

# Psychological Well-Being and Resilience Assessment of Brazilian Navy Military Personnel During a Long- Term Mission

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## ABSTRACT

Several aspects of military service can generate a psychosocial burden for personnel and their families that can contribute to increased stress and tension in daily routine. This can be even more aggravated when it comes to military personnel who carry out long-term missions, period which they spend a long time in stressful and risky situations, distanced from their families and more vulnerable to environmental conditions. This work aimed to evaluate subjective well-being and resilience, as well as verify the correlation between these two constructs in a sample of Brazilian Navy soldiers (male healthy adults, aged between 23 and 53 years) during an operational mission, from March to December 2020, aboard the "Independence" Frigate, a ship that was part of the Peacekeeping Forces in the Maritime Task Force of the UNIFIL. It's the first time that military personnel psychological parameters on board a Brazilian war ship have been evaluated. This study verified that there was no change in the general result and in each PWBS subdomain before and after the mission, which indicates that, for these participants, subjective well-being was not influenced by the operational mission carried out. Despite being on a long-term mission and, therefore, with the possibility of greater psychological vulnerability and stress, the participants showed good levels of well-being and life satisfaction. Positive associations were observed between all six PWB subscales and CD-RISC dimensions, thus, those military personnel with a higher level of subjective well-being also have better resilience indices.

**Keywords:** Well-Being; Resilience; Psychological Parameters; Military Personnel; Long-Term Mission

**Abbreviations:** PTSD: Post-Traumatic Stress Disorder; CD-RISC: Connor-Davidson Resilience Scale; UNIFIL: United Nations Interim Force in Lebanon; PBW: Psychological Well- Being; PBWS: Psychological Well-Being Scale

## Introduction

Military personnel must face many occupational stressors that are common among individuals in other professions, but separation from family and friends, frequent moving and other aspects of military service generate a psychosocial burden on personnel and their families that can contribute to increased stress and strains in daily routine (Lee [1]). The crew aboard an operational mission ship is immersed in an intense activities routine to keep the vessel in constant operation. However, long periods on board can lead to the emergence of a variety of psychological illnesses. Loneliness, confinement, the inadequacy in society feeling and even the strangeness generated when returning to the family environment, can precipitate anxiety and de-

pression. Although most accidents on board are related to falls, back problems and burns, there is a growing need to investigate the fatigue and stress that affect crews, with the aim of preventing accidents and occupational diseases (Mendes [2,3]). Researchers, clinicians, and professionals involved in public policies creation and implementation urge a more comprehensive view of trauma and sequelae. Exhaustion and military personnel permanent availability are important factors to be analyzed, especially about multiple exposures over time (Maguen, et al. [4]). Considering the stressors in conflict areas, it is necessary to pay attention to the appearance of psychic alterations, post-traumatic stress, and the increased risk of suicide among veterans with mental disorders (Pietrzak, et al. [5]).

It is also notable that here are flaws in the identification of individuals with probable post-traumatic disorder and even in access to services that document such information, making it difficult to provide care in the acute phase and positions in the face of future exposures. For individuals with more severe injuries, differentiated and continued treatment is recommended, due to the complex nature of health care associated with these disorders (Sudom, et al. [3]). Due to the complexity and particularities of military missions aboard navy ships, it is important to assess the well-being and degree of resilience of the crew, as well as preventively monitor behavioral changes that could compromise the state of health. The psychological well-being essence was studied by Carol Ryff, who developed a Psychological Well-Being (PBW) model from existential-humanist, human development, and mental health theories (Ryff, et al. [6-9]). The six dimensions defined for construction (positive relationships with others, autonomy, environmental mastery, personal growth, purpose in life and self-acceptance) represent evolutionary tasks characteristic of healthy development, and are associated with indicators of quality of life, well-being, and adaptive biological and psychosocial processes (Machado, et al. [10]). As for the resilience construct, this is defined as the ability to resist and overcome adversity, considering the intrinsic and extrinsic factors (Solano, et al. [11]).

It is related to reinforcing individual potential, with the aim of rescuing and strengthening healthy dimensions, thus providing conditions for overcoming risk exposure situations (Coutinho [12]). In general, resilient individuals have been known for their extroverted and open nature, strong sense of control, great ability to maintain a positive outlook and reflection on their surroundings (Lee [1]). In studies carried out with U.S. combat veterans, some authors related personal attributes, such as personal competence and control, tolerance to stress and acceptance of change, to indicators of psychological well-being, including less suicidal tendency, less alcohol consumption, less severity of depressive symptoms, lower prevalence of post-traumatic stress disorder and fewer health complaints. Note that high levels of resilience were more protective under high levels of combat exposure (Green [13,1]). The correlation between this two constructs in different contexts indicates that the higher the level of resilience, the better the PWB (Zhao [14]). However, in the military personnel routine more research is needed, especially when considering long-term missions. Thus, this study aimed to evaluate the well-being psychological state and resilience, as well as to verify the correlation between resilience and the factors that make up the subjective well-being during a Brazilian Navy operational mission, as a way of generating subsidies for the creation of strategies for the prevention of psychological disorders during long periods at sea.

## Method

This study was conducted from March to December 2020, aboard the "Independence" Frigate, a Brazilian Navy ship that was part of the

Peacekeeping Forces in the Maritime Task Force of the United Nations Interim Force in Lebanon (UNIFIL). To carry out the study, 172 crew members were invited to participate, all male military personnel, healthy adults, aged between 23 and 53 years. The researchers team presented the project and clarified any doubts, and then the military personnel interested in participating in the research signed the Free and Informed Consent Form, previously approved by the Research Ethics Committee (CAAE: 26282919.7.0000.5256). The individual's psychological assessment was performed using the Psychological Well-Being Scale (PBWS) (Ryff, et al. [7-9]) and the Connor-Davidson Resilience Scale (CD-RISC-25) (Connor [15]) at the beginning of the mission (first month) and at the mission end (last month), for comparative purposes. The scales application was previously authorized by the authors. The PBWS adapted for the Brazilian population (Machado [10]) consists of 36 items that are answered on a six-point Likert-type scale, where the extremes are "totally disagree" and "totally agree". The instrument is composed of six oblique factors, namely: positive relationships with others, autonomy, mastery over the environment, personal growth, purpose in life and self-acceptance.

These six dimensions are positively associated with measures of life satisfaction, positive affect, and balance between affects, and negatively associated with measures of negative affect and depression. The Connor-Davidson Resilience Scale (CD-RISC) has 25 items that measure the adversity adapt ability. Respondents rate items on a scale of 0 ("not true at all") to 4 ("true almost all of the time"). This scale was validated for the Brazilian cultural context (Solano, et al. [11]) and is indicated for use in the general population. To check whether there was a difference between the results obtained from the application of the PBWS and its subscales at the two moments (March and December/2020), the non-parametric Wilcoxon test was used. This test is used when the comparison involves two dependent groups, being a viable alternative when the data do not exhibit a normal distribution, which makes the use of the paired T test unfeasible. Spearman's correlation was used, accompanied by its associated test, to assess whether this correlation differs significantly from zero. The interpretation of the correlation  $r$  degree was made based on Table 1. The numerical variables were described as mean, standard deviation and variation coefficient. Tests with a p-value less than 0.05 were considered statistically significant. The analysis was performed using the R software.

**Table 1:** Interpretation of the correlation between variables.

r value (Correlation)	Correlation between variables
R=1	Perfect
$0.3 \leq r < 0.7$	Moderate
$0 < r < 0.3$	Weak
R=0	Nonexistent

## Results

Initially this study involved 172 individuals. However, those who did not respond to one or more items were excluded. To compare PBWS measurements before (March/2020) and after the UNIFIL mission (December/2020), the analysis was limited to individuals who completed both questionnaires, resulting in a sample of 67 people. Only four individuals answered the Resilience questionnaire before the mission, therefore the analysis focused on responses from December/2020. Then, in the CD-RISC-25 descriptive examination, people's responses at the end of the mission were analyzed, covering a total of 120 individuals. And a sample of 104 people was used to evaluate

the correlation between the dimensions of the PBWS and CD-RISC-25. Table 2 presents the means and standard deviations for the PBWS and its dimensions, in addition to the test carried out to assess whether there is a significant difference between the measurements before and after the mission. Among the dimensions of the scale, "Personal Growth" obtained the highest averages in both moments, while "Autonomy" recorded the lowest averages, also in both periods. For the difference test between March and December/2020, the PBWS did not show a statistically significant difference, nor did its dimensions. Table 3 highlights the results obtained for CD-RISC-25. Due to the difference in scale between Resilience dimensions, the variation coefficient was used to compare the variability of different dimensions.

**Table 2:** Results obtained for the PBWS dimensions applied in March/2020 (before the mission) and in December/2020 (after the mission) (n = 67).

Dimensions	Mean (standard Deviation)		p value (Wilcoxon)
	March/2020	December/2020	
Positive relationships with others	28.36 (5.82)	27.72 (6.02)	0.369
Autonomy	27.94 (5.00)	27.58 (5.45)	0.541
Mastery over the environment	28.28 (5.74)	28.43 (4.83)	0.885
Personal growth	31.73 (4.79)	32.13 (3.95)	0.699
Purpose in life	31.18 (4.69)	30.99 (5.24)	0.976
Self-acceptance	28.01 (3.78)	28.34 (4.10)	0.254
Well-being (General)	175.51 (25.07)	175.19 (23.36)	0.633

**Table 3:** Results obtained for the CD-RISC-25 dimensions applied in December/2020 (after the mission) (n=120).

Dimensions	Mean	Standard Deviation	Variation coefficient (%)
Tenacity	46.99	6.26	13.32
Adaptability-tolerance	34.65	5.63	16.25
Dependence on external support	12.18	2.21	18.14
Intuition	7.54	1.41	18.70
Resilience (General)	101.36	12.67	12.50

The "Dependence on external support" presented the highest variation coefficient, indicating a relative variation greater than the mean, and "Tenacity" presented the lowest variation coefficient, indicating a greater concentration around the mean. For the correlations between the dimensions of Well-being and Resilience, the results summarized in Table 4 were presented. All correlations between the dimensions were positive, and most of them were significant. The

moderate correlations can be highlighted between: "Tenacity" with "Personal growth", "Tenacity" with "Purpose in life", "Dependence on external support" with "Positive relationships with others", "Dependence on external support" with "Personal growth" and "Dependence on external support" with "Purpose in life". These correlations had values of 0.363, 0.335, 0.410, 0.373 and 0.347, respectively. The remaining correlations were classified as weak or inferior.

**Table 4:** Correlations between PWBS and CR-RISC-25 dimensions (n = 104).

	PRO	AU	MOE	PG	PL	SA
Tenacity	0.291**	0.277**	0.232*	0.363***	0.335**	0.174
Adaptability-tolerance	0.236*	0.135	0.196*	0.175	0.093	0.111
Dependence on external support	0.410***	0.233**	0.291**	0.373***	0.347**	0.235*
Intuition	0.237*	0.126	0.208*	0.309**	0.126	0.080

Note: PWBS dimensions: PRO (Positive relationships with others); AU (Autonomy); MOE (Mastery over the environment); PG (Personal growth); PL (Purpose in life); SA (Self-acceptance). \* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001.

## Discussion

Due to the profession's characteristics, military personnel act in a state of readiness in a context of responsibility and obedience, conditions that can cause high levels of stress. Concern about the troops mental health must be even greater when considering the possible problems brought about by long periods of confinement. This work aimed to evaluate subjective well-being and resilience, as well as verify the correlation between these two constructs in a sample of Brazilian Navy soldiers during an operational mission, from March to December 2020, aboard the "Independence" Frigate, a ship that was part of the Peacekeeping Forces in the Maritime Task Force of the UNIFIL. Studies in Brazil on these psychological concepts in military personnel are scarce, especially during long-term missions, period which they spend a long time in stressful and risky situations, distanced from their families and more vulnerable to environmental conditions. This is the first work that evaluates psychological parameters of military personnel on board a Brazilian war ship. Evaluating subjective well-being, the results show that there was no change before and after the mission in relation to each subdomain, as well as in the general well-being result, which suggests that the construct was not influenced by the operational mission carried out. Regarding the correlation analysis between well-being and resilience, associations were observed between all six PWB subscales and the resilience scale dimensions.

The results point to moderate correlations between "Tenacity" and "Personal growth", "Tenacity" and "Purpose in life", "Dependence on external support" and "Positive relationships with others", "Dependence on external support" and "Personal growth" and "Dependence on external support" and "Purpose in life." A positive association can be seen between resilience, which is a well-being indicator, and PWBS. The original PWBS validation study conducted by Machado, et al. [10] also observed correlations of the six PWB subscales and previous psychological well-being indicators, such as life satisfaction, positive and negative effects, balance between affects and depression. In another study conducted by Rosa and Hutz [16], the suitability of the Life Satisfaction Scale for the military environment was evaluated in cadets at the Academia Militar das Agulhas Negras and correlations were drawn with civilian university students. This scale had previously been adapted by Giacomoni and Hutz [17]. The results showed that

the Life Satisfaction Scale, used as a subjective well-being indicator, showed no difference between the military personnel and the university students evaluated, which is a good indication of the cadets' living conditions. As in our study, military personnel showed good levels of life satisfaction despite being in a military environment, considered more stressful and vulnerable. As pointed out in this work, other studies conducted in the United States, using the CD-RISC, also found that resilience is associated with psychological well-being indicators.

In the study by Maguen, et al. [4], resilience was strongly associated with positive affect before the mission. The study by Green [13] found that resilience was inversely associated with negative health indicators such as suicide, probable problems with alcohol, severity of depression and physical health. On the other hand, low levels of resilience were related to subjects with suicidal ideation (Pietrzak, et al. [18]). A recent study carried out in Brazil evaluated correlations between the dimensions of the Effort- Reward Imbalance Model, resilience and life quality in military police officers from the Military Police Special Operations Battalion of a city in Rio Grande do Sul. Evaluating resilience, it was found that this construct interferes with life quality, which is another subjective well-being indicator (Tavares, et al. [19]). A review study conducted by Brazilian researchers with the aim of evaluating psychological resilience and/or hardiness in military personnel pointed out that the focus of most research is on the correlation between resilience/hardiness and psychosocial aspects and also noted that resilience/hardiness plays a protective role regarding post-traumatic stress disorder (PTSD) (Cotian [20]). On the other hand, the review highlights that despite the crucial resilience relevance, there are few studies with military personnel on this construct, in addition, no studies were found that evaluate the effectiveness of interventions that promote resilience.

## Conclusion

Evaluating the psychological well-being and resilience of military personnel embarked on a Brazilian Navy ship during a long-term mission, this study verified that there was no change in the general result and in each PWBS subdomain before and after the mission, which indicates that, for these participants, subjective well-being was not influenced by the operational mission carried out. Despite being on a long-term mission and, therefore, with the possibility of greater psychological vulnerability and stress, the participants showed good lev-

els of well-being and life satisfaction. Positive associations were observed between all six PWB subscales and CD-RISC dimensions, thus, those military personnel with a higher level of subjective well-being also have better resilience indices. In the Brazilian scenario, studies that involve the evaluation of well-being indicators, resilience and other psychological constructs in military personnel are still very scarce. Therefore, future studies are necessary to evaluate these and other psychological aspects, such as stress, coping strategies, as well as to develop prevention, intervention and coping strategies for psychological disorders in military personnel, especially during operational missions.

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