotionally exhausted individuals limiting their relations with people and psychologically distancing themselves from people may lead to these behaviours. As a result, we can say that people who experience emotional exhaustion tend to evaluate themselves negatively. Moen, Hollund, and Hetland (2015) conducted a cross-sectional study in the maritime industry, identifying psychosocial factors that contribute to musculoskeletal pain, including the experience of uncertainty. Nielsen, Knardahl, and Copeland (2019) examined the prevalence, comorbidity, and risk factors of posttraumatic stress disorder symptoms in Norwegian adolescents, further emphasizing the psychological consequences of uncertainty. Song, Xia, Ma, and Gao (2018) provided a comprehensive review of seafarers' work environment and occupational health and safety in China, emphasizing the importance of managing uncertainty for seafarers' well-being. Baldwin and Ford (1988) provide insights into the transfer of training, which is crucial for equipping seafarers with skills to manage uncertainty effectively. Elferink and Schellart (2014) conduct a systematic literature review on the relationships between maritime accident characteristics and seafarers' safety behavior, shedding light on the role of uncertainty in safety-related incidents. Ghani and Deshpande (1994) explore the experience of optimal flow in human-computer interaction, which has implications for seafarers' engagement and performance in uncertain and demanding work environments. Özsever and Tavacioglu (2018), in the study it was observed that irregular and long working hours, rapid work environment changes and other organisational or individual factors have a negative impact on seafarers as well as other transport workers and shift workers. Seafarers working under these stress factors are naturally affected from psychophysiological and cognitive aspects and as a result, their overall performance decreases. Jensen, Sørlie, Gjerstad, and Holgersen (2016) investigate the relationship between working hours, coping strategies, and psychological well-being among socioeconomically disadvantaged seafarers. Mo and Zhang (2020) examine occupational stress, job burnout, and the mediating role of psychological capital in Chinese seafarers, offering insights into the psychological consequences of uncertainty and stress in this population. Additionally, Roberts and Bea (2001) draw lessons from high-reliability organizations, providing valuable insights for the maritime industry in managing uncertainty and promoting safety. These references contribute to the understanding of the psychological dynamics and implications of uncertainty for seafarers in the maritime industry. Tavacıoglu (2020) The psychology and non-technical skills (NTS) of the bridge team and other crew have a fundamental role in marine accidents. Some researchers, apart from technical factors, argue that most of the accidents are caused by inadequacy of seafarers to respond properly to cases on the ship. According to Martin Seligman, the founder of positive psychology, happiness is a “thing”and wellbeing is a “structure”. This structure is

not something in itself like air or freedom, but something in a form that emerges with different components that contribute to it. Therefore, it is not possible to define it with a single measurement and the measurement to be made requires bringing together different components (Seligman, 2011). In summary, the literature highlights the importance of addressing the psychology of uncertainty in seafarers and offers insights into training transfer, safety behavior, flow experiences, well-being, and stress management. These findings can inform interventions, policies, and practices that enhance seafarers' resilience, performance, and overall well-being in the face of uncertainty within the maritime industry.

Overall, these studies contribute to our understanding of the link between seafarers' psychology of uncertainty and workload, work stress and burnout in the maritime sector. They highlight the need for interventions and support systems that address the psychological consequences of uncertainty, such as training programs to enhance coping skills, decision-making, and stress management. Additionally, organizational policies promoting mental health support, open communication, and peer networks can play a vital role in mitigating the negative impact of uncertainty on seafarers' psychological well-being and fostering resilience in this unique work environment.

2. METHODOLOGY and RESULTS

This paper focuses on examining the experiences of uncertainty among seafarers and the associated levels of discomfort, while identifying the contributing factors. The findings reveal that seafarers commonly encounter uncertainty in areas that significantly impact their sense of order and motivation in ship life, including relationships with superiors/subordinates, private spaces, and colleagues. These aspects generate substantial uncertainty, exerting a considerable influence on the seafarers' overall experience. The hypothesis posited in this study suggests that the discomfort arising from these uncertainties is the primary factor affecting individuals' well-being, rather than the uncertainties themselves. The survey results demonstrate that, despite variations in the perception of uncertainty among individuals, the discomfort experienced by the majority remains high. The key determinants of this situation are identified as age and length of service among the participants. Uncertainty among individuals on board can stem from various factors. Among these, the primary sources of uncertainty include the insecurity surrounding hierarchical relationships, communication difficulties, and the need to establish harmonious interactions with co-workers. For instance, the prospect of working alongside someone with a history of problems or receiving negative feedback from others can create uncertainty. Additionally, living conditions and challenges encountered in accommodations, such as cramped cabins and shared bathroom facilities, further contribute to the sense of uncertainty.

Particularly, individuals who have previously experienced such problems become even more apprehensive when confronted with the possibility of facing similar issues again. This insecurity significantly impacts the lives of seafarers onboard, to the extent that some may even consider submitting a request for disembarkation solely due to the distress caused by uncertainty, regardless of the actual outcome of the situation.

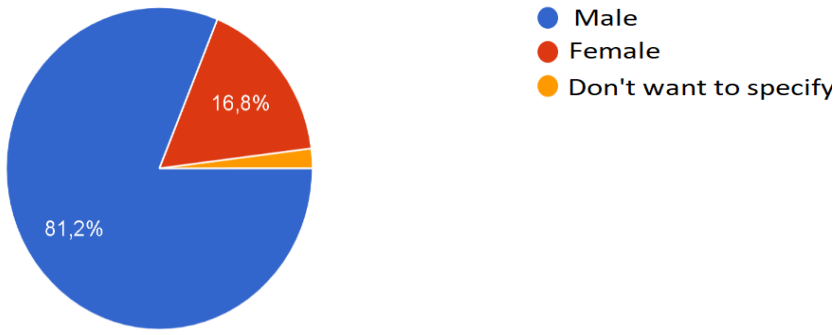

Figure 1 Gender distribution of our survey of factors triggering uncertainty and their discomfort with ship people.

Numerous scenarios onboard ships contribute to the creation of uncertainty. The most influential factors include hierarchical relationships, interpersonal harmony and communication, as well as the conditions and amenities provided in the living quarters. In these ambiguous circumstances, individuals start to experience insecurity, leading to discomfort. Interestingly, the discomfort arising from uncertainty often has a more profound impact than the uncertainty itself. Survey findings support this notion, revealing that even a relatively low level of uncertainty can cause significant discomfort, regardless of the degree of uncertainty experienced. Additionally, past experiences intensify apprehension about potential uncertainties, prompting individuals to avoid risks altogether in order to evade any potential discomfort.

To gain further insights into this subject, a survey was conducted on the Roots of Uncertainty and the Discomfort experienced by seafarers. The survey included 101 participants, encompassing individuals ranging from 19 to 77 years old (Figure 2), consisting of both male and female respondents, as well as those who chose not to specify their gender (Figure 1).

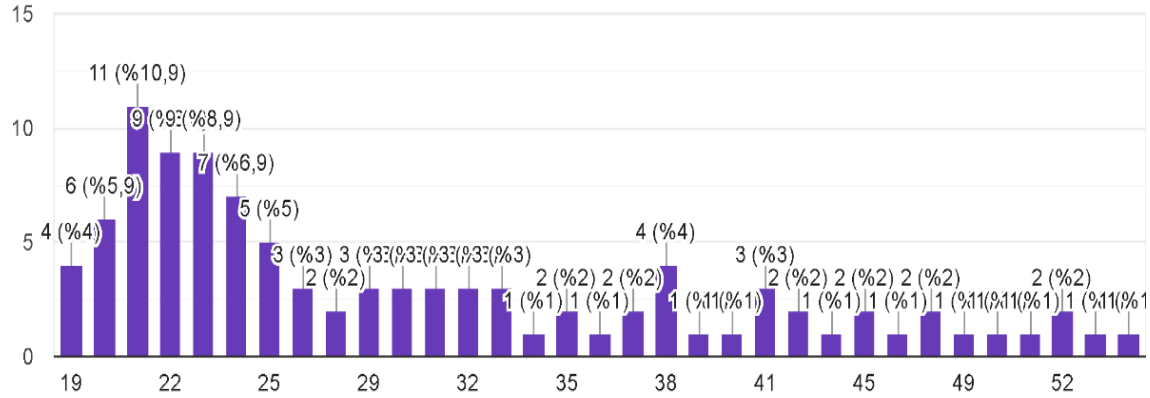

Figure 2 Age distribution of our survey of factors triggering uncertainty and discomfort among ship people.

Participants in the study were also questioned about their maritime service experience, ranging from individuals with no prior ship experience (0 months of service) to those with 35 years of service. This broad spectrum of participants allowed for comprehensive insights and more accurate observations.

The questionnaire employed a unique approach, encompassing one operational question related to situations requiring immediate work on the ship, one hierarchical question, one question regarding colleagues, and one question about private areas in the living space onboard the ship. Following these inquiries, participants were asked to indicate the level of discomfort they experienced in each situation.

To facilitate data analysis, the questions were assigned numerical values from 1 to 7 based on the ANOVA system. Participants' responses were then tabulated accordingly. Additionally, participants were asked to rate their overall level of discomfort, which was also recorded on a scale from 1 to 7.

The responses provided by participants exhibited a wide range of perspectives. The results yielded meaningful interpretations, capturing insights from individuals of diverse age groups and varying lengths of service.

The first question inquired about operational situations that involve uncertain timeframes and necessitate immediate work on the ship. This question aimed to assess the participants' sense of uncertainty in such operational scenarios (refer to Figure 2 for detailed findings).

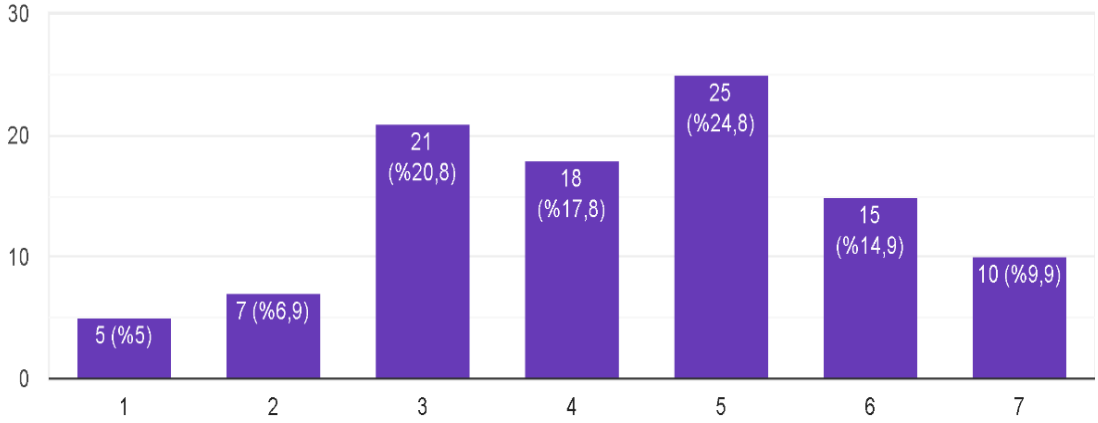

Figure 3 "Maneuver, Channel crossing etc. You're waiting for it, but when it will happen is not yet certain. How much uncertainty does this situation involve for you?" The graphic distribution of our question

The chart presented illustrates the distribution of responses among participants regarding operational uncertainty levels. It reveals that 32.6% of the participants experience lower levels of uncertainty in operational situations, while 17.8% report moderate levels of uncertainty. The majority, comprising 49.6% of the participants, indicate high levels of uncertainty. These findings indicate that a significant proportion of the participants express considerable uncertainty when it comes to operational situations.

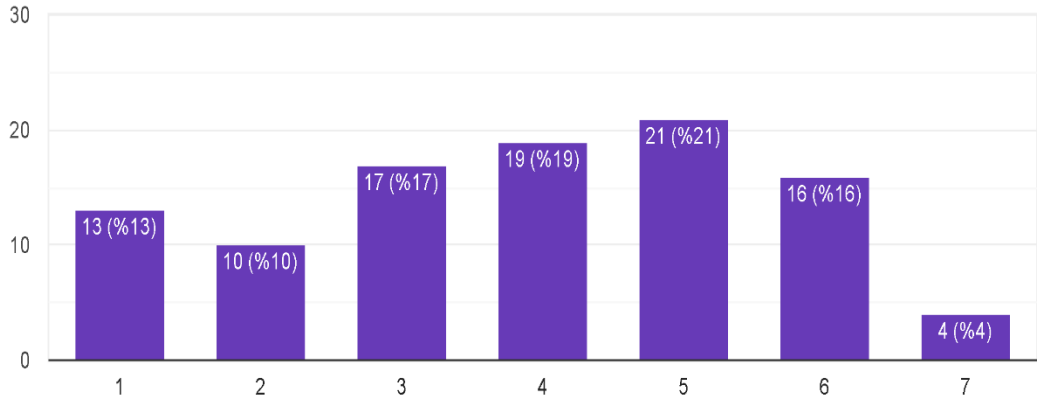

Figure 4 'Maneuver, Channel crossing etc. You're waiting for it, but when it will happen is not yet certain. How much uncertainty does this situation involve for you?" is the graph of the discomfort caused by our question.

The chart presented demonstrates the distribution of discomfort levels among participants in response to operational uncertainties. The findings reveal that 40% of participants reported low discomfort, 19% reported moderate discomfort, and 41% reported high discomfort (see Figure 4).

Interestingly, despite the majority of participants experiencing significant discomfort, the percentage is nearly equivalent to the number of individuals reporting low discomfort. Our data indicates that the age and years of service among participants play a role in this discrepancy. Participants who are older and have more years of service tend to be less affected by these uncertainties due to their accumulated experiences and familiarity with similar situations.

Moving on to our second question, it aimed to assess the level of uncertainty participants felt in hierarchical situations, where uncertainties arise based on the hierarchy within the ship's structure.

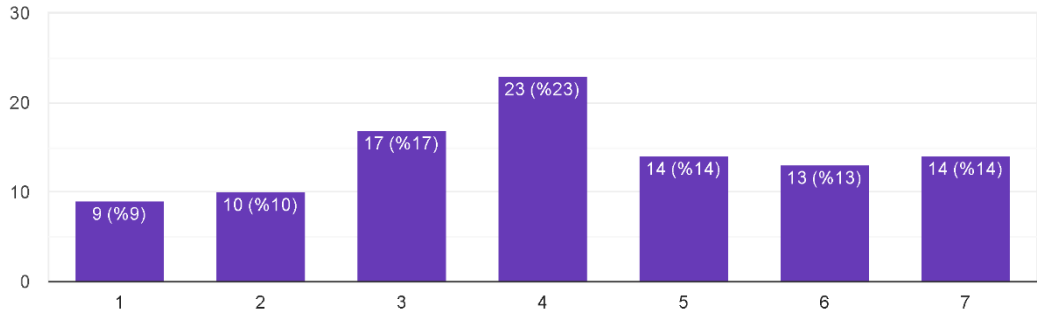

Figure 5 Respondents in our survey said, "A supervisor on board told you he wanted to speak to you privately. Imagine having this situation/experience. How much uncertainty does this situation involve for you?"

The chart displayed illustrates the distribution of uncertainty levels among participants in response to hierarchical situations. According to the data presented, 36% of participants reported experiencing low levels of uncertainty, while 23% reported moderate levels of uncertainty, and 41% reported high levels of uncertainty (refer to Figure 5).

It is notable that the distribution of individuals who feel high and low levels of uncertainty is relatively close. The significant differences observed among these groups can be attributed to variations in participants' years of service in the profession and their ages. These factors appear to play a crucial role in shaping individuals' perceptions of uncertainty in hierarchical situations.

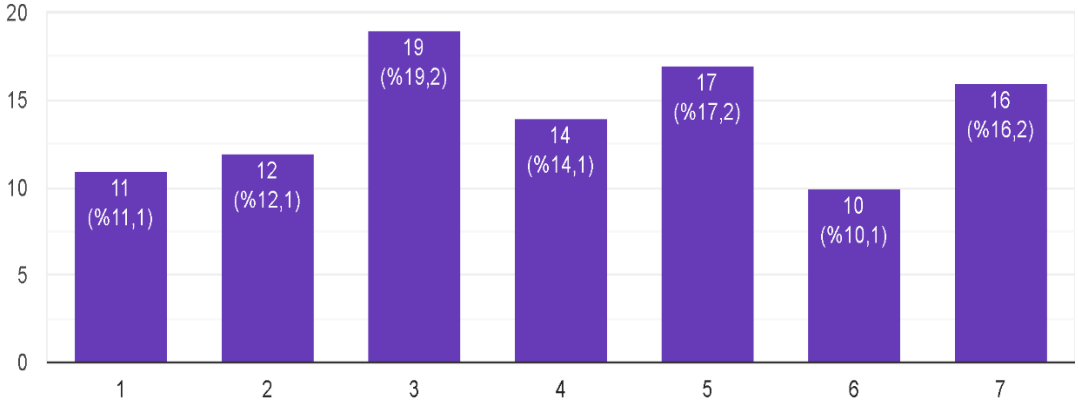

Figure 6 Represents the graph depicting the discomfort experienced by participants in response to the question: "A supervisor on board told you that he wanted to speak to you privately. Imagine having this situation/experience. How much uncertainty does this sit uation involve for you?"

The graph reveals that among the participants, 42.4% reported low discomfort due to the uncertainty arising from hierarchical situations, 14.1% reported moderate discomfort, and 43.5% reported high discomfort (see Figure 6).

Similar to the previous findings, the distributions of individuals experiencing high and low levels of uncertainty are closely aligned. The variation in perceptions can be attributed to differences in participants' years of service in the profession and their ages.

Moving forward, our third question aimed to measure the level of uncertainty individuals would feel when confronted with a completely new environment, new order, and working alongside unfamiliar individuals.

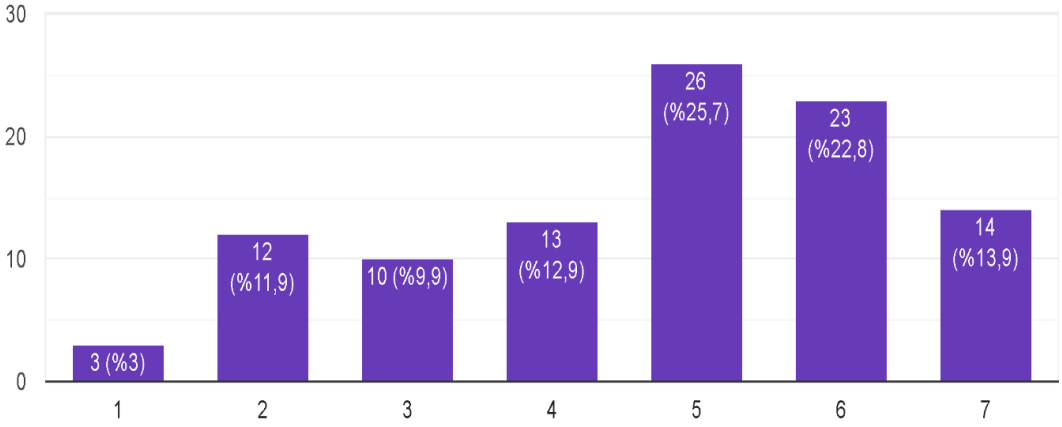

Figure 7 Represents the graph depicting the responses to our question: "You will be joining a ship in a company where you will work for the first time. How much uncertainty does this situation involve for you?"

As observed in our graph, the uncertainty arising from completely new environments, new order, and working with new individuals generates varying levels of uncertainty among seafarers. Among the participants, 24.8% reported low levels of uncertainty, 12.9% reported moderate levels, and 62.4% reported high levels of uncertainty (see Figure 7).
These results indicate that the prospect of operating in completely new environments, adapting to new orders, and collaborating with unfamiliar individuals induces significant levels of uncertainty among the majority of seafarers.

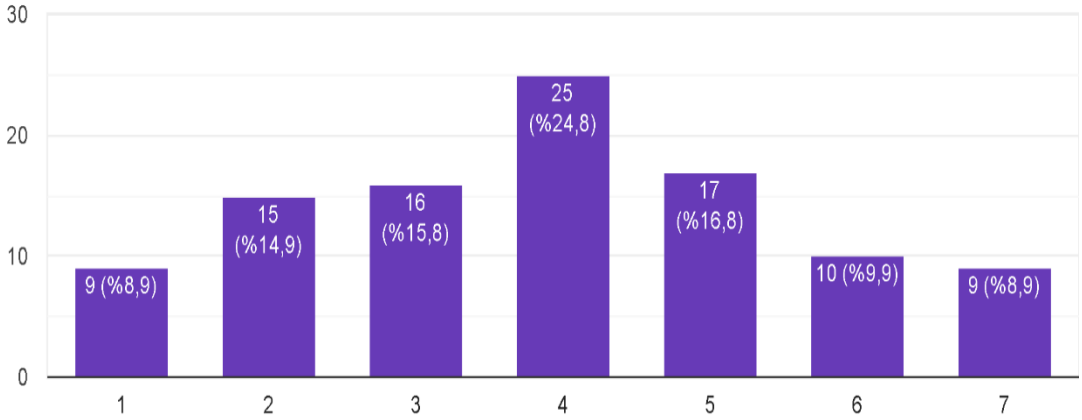

Figure 8 Displays the graph representing the level of discomfort in response to the question: "How much uncertainty does this involve for you if you will embark in a company where you will work for the first time?"

The graph reveals that among the participants, 39.6% reported low discomfort, 24.8% reported moderate discomfort, and 35.6% reported high discomfort when considering the uncertainty arising from entering a completely new environment, adapting to a new order, and working with new people (see Fig. 8).
Upon examining this graph, it becomes apparent that the majority of participants experience lower levels of discomfort due to the uncertainties associated with undergoing a complete change. However, it is noteworthy that the rates of high discomfort and low discomfort are quite close to each other, indicating a potential influence of factors such as years of service and age within the profession.
Moving on to our fourth question, participants were asked about the importance of harmony, communication, and rapport with their colleagues. These aspects hold particular significance for seafarers compared to many land-based professions, as they will be sharing their living space with their colleagues and spending extended periods of 4-6 months living together.

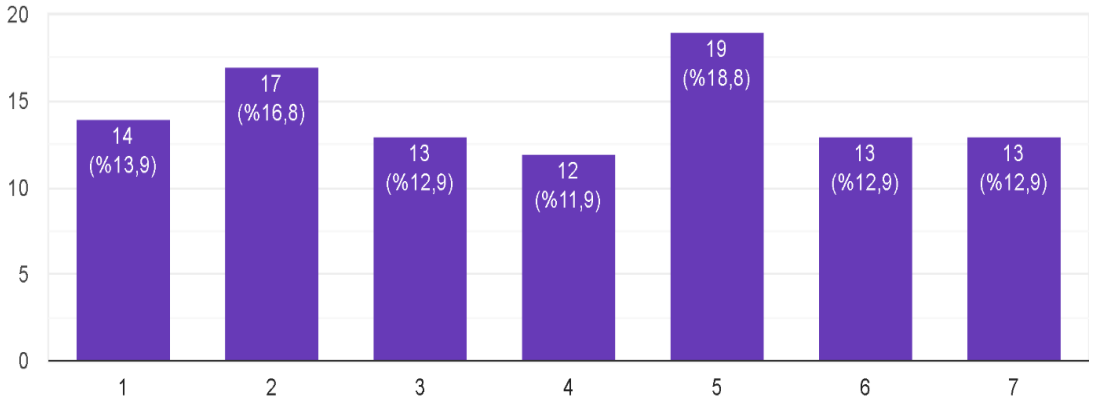

Figure 9 Illustrates the distribution of participants' responses to our question: "You learned that there is a possibility of going back on the same ship with someone you worked with before, but with whom you had a discussion/with whom you could not work in harm ony. How uncertain is this situation for you?"

According to the graph, the uncertainty experienced by seafarers due to a negative relationship with their colleagues in terms of harmony, communication, and getting along varied among participants. Among the respondents, 43.6% reported low levels of uncertainty, 11.9% reported moderate levels, and 44.6% reported high levels of uncertainty (see Fig. 9).

The graph indicates that there is a close distribution between those who feel high and low levels of uncertainty. The differences observed in these distributions can be attributed to variations in years of service and age within the profession.

It can be inferred that individuals with higher age or more experience are better able to anticipate potential scenarios because they have previously encountered similar situations. Their prior experiences contribute to their ability to predict the probable outcomes of such circumstances.

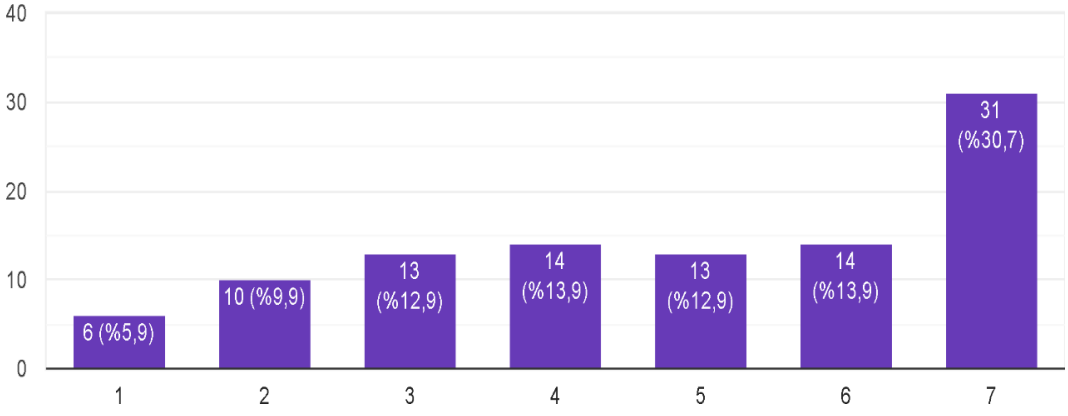

Figure 10 Displays the distribution of participants' responses to our question: "You learned that there is a possibility that you will go on the same ship again with someone you worked with before, but with whom you had an argument or could not work in harmony wi th. How uncertain is this situation for you?"

The graph illustrates that among the participants, 28.7% reported low levels of discomfort, 13.9% reported moderate levels, and 57.5% reported high levels of discomfort when it comes to working with a colleague with whom they had a negative experience related to harmony, communication, and getting along with colleagues (see Fig. 10).

In contrast to previous graphs, we observe that 30.7% of the participants directly indicated the highest level of discomfort. This finding suggests that many seafarers experience significant discomfort even when they are on the same ship with colleagues who are incompatible or problematic, regardless of the duration of their stay on the job. This can be attributed to the fact that seafarers share their living space with their colleagues and spend extended periods of 4-6 months living together, intensifying the impact of such relationships on their overall experience.

Our fifth and last question is about the possibilities of our participants in the living space, the conditions they are in and the privacy of their private spaces. This is a very important issue for the people of the ship, because the conditions under which they will live and what opportunities they will have is a very important issue for people who have to spend 4-6 months of their lives, and in some cases even longer.

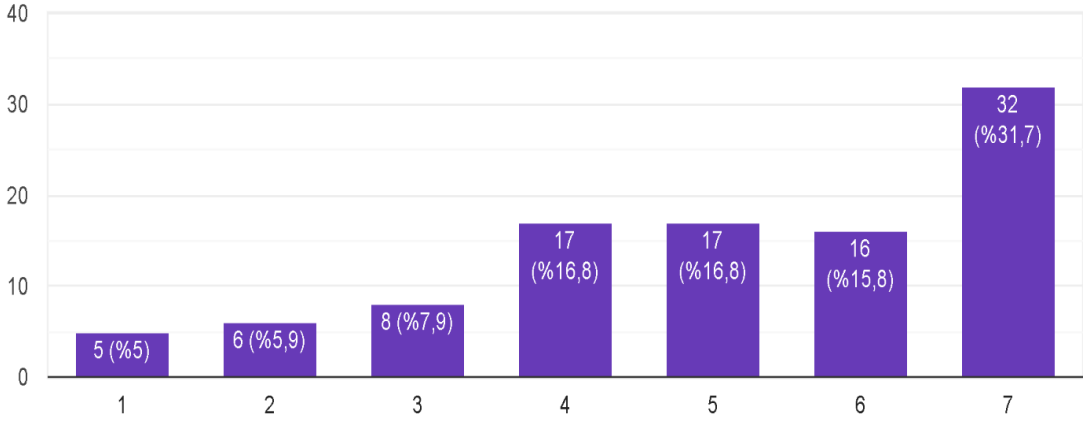

Figure 11 Presents the distribution of participants' responses to the question: "Private areas (toilet, bathroom) are not in the cabins on the ship you are joining, and they are for common use and you do not know them because you have not worked with your colleag ues before. How much uncertainty is this situation for you?"

The graph indicates that 18.8% of the participants reported low levels of uncertainty regarding the shared facilities, conditions, and privacy of private areas in the living quarters (see Figure 11).

Similar to the findings in the previous question regarding discomfort, we observe a significant level of unease among participants regarding the common use of private areas. The graph reveals that the highest percentage, 31.7%, expressed the highest level of uncertainty in this situation. The prospect of sharing communal private areas with unfamiliar individuals for a period of 4-6 months or longer significantly amplified feelings of uncertainty.

This suggests that the absence of private facilities and the need to share common areas with unknown colleagues had a profound impact on the participants, causing a heightened sense of uncertainty and discomfort.

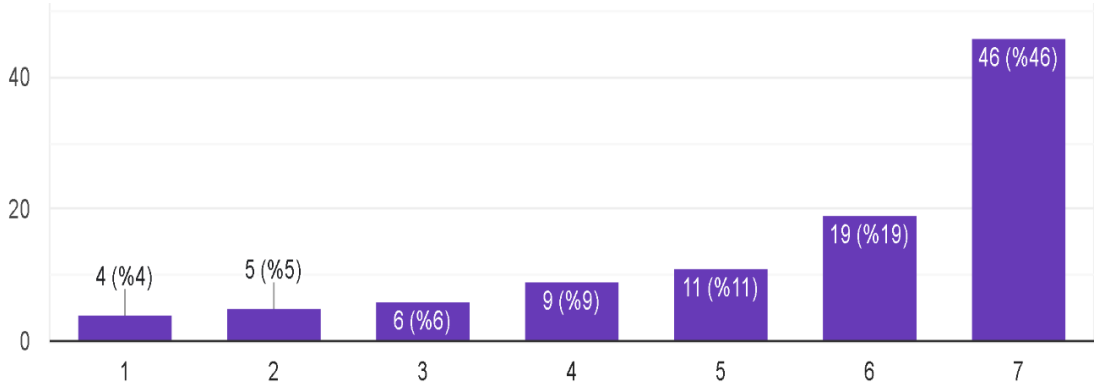

Figure 12 'The private areas (toilet, bathroom) on the ship you are joining are not in the cabins and are for common use and you do not know them because you have not worked together with your colleagues before, how much uncertainty is this situation for you? Distribution of the answers of our participants' discomfort to our question

As can be seen in our graphic, the discomfort felt by the participants about the facilities in the living space, the conditions they live in, and the privacy of private areas was low in 15%, moderate in 9%, and high in 76%. (Fig. 12)

Again, as we have seen, the highest level of discomfort in this question is marked many times by a clear margin. This shows us that the people of the ship found the discomfort arising from the possibility of perforation of their privacy due to the intense and long period of an uninterrupted part of their lives and the fact that private areas were in common use very disturbing. In particular, neither the highest level of perceived discomfort option was the highest ticked discomfort option compared to the other questions.

Our survey findings revealed that the discomfort experienced by ship personnel is more significant than the uncertainties they face in operational, hierarchical, change-related, colleague-related, and private area-related situations. Participants demonstrated a high level of discomfort due to their awareness or anticipation of the potential adverse outcomes associated with these uncertainties. Consequently, individuals working on ships remain vigilant and attentive to uncertainties and the resulting discomfort they may encounter. The survey results indicate that the primary concern for ship personnel lies not in the uncertainties themselves but in the discomfort that may arise if these uncertainties manifest unfavorably. Interestingly, participants exhibited a greater fear of the inconveniences that could arise from these uncertainties rather than the uncertainties themselves, including issues related to privacy, working with colleagues, significant changes, and hierarchical problems.

3. RESULT

Based on the analysis conducted in the survey, it was observed that the discomfort caused by uncertainty has a greater impact on ship personnel compared to the uncertainty itself. The survey included participants of various ages, services, and both genders, allowing for an examination of potential gender differences. It was found that age and years of service were the most influential factors in terms of uncertainties and discomfort, while gender did not play a significant role. This indicates that the maritime profession is not limited to a specific gender and that both men and women are equally capable of performing the job.

The equation used in the thesis to calculate uncertainties and the resulting discomfort is based on the work of Küçükkömürler (2019). Uncertainties were rated on a scale of 1 to 7, with 1 representing no uncertainty and 7 representing very uncertain. Similarly, the discomfort questionnaire used a scale of 1 to 7, with 1 indicating no discomfort and 7 indicating very uncomfortable. Age categories ranged from 18-22, 23-27, 28-32, 32-36, 36-40, and 40+, while years of service categories included 0, 6-12, 12-18, 18-30, 31-45, 46-60, and 60+. The number of years of service for which participants were legally eligible for promotion determined the upper limit of the service categories.

A repeated measures ANOVA was conducted using 12 themes and 3 discomfort levels to examine differences in discomfort ratings. Mauchly's test for sphericity was violated, so Greenhouse-Geisser scores were used to address the violation. The analysis revealed that both the themes ($F(8.91, 1559.24) = 202.76$, $p < .001$, $\eta 2 = .54$) and discomfort levels ($F(1.78, 301.53) = 1054.66$, $p < .001$, $\eta 2 = .85$) had a significant effect on discomfort ratings, as well as their interactions ($F(15.65, 2738.17) = 30.27$, $p < .001$, $\eta 2 = .15$). Pairwise comparisons showed significant differences between most theme pairs ($p < .05$) except for a few pairs. Additionally, the discomfort levels differed significantly, with low-level discomfort at M=3.06, moderate-level discomfort at M=4.34, and high-level discomfort at M=4.99.

The results indicate that the uncertainty themes ($F(2, 150) = 69.32$, $p < .001$, $np^2 = .48$ for uncertainty theme 3, and $F(2, 150) = 470.65$, $p < .001$, $np^2 = .86$) and their interactions ($F(4.300) = 18.82$, $p < .001$, $np^2 = .20$) had significant effects. Bonferroni-adjusted pairwise comparisons showed significant differences between all pairs ($p < .001$).

These findings highlight the significant impact of uncertainty-related discomfort on ship personnel and emphasize the importance of considering age and years of service in understanding these effects. The survey data support the notion that discomfort resulting from uncertainties is a major concern for ship personnel, and their ability to anticipate potential discomfort plays a significant role in their responses.

In order to investigate the statistical effect of the interaction between uncertainty and discomfort on the participants' responses to uncertainty, a two-way designed ANOVA was conducted. The results indicated that the main effect of uncertainty themes was not significant ($F(2, 150) = .521$, $p = .595$). However, the main effect of discomfort manipulations was significant ($F(2, 150) = 14.20$, $p < .001$, $p^2 = .159$), as well as the interaction between uncertainty and discomfort ($F(4, 300) = 5.23$, $p < .001$, $p^2 = .065$).

Pairwise comparisons with Bonferroni adjustment showed that participants in the low-discomfort manipulation condition ($M = 2.908$, $SE = .126$, 95% CI [2.658, 3.158]) had lower scores than those in the moderate discomfort condition ($M = 3.535$, $SE = .139$, 95% CI [3.258, 3.812]) ($p < .001$, 95% CI [-.924, -.330]), and the high discomfort manipulation condition ($M = 3.505$, $SE = .157$, 95% CI [3.192, 3.819]) ($p < .001$, 95% CI [-.959, -.236]). However, there was no significant difference between the moderate and high discomfort conditions ($p = 1.00$, 95% CI [-.284, .344]).

Regarding the pairwise comparisons within the interaction, a similar pattern to the main effect of discomfort manipulation was observed for the initial uncertainty theme. For the first uncertainty theme, the low discomfort condition ($M = 2.414$, $SE = .184$, 95% CI [2.048, 2.780]) was significantly different from the moderate discomfort condition ($M = 3.735$, $SE = .211$, 95%

CI [3.315, 4.156]) (p < .001, 95% CI [-1.947, -.696]), as well as from the high discomfort condition (M = 3.601, SE = .247, 95% CI [3.109, 4.093]) (p < .001, 95% CI [-1.789, -.585]), while there was no difference between the moderate and high discomfort conditions (p = 1.00). For the second uncertainty theme, only the low discomfort scores (M = 2.882, SE = .190, 95% CI [2.503, 3.261]) and high discomfort scores (M = 3.583, SE = .223, 95% CI [3.139, 4.026]) were significantly different (p = .007, 95% CI [-1.243, -.159]). There were no significant differences between conditions for the third uncertainty theme (p < .05 for all comparisons).
The field of study encompassed participants of various ages, services, and both genders, aiming to understand whether there were differences in experiencing uncertainties and discomfort on the ship. With this extensive pool of data, the study achieved significant and meaningful results. The inclusion of participants from different backgrounds and experience levels allowed for a comprehensive understanding of the topic.

4. CONCLUSION

In conclusion, the analysis of this survey data on the psychology of uncertainty in seafarers, which is directly related to workload, work stress and burnout, revealed that the discomfort caused by uncertainty has a greater impact on seafarers than the uncertainty itself. The study included participants of various ages, services, and both genders, demonstrating that the maritime profession is not limited to a specific gender. Age and years of service were found to be influential factors in experiencing uncertainties and discomfort, while gender did not play a significant role.
The equation used in the study to calculate uncertainties and discomfort was based on previous work by Küçükkömürler (2019). The results indicated that both the uncertainty themes and the discomfort levels had significant effects on discomfort ratings, as well as their interactions. Pairwise comparisons showed significant differences between most theme pairs, and the discomfort levels also differed significantly.
These findings highlight the significant impact of uncertainty-related discomfort on ship personnel and emphasize the importance of considering age and years of service in understanding these effects. The study supports the notion that discomfort resulting from uncertainties is a major concern for ship personnel and that their ability to anticipate potential discomfort plays a significant role in their responses.

REFERENCES

- Lazarus, R. S. (1999). Stress and emotion: A new synthesis. Springer Publishing Company.
- Tavacioglu, L., Tac, U., Eski, O., ve Gokmen, N. (2019). Burnout and job satisfaction among
- Turkish oceangoing seafarers. International maritime health, 70(4), 232-238.
- Moen, B. E., Hollund, B. E., & Hetland, J. (2015). Psychosocial factors and musculoskeletal pain: a cross-sectional study of the maritime industry. BMC musculoskeletal disorders, 16(1), 189.

- Nielsen, M. B., Knardahl, S., & Copeland, W. E. (2019). Symptoms of posttraumatic stress disorder in a national cohort of Norwegian adolescents: Prevalence, comorbidity, and risk factors. Journal of traumatic stress, 32(6), 833-842.
- Ren, Y., & Li, X. (2020). Investigating seafarers' safety behavior intention: A perspective of self-efficacy and cognitive bias. Safety Science, 121, 618-625.
- Song, H., Xia, X., Ma, Z., & Gao, J. (2018). A review of seafarers' work environment and occupational health and safety in China. Safety Science, 109, 378-384.
- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. Personnel Psychology, 41(1), 63-105.
- Elferink, S. J., & Schellart, A. J. (2014). Exploring the relationships between maritime accident characteristics and seafarers' safety behavior: A systematic literature review. Safety Science, 70, 246-257.
- Özsever, B. ve Tavacıoğlu, L. (2018). Analysing the effects of working period on
- psychophysiological states of seafarers. International Maritime Health, 69(2), 84-93.
- Ghani, F., & Deshpande, S. P. (1994). Task characteristics and the experience of optimal flow in human–computer interaction. The Journal of Psychology, 128(4), 381-391.
- Jensen, O. C., Sørlie, V., Gjerstad, J., & Holgersen, M. (2016). Working hours, coping, and psychological well-being among socioeconomically disadvantaged seafarers. Maritime Policy & Management, 43(5), 581-595.
- Mo, H., & Zhang, S. (2020). Occupational stress and job burnout among Chinese seafarers: The mediating role of psychological capital. International Maritime Health, 71(1), 17-25.
- Roberts, K. H., & Bea, R. (2001). Must accidents happen? Lessons from high-reliability organizations. Academy of Management Perspectives, 15(3), 70-78.
- Tavacıoğlu L, Eski Ö, Demir B, Gökmen N, Algan M. The non-technical skills of bridge officers on ship navigation: An assessment in terms of interpersonal skills. Indian Journal of Science and Technology, (2020) 13(46), 4587-4594.
- Seligman ME. Flourish: A visionary new understanding of happiness and well-being. New York, Free Press; (2011).