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MARITIME PSYCHOLOGY: A STUDY ON EVALUATION OF SEAFARERS AGGRESSION TENDENCIES

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ABSTRACT

Rapid development in technology and regulations due to major incidents and accidents in the maritime sector challenges seafarers now more than ever. Technological, educational, and other significant changes in the seafaring industry have increased professional and social demands at sea and compelling the psychosocial wellbeing of seafarers. In this study, we aimed to investigate and determine how severe the mental state of Turkish mariners and its expected effects on the maritime community. Life on-board can be utterly stressful and many studies, show that there is a correlation between stress and aggression along with other undesirable mental conditions. It was reached reasonable outcomes about aggression levels of Turkish Seafarers with the use of the Buss-Perry Aggression Questionnaire. Firstly, Cronbach's Alpha values have been calculated for each scale of the test, then a conformity factor analysis has been carried out. Results of the questionnaire have been evaluated regarding sample groups of gender, rank, educational institution, and vocational ship type. When the questionnaire scales on physical aggression, verbal aggression, anger, and hostility were examined, significant differences have been found on verbal aggression regarding gender and the difference in educational institutions and on anger depending on rank.

Keywords: *Maritime Psychology, Buss-Perry Aggression Questionnaire, Human Factor, Maritime Business*

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DENİZCİLİK PSİKOLOJİSİ: DENİZCİLERİN SALDIRGANLIK EĞİLİMLERİNİN DEĞERLENDİRMESİ

ÖZ

Denizcilik sektöründeki büyük olaylar ve kazalar nedeniyle teknoloji ve yönetmeliklerdeki hızlı gelişme, denizcileri artık her zamankinden daha fazla zorlamaktadır. Denizcilik endüstrisindeki teknolojik, eğitimsel ve diğer önemli değişiklikler denizde mesleki ve sosyal talepleri artırmış ve denizcileri psikososyal açıdan zor durumda bırakmıştır. Bu çalışmada, Türk denizcilerinin ruhsal durumunun ne kadar zorlu olduğunu ve denizcilik camiası üzerinde beklenen etkilerini araştırmayı ve tespit etmeyi amaçladık. Gemide yaşam son derece stresli olabilir ve bizimki gibi birçok çalışma, diğer istenmeyen zihinsel koşullarla birlikte stres ve saldırganlık arasında bir ilişki olduğunu göstermektedir. Buss-Perry Saldırganlık Anketi kullanılarak Türk denizcilerin saldırganlık düzeyleri konusunda makul sonuçlara ulaşılmıştır. İlk olarak Cronbach Alpha katsayıları her ölçek için hesaplanmış, ardından doğrulayıcı faktör analizi yapılmıştır. Anketin sonuçları, cinsiyet, rütbe, üniversite ve çalışılan gemi tipi gruplarına göre SPSS-26 programı kullanılarak değerlendirilmiştir. Fiziksel saldırganlık, sözlü saldırganlık, öfke ve düşmanlık üzerine anket ölçekleri incelendiğinde, cinsiyete bağlı olarak sözlü saldırganlıkta, rütbeye bağlı olarak öfkede anlamlı farklılıklar bulunmuş ve eğitim kurumlarındaki farklılığın sözel saldırganlık ölçeğinde önemli bir faktör olduğu görülmüştür.

Anahtar Kelimeler: Denizcilik Psikolojisi, Buss-Perry Saldırganlık Ölçeği, İnsan Faktörü, Deniz İşletmeciliği.

1. INTRODUCTION

Maritime transportation has been the main transportation model and one of the pillars of the global economy with making up almost 90% of it while providing cost-efficient transportation services (UNCTAD, 2019). As globalization continues to grow and improve, the requirement for developing new transportation models and even newer technologies and the improvements in the existing models have increased the importance and demand for the maritime industry. The competitiveness that has occurred in the light of this demand has caused the creation of a threat for maritime safety and safety of navigation.

Major accidents in maritime trade history such as Titanic, Exxon Valdez, Torrey Canyon etc. have resulted in the creation and surfacing of new regulations and revisions to existing regulations which have emphasized technical standards and economic aspects of the business. Although, in recent years, the human factor has been recognized as the primary root cause of major incidents that resulted in severe consequences

to the environment, world economy, and humanity (Özsever and Tavacıoğlu, 2018).

Maritime psychology has been described as “the study and practice of the interplay between human behaviour and the maritime environment”. The human element assumes an extremely significant function in systematic design and operations of maritime transportation. Ships navigate and manoeuvre in seas and harbours with heavy traffic, as well as narrow and dangerous waterways. The psychophysiological state of the seafarers working in the compelling environments of seamanship and the ship has to be stable. Furthermore, the maritime profession requires a comprehensive collaboration and a significant level of physical and mental capabilities. The dangerous and therapeutic aspects of working and living on-board have been acknowledged as putting a mental cost to seafarers significantly (MacLachlan, 2017).

In maritime environment two terms have specific importance: “safety” and “security”. There are sharp differences between these terms. The meanings of the terms were clarified by Idsø Skavland and Mejdell Jakobsen (2000) (quoted in Albrechtsen, 2003). Albrechtsen (2003) quoted that “Safety is protection against random incidents. Random incidents are unwanted incidents that happen as a result of one or more coincidences. Security is protection against intended incidents. Wanted incidents happen due to a result of deliberate and planned act.”.

IMO promulgated the International Safety Management (ISM) Code, which will also serve its own founding purpose. This code became mandatory on 1 July 2002 for all ocean-going merchant ships and yachts larger than 500 GT (IMO, 2002). A significant reduction in maritime accidents and casualties has been achieved as a result of strict implementation of ISM procedures. Safety is always a top priority, especially for those working at sea. Human element in the maritime sector is significant for both the safety and security of ship and the prosperity of all seafarers in an impervious and complex social system like an on-board environment. In such a social environment, injuries or death could have traumatic impacts on seafarers, besides, most of the seafarers face dangers such as piracy, severe accidents, and stowaways which are all stressful events (Jensen and Oldenburg, 2019). Being away from the normality of a regular life on land, confinement, long working hours, and being homesick are all difficulties seafarers have to bear while carrying out their daily work routines. Even nowadays social conditions are better than before (Alderton et al. 2004). With these difficult conditions, ever-growing responsibilities of seafarers have significantly increased via safety and security of ships

operation, machinery, and equipment (Borodina, 2013). Accordingly, Lipowski et al. (2014) indicated that seafarers are included in a professional group that carries the highest risk for stress, Jezeswka et al. (2006) emphasized the mental wellbeing of seafarers, and Schager (1997) stated that modern scientific psychology application could be beneficial for the maritime industry workers.

Furthermore, Smith et al. (2006) had stated that the psychological and physiological stressor factors originating from on-board compelling working environments. In such occupation which environmental effects such as noise and ship motion on the sea and organizational and operational factors such as working hours, number of on-board personnel and consistency of port of calls combined with the effects of psychologic coercion may not only cause accidents with severe consequences and harm but also affects well negatively being of people, human element or human factor is a very top-line subject in consideration with the maritime industry and maritime studies. As required by the Maritime Labour Convention 2006 (MLC 2006), in on-board working environments, high levels of stress should be investigated, evaluated, pursued and if possible corrected. MLC 2006 also recommends the consideration of specific psychological problems that spring from the shipboard environment.

Considering many problems seafarers face due to compelling conditions of on-board life, this study aims to emphasize on mental problems of seafarers and research whether physical aggression, verbal aggression, hostility, and anger tendencies of seafarers are dependent on demographic characteristics such as gender, rank, nationality, educational institution and ship type.

For evaluation, the Buss-Perry Aggression Questionnaire has been conducted on a group of seafarers. For the validity and reliability of the scale, conformity factor analysis has been carried out using AMOS-21 package and on various demographic features and statistical analysis has been carried out via Statistical Package for the Social Sciences 26th version (SPSS-26) for determining the significance.

2. CONCEPTUAL FRAMEWORK

There is a need to create a study to understand the stimulating working environment on ships. Walsh-Danishmandi and Mac Lachlan (2000) specified the size of the maritime sector as enormous and frankly, even though people experience personal dangers and while working regularly. Teamwork is very crucial to maintain the safety and security of the ship. Watchkeeping officers are known as one of the most vital

members of the crew (Uğurlu, 2015). Ship Officers are required to get trainings and necessary certification to be qualified officers on-board ships. Standards of Training, Certification, and Watchkeeping (STCW) Convention standardized and unified the essential training. According to the STCW, every deck officer candidate must finish the training A-II/1 as indicated in the STCW convention successfully to be able to work on-board of the commercial vessels (IMO, 2011). Mac Lachlan (2017), indicates that safety manners, extending from risk perception to approach to safety equipment and search and rescue activities, should always be a significant condition of the maritime industry. Thus, every watchkeeping officer must guarantee safety and security of the ship, his/her crew and his/her cargo and its operations, navigational watchkeeping, ship maintenance, necessary drills, test and controls, supply operations, etc. As Jones et al. (2005) and Uğurlu et al. (2012) mentioned, when fulfilling their jobs, officers of the ship may encounter situations that are not favourable and unpleasant such as rough weather conditions, unsafe working conditions, inadequate rest hours, and/or interminable work hours, traffic, pressure from the management and/or charterer, frequent inspections and security risks of a life at sea.

International Maritime Organization has been congregated in many assemblies for evaluating the problems those seafarers have experienced. During the Manila Assembly in 2010, IMO recommended to the maritime corporations and member countries to frame the seafaring sector to become more attractive for newcomers and seafarers of both genders from this sector. Ameliorate the training standards, being sure that every seafarer has satisfactory living conditions, a suitable working environment, and enough opportunities for social capabilities on-board, motivating cadets, and equal working and living opportunities to female seafarers at sea can be listed as some of the recommendations by IMO (IMO, 2011).

Carter and Schreiner (2013) have worked on some problems considering psychological factors that are stated as could be important in the maritime sector. Those include job descriptions, working durations, and manning proportions, piracy and other crimes with their interrelating trauma, incidents and accidents with high severity, injury and/or death - some by suicide- of seafarers, various health risks caused by working environment in context with not only working conditions but also caused by carrying dangerous cargoes which require special conditions for handling, safety and security requirements, motion sickness and fatigue effect state of seafarers' psychology and physiology.

One of the most important factors affecting the professional on-board life is the working conditions of seafarers. In past years many

collaborated studies on neuroscience, psychology and mental well-being have shown those are affected by long-term and short-term stress (Southwick et al. 2014). In literature, various studies regarding the working conditions of seafarers have been done (Hansen and Pedersen, 1996; McNamara et al. 2000; Baulk and Reyner, 2002; Bloor et al. 2004; Pik, 2007; Bal 2011; Louie and Doolen, 2007; Mitroussi, 2008; Orosa et al. 2011; Uğurlu et al. 2012; Taç et al. 2013; Beşikçi Bal et al. 2016; Özsever and Tavacıoğlu, 2018; Köseoğlu et al. 2019; Erdem and Tavacıoğlu, 2019). These studies cover the undesirable working conditions, poor environmental conditions, insufficient rest hours, insufficient social life, fatigue as well as constantly being on-board and being in the maritime transportation environment which has high risk, subsistent dangers, and unexpected safety situations at sea. The Compendium of Maritime Labour Instruments in its revised second edition published in 2015 has summarized how the maritime industry supposed to be working, which contained in the MLC 2006; Seafarers' Identity Documents (Revised) Convention (ILO, 2003); and the Work in Fishing Convention and Recommendation (ILO, 2007). These documents are about relations between people working and living in difficult and complex conditions that would need a high degree of teamwork, communication skills, physical and cognitive abilities, and human interaction (ILO, 2006). Even if the point of requirements and effects of on-board life of seafarers is considered as high, MacLachlan (2017) mentions that the conventions which are addressing in a relation of human behaviour exclude the term "psychology" (Köseoğlu, 2018, Köseoğlu et al. 2019).

Violence, which can be defined as aggression, is used for the behavioral and uncontrolled manifestation of anger, while hostility refers to the more chronic form of anger (Soykan, 2003). Human and science history still argues on the aggression and its source, effects, and its results. It is possible to observe aggression in different layers among people and society. Researchers are trying to clarify the relationship between personal relations and mental health explain the relationship between psychological symptoms and sleeping. Aggressive behaviours hold many other concepts under themselves. Violence, hostility, anger, verbal assaults are considered under the concepts of aggression. Ramirez and Andreu (2006), indicates that verbal insults, mocking, and shouting are under the concept of verbal assault. Haskan and Yıldırım (2012) and Tafrate et al. (2002) specify anger as an emotion in situations when people cannot supply their needs or keep under unwanted situations. Negative ideas developed towards others is explained as hostility (Demirtaş Madran, 2013). On the other hand, violence is explained as intended and hurtful physical strikes, fractures, bodily harm towards other people (Anderson and Bushman, 2002; Boxer and Tisak, 2005; Ramirez and Andreu, 2006). Hence, aggression ought to

be considered as a behavior developed with impairing different layers of negative attributes.

The causes of mental illness among seafarers according to the International Committee on Seafarers' Welfare (2009) are; stress, harassment, anxiety, fatigue, disruptive thinking and behaviour, and alcohol and drugs addiction, all of which caused by isolated lifestyle, homesickness, lack of shore leave, job retention and long working hours, cultural issues, on-board safety and security risks. One of the main psychological challenges that seafarers face is homesickness and the main cause of it is separation from spouses and families. Seafarer's mostly aware of the problems that their family face when they are away. Also, when they came back home, they realize a lot of things about their family changes. Thus, many seafarers face 2 types of homesickness; firstly, when they are on-board and they miss their family; and the other one is when they are at home and they yearn for the ship. For a recognizable sum of the seafarers, this complexity is solved by the usage of alcohol and drugs.

There are many articles according to Badawy (1998), about the relationship between aggression and alcohol and drug consumption. Alcohol causes the cerebral indolylamine 5-hydroxytryptamine (5-HT or serotonin) deficiency which causes aggression.

Seafarers have often been seen as heavy smokers and drinkers by the general public. Clinical studies have confirmed most of the maritime population has addictions (Brun-Gulbrandsen and Irgens-Jensen, 1967). According to the literature review carried out by Pougnet et al. (2014), regarding the assessment on the prevalence of addiction in seafarers, reveals that 63.1% of the seafarers are smokers, 14.5% are hazardous drinkers and 3.4% are constant smokers of cannabis. Although the studies were regarding the "soft" substances, not enough studies were found on the usage of "hard" substances such as; heroin, cocaine, sedatives or other hard drugs.

Certain drugs related to assertive behaviour including anabolic steroids, cocaine, amphetamines, sedatives, opiates, and hallucinogens, have been known to result in aggression by suppressing neurotransmitters like dopamine, norepinephrine, gamma-aminobutyric acid, and serotonin (Anderson and Bokor, 2012).

Currently in the shipping industry, operating a vessel with a crew of the same nationality is nearly impossible. Multinational crews are a regular occurrence on on-board manning processes while according to research done in 2010 "multi-nationally" operated ships occupy more than 80% of

the world's merchant fleet (Hanzu-Pazara, R. and Arsenie, P., 2010). Language barriers burdens seafarers that represent a serious risk in maintaining high-quality operation and management which is crucial to create a qualified and safe operation onboard ships. Considering communication barriers on-board both in social and operational processes causes difficulties in living in such complex working environments.

Mobbing is a key problem on harassment and bullying onboard ships. Kum and Ertas (2016) states that in the relationship regarding mobbing and demographic parameters, sectoral, educational and rank parameters have been examined as effective.

Ziello et al. (2013) indicate, the traumatic experiences such as kept in captivity a hostage by pirates could lead to relevant psychopathological disorders in victims.

A variety of studies shows that there are multilayer connections and relationships among different physiological parameters about aggression. Researchers found a significant relationship between social problem solving (Albayrak Sargin, 2008), adaptation in social relationships (Crick and Grotpeter, 1995; Deluty, 1979; Nicki, 1996), and negative social anxiety (Kurtyılmaz, 2011). Furthermore, there is a meaningful connection between aggression and being suicidal (Brown et al. 1982), narcissistic personality (Bushman and Baumeister, 1998), anti-social personality disorder (Algül et al. 2009), wrong usage of narcotic drugs (Tani et al. 2001), usage of alcohol (Denson et al. 2007). In addition to all, there is a negative relationship between increased aggression and empathy (Kaukiainen et al. 1999), self-confidence (Donnellan et al. 2005), emotional intelligence (Kaynak, 2013). Sometimes feelings of anger and frustration can stem from real and inevitable problems in life. Cultural beliefs such as "every problem has a solution!" increase the feelings of frustration when we cannot find a solution. Feelings of anger are natural and healthy emotions experienced in such situations (Kökdemir, 2004). As other researchers indicate, there is a clear negative relation between aggression and positive personal characteristics, in the contrary, positive relation between aggression and negative personal characteristics.

3. METHODOLOGY

It is a known fact that seafarers become aggressive due to the complex emotional intensity of being away from their loved ones and home, working environment problems, extreme fatigue, insufficient sleep, and stress factors. This study aims to determine the aggression state of Turkish Seafarers in relation to demographic characteristics. In this study,

the mental state of the Turkish seafarers are evaluated based on physical aggression, verbal aggression, hostility, and anger tendencies by utilization of a Buss-Perry Aggression questionnaire. The results are evaluated via statistical analysis software. Questionnaire implemented on the Turkish language due to participants is Turkish. A pre-translated form from "The Reliability and Validity of the BPAQ-Turkish Version (BPAQ-T)" by Demirtaş Madran (2013) has been utilized.

BPAQ-T was distributed to volunteering participants through e-mail and social media platforms. For the analysis of the results gathered from the BPAQ, Statistical Package for the Social Sciences 26 (SPSS 26) program has been utilized regarding samples groups of gender, rank, education, and vocational ship type. The sample size has been established regarding the literature on maritime studies. The study has been conducted an analysis using interpretive and quantitative methods. Firstly, Cronbach Alpha reliability test has been carried out to research the internal validity of the scale. The normality of the acquired results from the questionnaire has been evaluated using the "Shapiro-Wilk W test". Then the results have been analysed according to demographic information that has been gathered from the questionnaires using the "Kruskal Wallis-H test" for groups with more than two subjects and the "Mann Whitney-U test" for investigating two independent samples, which are determined as the gender information in this study. The results have been evaluated according to statistical analysis regarding significant differences, using 0.05 p-value significance level indicating a 5% risk of an existing difference when there is no actual difference. Finally, to analyse the validity and reliability of the scales, conformity factor analysis has been carried out utilizing AMOS 21 package.

3.1 Buss-Perry Aggression Questionnaire

There are several questionnaires for assessing anger or aggression, for example, Behavioral Anger Response Questionnaire (BARQ), The Clinical Anger Scale (CAS), The Hostility Inventory, Buss-Perry Aggression Questionnaire (BPAQ), etc. Those are all valid questionnaires but only a few have consulted clinical psychologists to choose a more effective one for the maritime domain. In this study, Buss-Perry Aggression Questionnaire has been utilized which has 29 items with 5-point Likert scale and used for measuring four dimensions of aggression, which are: Physical Aggression, Verbal Aggression, Anger, and Hostility (Buss and Perry, 1992).

Physical aggression scale comprises of nine questions that are related to physically harming others, verbal aggression scale comprises of

five questions related to verbally hurting others, anger scale comprises of seven questions measuring emotional aspect of aggression and hostility scale comprise of eight questions, evaluating cognitive aspect of aggression.

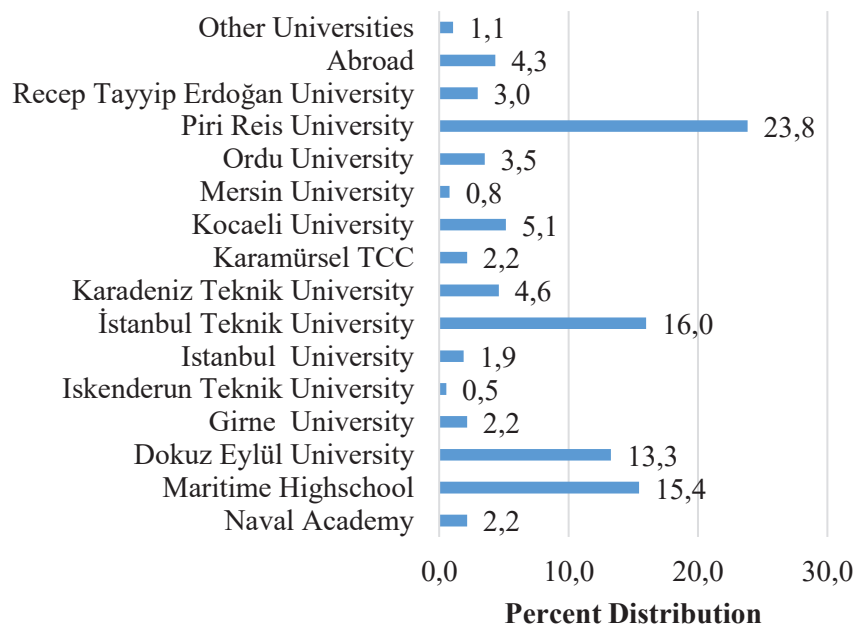
BPAQ is one of the most utilized aggression scales in the world (Demirtaş Madran, 2013). One of the main reasons for choosing BPAQ is that there are many research on the validity and reliability of BPAQ. Gerevich et al. (2007), work with a sample of 1200 people representative of the population over 18 years of age. Reyna et al. (2011) work with the sample consisted of 371 adolescents aged 12 to 19 years from Cordoba, Argentina. Bernstein and Gesn (1997) examined the factor structure of the items. Von Collani and Werner (2005) studied on the German version of BPAQ's validity. Maxwell (2007) examined validation of BPAQ's Chinese Version for Hong Kong Chinese. Ando et al. (1999) developed a Japanese version of BPAQ by first used a 45-item rating questionnaire on 1125 college students, then a 24-item questionnaire on 611 college students. Demirtaş Madran (2013), used a Turkish version which was translated by 2 bilingual people and works with 220 students from 2 universities. Evren et al. (2011) worked with 200 male substance-dependent patients in 2009 in AMATEM (Alcohol and Drug Research, Treatment and Education Centre) Istanbul. Accordingly, BPAQ has been considered a valid and reliable questionnaire that can be utilized in various subjects and sub-subjects.

4. RESULTS AND DISCUSSIONS

There are many valid questionnaires but only a few have consulted clinical psychologists to choose a more effective one for the maritime domain. For this reason, Buss-Perry Aggression Questionnaire has been utilized which has 29 items and those are grouped for factor analyses yielded 4 scales: Physical Aggression, Verbal Aggression, Anger, and Hostility. The questionnaire has been chosen with the consultation of various psychiatrists and specialists. The data have been collected via Google forms on the web. The volunteering participants in this study have been established as seafarers with demographic variables, with a sample size of 369 seafarers, in which, 334 of the participants (91%) were male and 34 (9%) of them were female. The gathered demographic information has been structured considering participants' job title, gender, ship type they work on-board and the institution they had been graduated from or going to. In Table 1 ranks and gender is given, Figure 1 shows the distribution of the participants' institutions and Figure 2 shows the distribution of the participants' vocational ship type.

Table 1: Rank-Gender Distribution of the Volunteering Participants

Rank/Gender	Male	Female
Master	47	1
Chief Officer	30	2
Chief Engineer	18	2
Second Officer	45	1
Second Engineer	13	-
Third Officer	58	11
Third Engineer	41	1
Fourth Engineer	9	-
Electro-technical Officer	7	-
Deck Cadets	57	11
Engine Cadets	12	3

**Figure 1:** Institution Distribution for the Questionnaire

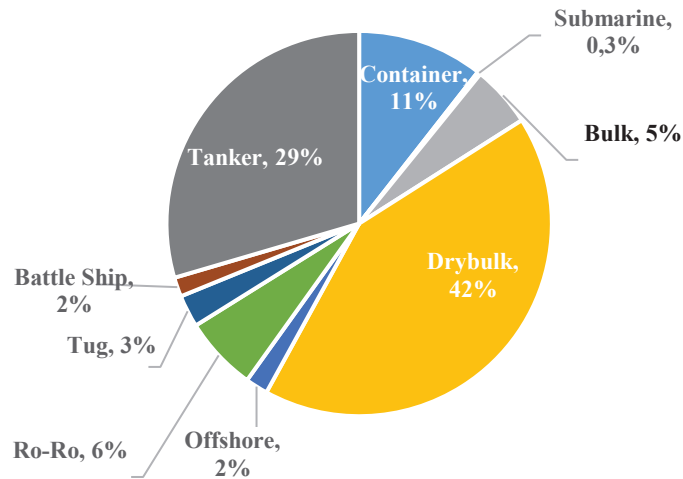


Figure 2: Vocational Ship Type Distribution.

Reliability value for each of the factors and total reliability value have been determined by calculating Cronbach’s Alpha ($C\alpha$) values. For $C\alpha$, values between 0.80 and 1.00 indicates that the scale is “highly reliable”, and values between 0.6 and 0.8 indicates that the scale is “reliable”. The values below 0.6 are determined as “not reliable” (Nunnally, 1978; Mehdiyev et al. 2017). The results are given in Table 2 below., $C\alpha$ values were found as $0.80 < C\alpha = 0.823 < 1.00$ for physical aggression, which is highly reliable, $0.60 < C\alpha = 0.630 < 0.80$ for verbal aggression, $0.60 < C\alpha = 0.712 < 0.80$ for hostility and $0.60 < C\alpha = 0.776 < 0.80$ for anger, which indicates that the scales are reliable. For BPAQ-T, $C\alpha$ value was found as $0.80 < C\alpha = 0.906 < 1.00$, which states that the scale is highly reliable.

Table 2: BPAQ-T Cronbach’s Alpha Values for Each Scale

	Cronbach’s Alpha	Reliability
Physical Aggression	0,823	Highly reliable
Verbal Aggression	0,630	Reliable
Hostility	0,712	Reliable
Anger	0,776	Reliable
Total	0,906	Highly reliable

For the normality test, the Shapiro-Wilk W test has been utilized in the questionnaire parameter results. As mentioned in Methodology Section (Section 3), the questionnaire has four parameters to analyse. For all the parameters, the distribution has resulted as non-parametric distribution with none of the tests' p-value was greater than 0.05 ($p < 0.05$) hence a significant difference has not been observed. The significance level of each parameter is given in Table 3.

Table 3: Shapiro-Wilk Normality Test Results

	Shapiro-Wilk Statistic	df	Significance
Physical Aggression	0,984	369	0,000404569532528
Verbal Aggression	0,965	369	0,000000117815872
Hostility	0,974	369	0,000003619081909
Anger	0,978	369	0,000023517405293

In the first conducted analysis, the Mann-Whitney U test is applied for the genders and a significant difference has been found on verbal aggression parameter (Mann Whitney-U=0.002<0.05) between genders but on the other hand there are no significant differences found on physical aggression (Mann Whitney-U=0.906>0.05), anger (Mann Whitney-U=0.366>0.05) and hostility (Mann Whitney-U=0.540>0.05) parameters, as seen in Table 4.

Table 4: Mann-Whitney U Gender Test Results

	Physical Aggression	Verbal Aggression	Hostility	Anger
Mann-Whitney U	5324,000	5039,500	3645,000	4871,500
z	-0,118	-0,613	-3,033	-0,904
p	0,906	0,002	0,540	0,366

In the second analysis, Kruskal Wallis-H testis utilized regarding participants' ranks. Only one significant difference has been found on anger tendency regarding rank (Kruskal Wallis-H =0.017<0.05) but for the other three parameters, a significant difference has not been found. Verbal aggression (Kruskal Wallis-H =0.219>0,05), physical aggression (Kruskal Wallis-H =0.486>0.05) and hostility (Kruskal Wallis-H =0.370>0.05)).

Accordingly, it can be assumed that seafarers rank has an effect on anger parameter among other Buss-Perry Aggression Questionnaire parameters as seen in Table 5.

Table 5: Kruskal-Wallis H Rank Test Results

	Physical Aggression	Verbal Aggression	Hostility	Anger
Kruskal-Wallis H	9,492	13,081	10,837	21,595
df	10	10	10	10
p	0,486	0,219	0,370	0,017

In the third analysis, the Kruskal Wallis-H test has been applied regarding seafarers' vocational ship type and a significant difference has not been found on any of the parameters of BPAQ-T (verbal aggression (Kruskal Wallis-H =0.559>0,05), physical aggression (Kruskal Wallis-H =0.857>0.05), anger (Kruskal Wallis-H =0.376>0.05) and hostility (Kruskal Wallis-H =0.702>0.05)). Accordingly, it cannot be assumed that vocational ship type affects Buss-Perry Aggression Questionnaire parameters as seen in Table 6.

Table 6: Kruskal-Wallis H Ship Type Effect Test Results

	Physical Aggression	Verbal Aggression	Hostility	Anger
Kruskal-Wallis H	4,005	6,797	5,510	8,609
df	8	8	8	8
p	0,857	0,559	0,702	0,376

In the final analysis, regarding participants' education, a significant difference has been found on the verbal aggression parameter (Kruskal Wallis-H =0.030<0.05). For other parameters of the BPAQ-T a significant difference has not been observed (physical aggression (Kruskal Wallis-H =0.357>0.05), anger (Kruskal Wallis-H =0.137>0.05), and hostility (Kruskal Wallis-H =0.217>0.05)). Accordingly, while there is a significant difference regarding educational institutions on verbal aggression, but it cannot be assumed that education difference affects other Buss-Perry Aggression Questionnaire parameters as seen in Table 6.

Table 6: Kruskal-Wallis H Education Difference Test Results

	Physical Aggression	Verbal Aggression	Hostility	Anger
Kruskal-Wallis H	16,387	26,882	18,918	20,991
df	15	15	15	15
p	0,357	0,030	0,217	0,137

Finally, Conformity Factor Analysis (CFA) has been carried out for BPAQ-T that has been applied on seafarers considering the data set is appropriate for factor analysis. In order to carry out CFA, AMOS-21 package software has been utilized to analyse reliability and validity of the scales. The results for CFA have been given in Table 7.

In order to provide an acceptable CFA model, model fitness indices have to be evaluated. The criteria for model fitness indices are also given in Table 7 (Fornell and Larcker, 1981; Hu and Bentler, 1998; Sümer, 2000; Hair et al., 2014) According to model fit indices, CFA model shows a good fit with observed data. Chi Square fitness statistic values were found as; (X^2) =474.81, (df)=199 and (X^2 /df) = 2.39, indicating a good model fit.

Other model fit results are as follows; root mean square error of approximation (RMSEA) value has been found as 0.06, root mean square residual (RMR) as 0.08, comparative fit index value (CFI) was found as 0.91 which considers the sample size and degree of freedom in the model, Incremental Fit Index (IFI) as 0.91, Tucker-Lewis Index (TLI) as 0.90.

Table 7: Model Fit Results

Model Fit Indices	Model Fit Criterion	Results
X^2	-	474.81
df	-	199
X^2 /df	X^2 /df <5	2.39
RMSEA	$0.00 \leq \text{RMSEA} \leq 0.1$	0.06
RMR	$0.00 \leq \text{RMR} \leq 0.1$	0.08
CFI	$0.90 \leq \text{CFI} \leq 0.95$ (good fit)	0.91
IFI	$0.90 \leq \text{IFI} \leq 0.95$ (good fit)	0.91
TLI	$0.90 \leq \text{IFI} \leq 0.95$ (good fit)	0.90

The results for BPAQ-T CFA model for seafarers has been presented in Figure 3.

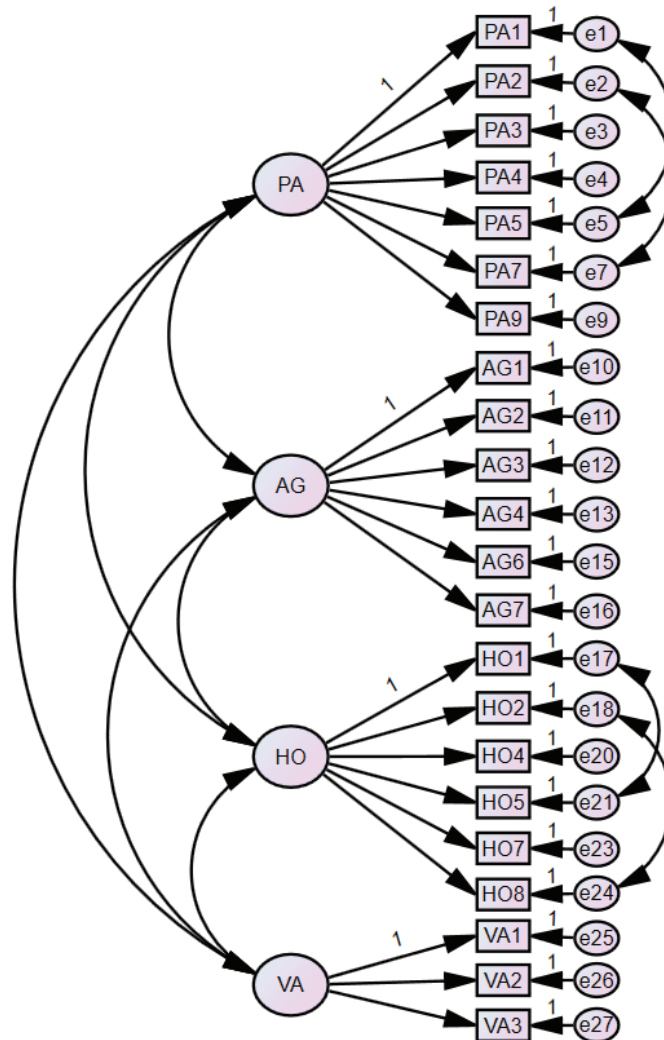


Figure 3: BPAQ-T Conformity Factor Analysis Model for Seafarers

5. CONCLUSIONS

The psychologic tribute of maritime business has been emphasized in the recent literature exponentially increasing. As a result of globalizing world and developments and improvements in technologies, the need for faster transportation systems has increased the requirement for the maritime transportation industry. In these developments and requirements' wake, compelling working environments for seafarers have occurred regarding maritime transportation industry such as more voyages, less personnel employment, and improper working hours on top of the daily challenges such as adverse weather conditions.

Ships are considered as complex working environments comprise of various stressor factors affecting seafarers causing psychological challenges for seafarers continuously. In the literature, psychological factors by individual conditions caused by onboard working circumstances are affecting seafarers deeply. Being lonely, homesickness, isolation onboard and anti-social living conditions are understood to be the most apparent psychological factors.

In this study, it was emphasized the mental problems of seafarers and research whether the physical aggression, verbal aggression, hostility, and anger tendencies of seafarers are dependent on demographic characteristics. For evaluation, Buss-Perry Aggression Questionnaire has been conducted on a group of seafarers on various demographic features and statistical analysis has been carried out utilizing SPSS-26 and Conformity Factor Analysis has been carried out using AMOS-21 packages. Reliability and validity analyses have been carried out with Cronbach's Alpha values showing that BPAQ-T is reliable and CFA results show that the model is a good fit to the observed values. Regarding Buss-Perry Aggression Questionnaire scales, significant differences have been found on verbal aggression regarding gender, on anger regarding the rank of the participants and verbal aggression regarding participants' education. A significant difference has not been obtained regarding participants' vocational ship type.

Finally, in this study, in the light of emphasizing the mental problems of Turkish Seafarers, it is expected to provide a perspective to the maritime business sector to discuss positive psychological supports to seafarers by the hand of government, companies, and families.

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