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STRESSORS IN MODERN MILITARY OPERATIONS: THE INFLUENCE OF PSYCHOLOGICAL HARDINESS AND PERCEIVED SUPPORT IN THE LEADERSHIP PROCESS

STRESSORES EM OPERAÇÕES MILITARES MODERNAS: A INFLUÊNCIA DA ROBUSTEZ PSICOLÓGICA E DO APOIO PERCEBIDO NO PROCESSO DE LIDERANÇA

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Abstract

War is one of the most ancient activities in human history and, for combatants, it is certainly one of the most risky and stressful experiences imaginable, given the events that underlie it, which can ultimatelybe life-threatening.

The current conflict typology is quite different from the "classical" wars of the past and has brought a different operational environment, characterized mainly by complexity, uncertainty and unpredictability, particularities that foster the emergence of stress and other psychological disorders in combatants.

This research supports the conclusion that characteristics such as robustness and leadership effectiveness play a key role in mitigating possible stressors in the modern military operational environment, as well as reducing stress levels in the military.

Another interesting conclusion that arose from this research was the fact that significant differences exist between the three branches of the Armed Forces regarding the appreciation ofcertain aspects studied in this work, exposing some unexpected disparities.

Keywords: Perceived support, Leadership, Resilience, Psychological robustness, Stress, Stressor.

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Resumo

A guerra é das atividades mais antigas de que há registo na história da humanidade e para aqueles que nela combatem constitui uma das mais arriscadas e *stressantes* experiências que é possível imaginar, dadas as vicissitudes que lhe subjazem e que, em última análise, podem colocar em risco a própria vida.

A tipologia atual dos conflitos, bastante diversa das guerras "clássicas" do passado, trouxe um ambiente operacional diferente, caraterizado essencialmente pela complexidade, incerteza e imprevisibilidade, particularidades estas que fomentam o surgimento de *stress* e outras patologias, ao nível psicológico, nos combatentes.

A investigação permite concluir que caraterísticas como a robustez psicológica e a eficácia da liderança desempenham um papel determinante na atenuação dos *stressores* presentes em ambiente de operações militares modernas, bem como na redução dos níveis de *stress* dos militares, embora de forma diferenciada em cada um dos ramos das Forças Armadas.

Outra interessante conclusão retirada da investigação é a de que existem diferenças significativas entre os três ramos das Forças Armadas, em ambiente de operações militares modernas, no que toca à valorização que é atribuída pelos subordinados a aspetos como a robustez psicológica dos seus líderes.

Palavras-Chave: Apoio Percebido, Liderança, Resiliência, Robustez Psicológica, *Stress, Stressor.*

Introduction

The effects of stress can be highly detrimentalto the human beings, resulting in consequences that can range from simple behavioural changes to severe physical or psychological disorders requiring specialised treatment, which is why it is important to understand this phenomenon and to learn strategies to mitigate it.

Military personnel, by definition, perform one of the most conceivably stressful activities imaginable, bearing in mind the possible risk to their own lives.Even if their training greatly facilitates the adjustment to the adversity of a Theatre of Operations (TO), stressors are always present, although they may vary in type according to scenario. Also subject to variation are individual coping strategies, which have a direct influence on how those stress or sareperceived and that may or may not result in stress. However, stress in military operations, especially negative stress or distress, is highly counter productive, in that it could endanger the lives of soldiers and their peers.

As it happens, the characteristics of Modern Military Operations (MMO) promote in many ways the emergence of stress in the military personnel who take part in them, as noted by Litz, presenting the example of the Afghanistan and Iraq wars (2007, citedin Osório et al., 2010, p.281).

In this context, the relevance of this research is justified by the almost complete absence of national studies assessing potentially attenuating or mitigating factors of stress in the military personnel in MMO, despite Portugal already having a long and successful track record in this type of TO, particularly in the field of Peace Support Operations (PSO).

Therefore, the object of study of this research is the relationship between leaders and their subordinates in MMO, on the premise that these types of mission are susceptible to inducestress on the military personnelinvolved. The research results can be extended to the three Branches of the Armed Forces (AF).

The objective of this research involves assessing to what extent certain characteristics and attributes of military leaders, including their psychological robustness, the effectiveness of their leadership and the social support they provide to subordinates, can contribute to a reduction in stress levels. Naturally, by better understanding the mechanisms or attitudes that enable a reduction instress levels in participants in military MMO, we are contributing to the development of strategies for that mitigation.

The methodological approach advocated by Quivy and Campenhoudt (2003) was used to conduct this research and an analytical model based on a corpus of concepts was created, within which was defined the driving Central Question (CQ) that served as beacon to all subsequent research: *"Bearing in mind that military personnel in modern military operations is subject to stressors that may affect their performance, to what extent can leadership and the psychological robustness of leaders contribute to a reduction in the stress levels of subordinates?"* The answer to this CQ results from the analysis of five hypotheses:

H1: The psychological robustness of leaders contributes to lower stress levelsin subordinates.

H2: The psychological robustness of leaders has implications in the reduction of the different types of stressors.

H3: A transformational leadership style leads to a higher perception of support by subordinates.

H4: Perceived support leads to lower stress levelsin subordinates.

H5: A transformational leadership style leads to lower stress levelsi n subordinates.

In order to organize the article, we divided it into three chapters, each with a perfectly differentiated goal.Thus, in the first of these chapters is provided the conceptual framework for the topic under analysis. There,in areview of the literature, the concepts that will be approached during the investigation are introduced, seeking to summarisethe most important points in each theory, always with a view to establishing the expected bridge to the military world.

The second chapter is devoted to the explanation of the methodology adopted in this research, by describing the sample, procedure and instruments used and, finally, the third chapter of the work presents and discusses the results.

1. Conceptual framework

a. Modern military operations

(1) The new wars

Stating that the war today is a phenomenon without any connectionto what was witnessed in ancient times is obviously an exaggeration. As we canappreciate, there is a world of difference between how military operations are conduct in the twenty-first century and how they were in the past but still there is an umbilical connection that endures through the ages, bridging the gap between certain concepts from the past and current aspects.

It is only with SunTzu that some basic concepts begin to emerge that, with the necessary adaptations, are still fully applicable to the phenomenon of war today. In the time of Sun Tzu and for several centurieslonger, the activityof war was practiced among non-state actors through localized fighting and battles, which were short-lived, and its conduct was the responsibility of a sovereign,who personally directed the action of"private" military forces (Pereira, 2011, p.9).

Another timelesswar theorist, already in the post-Westphalian period, whose legacy spans over to the present day, was Clausewitz, in the nineteenth century, whocoined the famous aphorism that "war is the continuation of politics by other means". All of this remains current, which is why these two theorists remain part of the bibliography of any school, organization or forum where the phenomenon of war is studied.

However, while certain dogmas remained, there were also dramatic changesin recent decades that indelibly marked the typology of today's conflicts.Some authors have advocated that the Westphalian paradigm of dominance of the nation-state as the key actor of international relations is declining, pointing as an example the emergence of a panoply of non-state actors whose scope has increased, which has had consequences in terms of the nature of today's military operations.

Effectively, what we have today is a context in which violence is global, asymmetric, lasting and often lacking a clear origin. The operational environment is highly complex, nonlinear, unpredictable, heterogeneous, mutable and dynamic. Threats, which were previously well-defined, disappeared as such giving rise to new risks and dangers, and the international community (IC) has been forced to admit that, in addition to States, other actorsalsocurrently employ force as an instrument of International Relations.

In the face of all this, current wars are irregular, structurally and temporally asymmetric, and without proximity or definition of battle fronts, with combatants often mixed with the population, who are used, if necessary, as shield or trade currency . These wars are, therefore, developed in subversive operational environments, associated with transnational terrorism, or rather global subversion, a phenomenon which currently represents a major threat, especially if associated with the use of Weapons of Mass Destruction (WMD) (Garcia, 2008, p.179).

In this context, where national borders no longer provide Stateswith protection, as the events of September 11demonstrated, defence eventually became de-territorialised, with States often being required to project forces abroad, to the locations wherethe threats are developed, based on the principle that the best defence may in some cases be to attack an evil at its root (Roboredo, 2010, p.22).

As it turns out, this new reality, marked by transnational threats, puts us in a new security-paradigm, where no state can take security for granted, even if it is not directly involved in an armed conflict.This allows us to introduce the issue of PSO.

(2) Peace Support Operations

As stated earlier, the growing global instability resulting from the various interactions between state and non-state actors hasbecome a justification for political and military interventions on behalf of the IC, and PSO are one of the key instruments of those interventions (Pereira, 2010, p.39), and are, therefore, one of the current paradigms of MMO.

Since its participation in the 1990s in the TO of Bosnia and Herzegovina, Portugal maintained a constant presence, visible and acknowledged, in this type of military operations . Examples include the size of the contingent that helped in the peace enforcement mission in the territory of the former Yugoslavia - more than 900 men - the simultaneous and meaningful participation, from 1999 onwards, in the Balkans and in East Timor or even the fact that, in 2001, Portugal was the second European country, behind the Ukraine, with more military forces deployed in UN missions. On the other hand, in another perspective, Portugal was the only one of the small and medium countries of the European Union (EU) to participate with military forces under the direct command of the Commander of the InternationalSecurityAssistanceForce (ISAF) in NATO's mission in Afghanistan (Gaspar, 2008, p.3).

b. Stress and stressors

(1) Stress and stressors - an overview

It is believed that stress is a primitive reaction to danger, useful to humans in the distant past in their struggle for survival (Schager, 2009, p.2).Take, for purposes of definition, the proposal by Lazaruset al. (1984 cited in Marshall, Davis & Sherbourne, 2000, p.11), where the concept of stress is presented as an imbalance, real or perceived, between the requirements of the environment that individualsare subjectto and their ability to adapt to those requirements.Stress should always be treated as an individual response to an environmental situation(Schager, 2009, p.5).

At the root of the issue are not, therefore,the potentially traumatic episodes themselves,which anyone can experience, but the perception of these various situations,of which we end up performing a particular mental assessment, automatic and unconscious. If, as a result of this assessment, it appears that the requirements of the situation outweigh the available resources and capabilities, then individuals assume that the situation or fact is stressful and react accordingly. If, on the other hand, it appears that the resources to manage the situation are within range, then

the situation is not perceived as stressful. Each person, depending on their own personality and the context in which they operate, perceives things in different ways and has different coping strategies, which is why no two people respond in the same way to the same situation (KCHC, 2010, p.3).

The difference between stressors and stress can be established quite simply: the first dimension corresponds to the cause ofstress.Stressors are the things, situations or events that cause stress reactions.Some stressors are cross-cutting and can be taken to affect everyone equally, but others are individual, affecting one person but not others in their vicinity (Schager, 2009, p.1).A stressor can be acute - a specific threat - for example-, or permanent - fatigue or boredom. As for the reactions to stress, these can also be temporary or permanent (Delahaij & Gaillard, 2006).

(2) Stress in modern military operations

Only with great difficulty can we conceive another scenario where, potentially, stress is as strong and pervasive as ina war environment where the physical integrity and, ultimately, the life of a combatant, are constantly under threat.

This phenomenon has long been an object of study within the AF of various countries, in that military leaders soon realized that casualties in combatants for psychological/psychiatric reasons could rival in number with the casualties caused by death or injury.

In fact, wars are responsible for stress reactions in combatants, which, if taken to the extreme, can render them unable to continue to perform their missionconsistently on the battlefield (Shaw, 1990 cit. By Osorio et al., 2010, p.281).

Greene-Shortridge et al. (2007),addressing a current example, point out that about 30% of US troops returning from theTO of Iraq experienced some kind of psychological problem, including at least symptoms like anxiety, depression, nightmares, feelings of anger and difficultyconcentrating.

Moreover, even if it does not immediately cause casualties, stress can be the source of a varietyof inappropriate behavioursin a TO, and may even progress to levels that cause psychological disorders and homicidal or suicidal behaviour. In combat situations, excessive stress has also been linked to failures in judgement regardingthe operational and tactical environment and can lead to injuries in other combatants (US Army, 2006 p.viii).

In the case of MMO, characterized by the factors previously described, the scenario is not different even in the case of lower intensity PSO. These MMO introduce a new set of stressors, different from those of "classic" wars, but that are no less harmful.The enemy in this type of operations does not function in a hierarchy and combatants seek to carry out low-intensity actions, dispersed and without defined front lines.Thus, the operations conducted by the military always involve risks, forcing them to a degree of permanent high alert and redoubled efforts to distinguish enemy combatants from civilians, seeking to avoid collateral casualties (Litz, 2007 cit. By Osorio et al., 2010, p.282).The Rules of Engagement themselves (often quite stringent, especially in the case of PSO) may be a stressor for military personnel,

as they may experience potentially hazardous events to which they cannot react (Franke, 2003 citedin Osorio et al., 2010, p.282), potentially causing feelings of impotence.

These, then, are some of the stressor elements that must be taken into account as part of the new reality of conflict.In fact, some of these stressors may ultimately be common to any TO.

(3) Effects of stress and mitigation strategies

As we havestated, the consequences of psychological disorders in combatants can lead to adverse effects because they can result in casualties and other problems, affecting operational performance.In this context, there is every advantage in giving military personnel the best possible preparation to cope with such events, particularly through the creation of mechanisms of (increased) resistance to stress.

It is known that the severity of the reactions of each individual tostress is conditioned by both personal and situational characteristics, which determine in part how the various situations which arise are assessed.The degree of stress is therefore not only related to the mere presence of stressors in the environment but to how each individual perceivesthem, how theyfaceup to pressure and to surrounding requirements, and also to the strategies that they are able to use to cope with it all, psychologically speaking (Schager, 2009, p.2).

All these factors are of crucial importance in the current military operational environment, to the extent that the complexity and dynamismthat characterize that environment increaseuncertainty and reduce the perception of control by the military. In a scenario such as this it is essential to possess an adaptive capacity to respond to situations, although, before acute episodes of crisis, the performance of each individual can be affected by emotional and stress-relatedphysiological reactions.One of the simplest and most effective ways to acclimatise the military to this reality, by encouraging their tolerance to stress, is training (Delahaijet al., 2006).

Soldiersare obviously trained for combat, and one of the objectives of that training is to develop competencies to survive and continue fighting beyond a level at which, under normal conditions, they would have given up (AIS, s.d.).

During these training phases, in general, and in thepreparation phase for a particular mission, leaders and military commanders are those with the greatest interest in creating stress-generating factors among their subordinates, cultivating their resilience and familiarizing them as much as possible with the challenges they may face in TO. Otherwise, once displaced, the responsibility of leaders is even greater, because of their role inthe monitoring and early detection of possible adverse reactions to stressin their subordinates, with the lower levels of leadershipbeing particularly important due to their proximity to the bulk of the effective (Nash, 2006, p.2).

Strategies for stress managementmust be multifaceted.Whettenet al. (2002 cited in Powley & Lopes, 2011, p.9),when addressing on this issue, refer three different strategies to eliminate or mitigate stress,describing them as active, proactive and reactive.The first one involves

creating a new situational environment without the presence of stressors, which could be suitable for soldiers who are at risk of inflicting damage on themselves or on theirpeers.A proactive strategy aims to find ways of guiding the military in dealing with the negative effects of stress and preparing them for future setbacks, increasing their internal resources.Finally, the reactive strategy is immediate and seeks to improve the responses of each individual to stress, however it has the great disadvantage of being somewhat ephemeral, and must be continuously revisited.

Considering the three possible dimensions, the authors conclude that neither the active nor the reactive strategy is sufficient to promote desirable characteristics such as resilience and sustainability in combat.The proactive approach is selected as being the most complete, inasmuch as it allows the development of coping mechanisms and resilience, thus enhancing the sustained ability to cope with future stressors.

c. Psychological robustness

The observation is not new that certain individuals break down when confronted with certain potentially stressful circumstances while, exposed to exactly the same conditions, others resist, overcome them and move on.The resource or personality trait behind this phenomenon is psychological robustness, a concept originally presented by Kobasa in 1979 to explain resilience and coping in stressful situations (Claudino et al., 2009, p.116). This concept appears in the literature closely linked to another - resilience .Indeed, the two concepts are quite similar, even resulting in interpretations that do not always coincide among several authors who address these issues. In any case, psychological robustness is usually seen asa personality trait, "which develops early in the individual and remains fairly stable over time" (Bartone, 2006, p.137), while resilience is considered more as a resource available to that individual.

Bartone adds that, more than a personality trait, as it is presented by some authors, psychological robustness can more effectively be described as an internal operational style, which includes cognitive, emotional and behavioural features that characterize people who remain healthy under stress, in contrast to others whodeveloppathologies under the same conditions. Psychologically robust individuals demonstrate a strong commitment towards life and work, and an appropriate sense of control of situations. At the same time, they appear more willing to accept daily challenges,looking at stressful and painful experiences as part of human existence, and therefore worth experiencing. They are highly resilient in response to stressful situations (Bartone, 2010, p.248).

It is obvious that, as stress and its effects are potentially restrictive, the discovery of a relationship between a personality trait or operational style, as mentioned by Bartone, and the ability to handle itsmanifestation is greatly useful, inasmuch as it makes it possible to explore or teach effective strategies of interaction with stress resulting in a healthier coexistence with the phenomenon.

Indeed, numerous studies, particularly by AF of various countries, have confirmed that psychological robustness acts as a powerful attenuator for stress. Some of these studies even demonstrate that certain soldiers who developed symptoms ofPTSD following exposure to combat stressors had a significantly lower psychological robustness than those who did not have those symptoms (Bartone, 2010, p.249).

Other relatively recent studies have also shown that psychological robustness can be enhanced by proper training.In this respect, leaders, as in so many other aspects of theirperformance, have an important role to play in that, by their actions and by their example, they can pass on to their subordinates a"psychologically robust" approach to military life that manifests the three great values of commitment, control and challenge (Adler, 2006, p.97).

In this regard, Bartone remember that leaders with a high degree of psychological robustness end up by having a visible impact on the group in high stress contexts when, by their characteristics, they encourage their subordinates to interpret the events they are experiencing as challenges to overcome and learnfrom.

d. Perceived Support

We move in a complex web of social relations that greatly influence our lives and from which an important conceptemerges - social support - which has had several definitions. Somewhat simplistically, Albrecht et al. (1987 cited in KHPC, 2011, p.182) define this concept as verbal and non-verbal communication between recipients and providersthat reducesuncertainty about the situation,the self, the other, or the relationship, and functions to enhance a perception of personal control in one's life experience. Seeking the most complete definition possible, social support can also be defined as "a transactional communicative process,including verbal and/or non-verbal communication, that aims to improve an individual's feelings of coping, competence, belonging and/or esteem" (KHPC 2011, p.184).

One of the major advantages of social support is that it can act as an agent to moderate stress, as has been consistently shown by studies.

In this context, there is a particularly importantfactor, which has to do with the distinction that must be done between available social support, so to speak, and perceived social support (which is, moreover, the concept under analysisin this work). The first concept means the support that an individual receives in terms of what is said, what is given and what is done for them. However, much more important is the perception that each individual has of the availability of such support. Perceived support refers to the perception of an individual that social support is available,is usually considered as negative or positive, and provides what is considered needed by that individual (Norris & Kaniasty, 1996; Sarason, Sarason & Pierce, 1990 cited in KHPC 2011, p.184).

In the military context this situation is not much different.Here, the social support provided by key elements such as commanders, direct supervisors or colleagues are of crucial importance and may prove essential to the process of interacting with situations and eventsthat are potential causes of stress, characteristic of the military environment.

Some studies conducted in a military context have shown the influence of certain variables of social support in mediating the effects of stress. Group cohesion, for example, has been identified as the most important variable in absorbing the impact and reducingthe adverse effects of stressors(Glass, 1973; Gringeret al, 1945b; Shilset al, 1948; Stoufferet al, 1949 cited in Milgramet al., 1989, p.186).

e. Leadership and leadership styles

In its simplest sense, leadership can be defined as a process of influencing human behaviour, that is,of motivating individuals to adopt behaviours that they otherwise would not display (Vieira, 2002, p.10).

It is perhaps the magnetic power of leadership that has promoted numerous studies and heated discussions about this topic. As stated by Cunha et al. (2005, p.19), it is a "dynamic concept, with different interpretations and the target of several forms of analysis over time". We are in the presence of a complex concept, which, according to many authors, can hardly be explained by simplistic theories,namelytrace theory.

Nevertheless, leadership styles are presented as being particularly relevant in achieving organizational objectives, a significance that is shared with the employees themselves. The very perception that subordinates have of their superiors' leadership style and their ability to develop and achieve organizational goals also seems to play an important role in the process (McColl-Kennedy & Anderson, 2002, p.546).

Even beforethe discussionwith regard to stylehad begun, some authors had already addressed the topic of leadership. This was the case of Carlyle, who became famous for his Great ManTheory, popular in the second half of the nineteenth century, where he argued that successful leaders possess personality traits and character that set them apart from followers.

Stogdill continued with this line of reasoning, having tried, over 30 years, to validate Carlyle's theory. He failed, but concluded that, despite the fact that certain differences among individuals may be relevant in identifying emerging or effective leaders, these were not enough to,alone, constitute universal personality traits that set them apart from everyone else (Chemers, 2000 p.28).

From the mid-twentieth century,the research started to give greater emphasis to the behaviour of leaders to the detriment of personality traits. This new behavioural approach implied that leadership would be related to aspects that could be learned. Once the appropriate style was found, everyone could be trained to display the corresponding behaviour and thus become a more effective leader (Hartog & Koopman, 2001, p.168).Some of the most famous behavioural theories belong to McGregor and Blake and Mouton.

Research on the behavioural style of leaders has been criticized for not providing for an environmental and situational framework of the issue.Thus emerged,in the 1960s, a situational and contingency approach to leadership in the light of which no style is universally suitable for all circumstances. Instead, the most appropriate leadership style will depend on factors such as

the situation, the people involved, the task, the organization and other relevant environmental variables on a case by case basis (Bolden et al., 2003, p.8).Two of the better known contingency theories of leadership are Fiedler's model and the Hersey-Blanchardmodel.

In the face of certaingaps that have been pointed out in the theories of leadership developed so far, the interest in the study of thisfieldwasrenewedin the 1980s, supported by the acceptance of the distinction between transactional leadership and transformational leadership, with emphasis on the latter (Meindl, 1990 cited in Hartog & Koopman, 2001, p.173). On this subject, Bass even argues that the transactional-transformational model is a new paradigm that does not replace, nor is it explained by other models (1990b cited in Hartog & Koopman, 2001, p.173) while Bryman refers to this new paradigm as the "new approach to leadership" (1992 cited in Hartog & Koopman, 2001, p.173). The "new" leaders, seen in the light of this theory, are defined as "transformational, charismatic, transforming, inspirational, visionary,or value-based" (Hartog & Koopman, 2001, p.173).

Transformational leadership, which was originally introduced by Burns in 1978, is therefore one of the striking theories of the last decades.Bass (1985 cited in Rafferty & Griffin, 2004, p.330) and Yukl (1999 cited in Rafferty & Griffin, 2004, p.330) point out, in this respect, that what distinguishes transformational leaders from others is the fact that they can motivate their subordinates to perform far beyond their own expectations, through the transformation of their attitudes, beliefs and values.

Bass was to refine this theoryin 1985, arguing that the best leaders also include dimensions of transactional leadership, which, for the author, complements the concept of transformational leadership (Rosinha, 2009).

Keeping tothat evolutionary direction, Bass would, together with Avolio in 1991, proposewhat became known as Full Spectrum LeadershipTheory (FSLT). This theory proposed three simultaneous constructs representing different leadership styles: transformational, transactional and laissez-faire and,according to Kirkbridge (2006 cited in Bodla, 2010, p.210.), it hasturned into the "most studied and validated leadership model in use throughout the world". The theory covers five dimensions related to transformational leadership, three related to transactional leadership and one to laissez-faireleadership.According to Avolio(1999 cited in Bodla, 2010, p.210), this theory does not claim to include any and all possible dimensions of leadership but rather encompass a sufficiently broad spectrum to allow a range from a passive leadership style (laissez faire) to a highly charismatic style (transformational leadership).

2. Methodology

As for the methodological procedure that shaped the preparation of this work, we attempted to use the process that would best fit the reality in question in order to fully respect the scientific method and to lend rigour, objectivity and reliability to the work,byresorting to a quantitative method of direct observation - a survey by questionnaire -,and by using a hypothetical-deductive method.

a. Sample

As for the sampleused in the fieldwork, 101 military personnel were selected from the three Branches of the Armed Forces (50 from the Navy, 31from the Army and 20from the Air Force), having in common their almost exclusive participation in military operations in the TO of Afghanistan, a choicejustified by the fact thatthis is one of the most aggressive scenarios wherethe NDF have participated in recent years.

The Navy personnel who were given the questionnaire belongto various specialties and are currently serving in the Marine Corps and in the frigate NRP "Álvares Cabral". The Army personnelbelong to the"Command"specialty and serve in the CommandoTroops Centre.The Air Force personnel are from various specialties and serve in various Units or Bodies of the Branch.

The sample comprises personnel from three categories - Enlisted, Sergeants and Officers, the first group being the largestin order to reproduce as faithfully as possible the universe under study. In theOfficers group, the sample includes only Subordinate Officers and Intermediate Officers(Captains).

b. Procedure

Data collection took place between February and March 2014, from the previously mentioned military personnel. They were asked to fill out the questionnaire, either directly (Army and Navy), or through an online platform (Air Force).

In March 2014, the data were extracted and compiled in an Excel file in order to be subsequently introduced and processed in the software Statistical Package for Social Sciences (SPSS).

c. Instruments

The survey was built on five questionnaires that, combined, allow an assessment of the five hypothesesanalysed in this Research Work. The structure of the questionnaire was prepared as follows:

(1) Questionnaire for data collection on stressors arising from modern military operations

The first questionnaire is intended to assess stressors arising from MMO. It comprises 30 questions, and a Likert scale was used for evaluation with the following classification: (1) Strongly or completelydisagree; (2) Disagree; (3) Neitheragreenor disagree; (4) Agree; (5) Strongly or completelyagree.The respondents performed a self-assessment.

This questionnaire was prepared based on the six dimensions of stress in MMO identified in the work carried out by Bartone (2001 cited in Bartone, 2006 pp.133,134), Bartoneet al. (1998 cited in Bartone, 2006, pp. 133.134) and Castro et al. (1999 cited in Bartone, 2006 pp.133,134) . These six dimensions cover the 30 stressors in the questionnaire and are as follows: isolation

(questions 1 to 5); ambiguity (questions 6 to 10); impotence (questions 11 to 18); boredom (questions 19 to 22); danger (questions 23 to 26) and workload (questions 27 to 30).

(2) Questionnaire for the assessment of perceived stress

The second questionnaire applied the perceived stressscale by Cohen and Williamson (1988 cited in Silva, 2012, p.77). It consists in 14 questions, under a single dimension - perceived stress–and a Likert scale has been used for evaluation, with the following classification: (1) Never; (2) Rarely; (3) Sometimes; (4) Often; (5) Always.The respondents performed a self-assessment.

(3) Multifactor leadership questionnaire

The third questionnaire enables the assessment of leadership styles and effectiveness. It was extracted from the Multifactor Leadership Questionnaire of (MLQ) by Bass & Avolio (2004 cited in Silva, 2012, p.183), which was translated into Portuguese, validated and made reliable by Rosinha (2009 cited in Silva, 2012, p.77).It comprises 22 questions and aLikert scalewas used for evaluation with the following classification: (1) Never; (2) Rarely; (3) Sometimes; (4) Often; (5) Always.The respondentsperformed a hetero-evaluation of their direct superiors.

The questions reflect six different dimensions: individualized consideration (issues 1 to 5) and inspirational motivation (issues 6 to 9), both included in transformational leadership; contingent reward (questions 10 to 13) and active management by exception (issues 14 to 17), both included in transactional leadership; satisfaction (questions 18 and 19) and extra effort (questions 20 to 22), both included in the so-called leadership outcomes,whichallow them toevaluate the effectiveness of their leadership.

(4) Resilience assessment questionnaire

The fourth questionnaire allows for an assessment of the degree of resilience (Pesce et al., 2005 cited in Santos, 2010, p.159) of a respondent'sdirect superior. It comprises 25 questions integrated into a single dimension - resilience – and a Likert scalewas used for evaluation with the following classification: (1) Never; (2) Rarely; (3) Sometimes; (4) Often; (5) Always. The respondentsperformed a hetero-evaluation of their direct superiors.

(5) Social support scale (SSQ-6)

The fifth questionnaire allows for the measurement of perceived social support (Rudnik, 2007 cited in Santos, 2010, p.160), using an abbreviated Social Support Scale (Social Support Questionnaire, SSQ-6).Itcomprises six questions integrated into three dimensions - social support provided by family, social support provided by the direct superior and social support provided by peers– and a Likert scalewas used for evaluation with the following classification: (1) Never; (2) Rarely; (3) Sometimes; (4) Often; (5) Always.The respondents performed a self-assessment.

3. Presentation and discussion of results

In this chapter we will present the results that we believe are the most relevant in the present work. We will begin with a brief graphical characterization of the sample, as seen in Figures 1, 2 and 3.

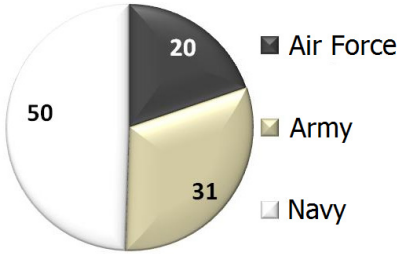

Figure 1 – Number of military personnel in the sample, by Branch of the AF

Source: Ferreira (2014)

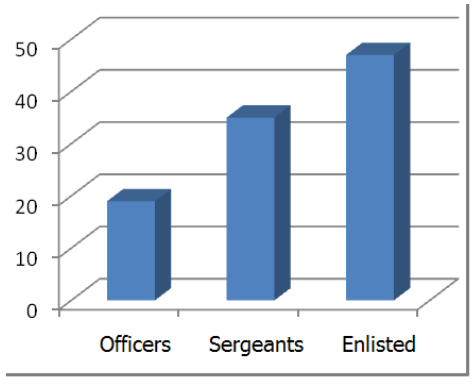

Figure 2 – Sample distribution by rank

Source: Ferreira (2014)

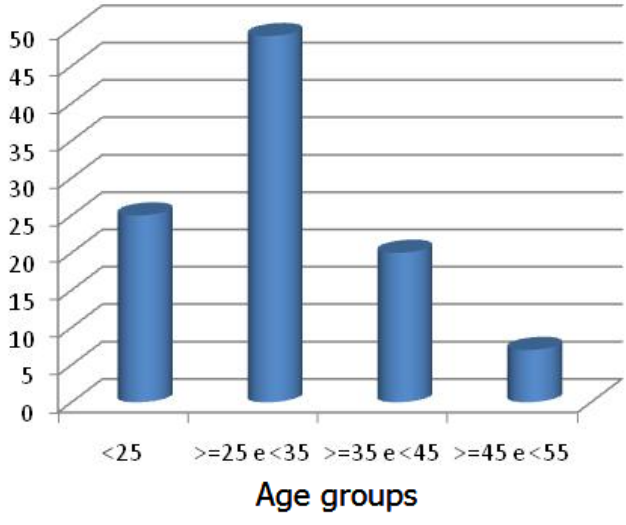

Figure 3 – Sample distribution by age group

Source: Ferreira (2014)

a. Descriptive statistics

With regard to the dimensions of each of the five considered concepts, we will assessthe most important, or the most valued, based on the mean values for each. Thus, for the stressors arising from MMO, we found that the main dimension indicated by the sample was "Isolation" (Table 1).In contrast, the less scoreddimension was "Ambiguity".

Table 1 - Statistical values of the dimensions of stressors arising from MMO

	N	Minimum	Maximum	Mean	Standard Deviation
Isolation	101	1,00	5,00	3,0619	0,7145
Danger	101	1,00	5,00	2,9678	0,85562
Workload	101	1,00	4,25	2,8985	0,76172
Boredom	101	1,00	4,75	2,8738	0,96606
Impotence	101	1,00	4,63	2,7714	0,79086
Ambiguity	101	1,00	5,00	2,5089	1,03248
Valid number (list)	101				

Source: Ferreira (2014)

Despite these results, we have found significant differences in this area among the three branches of the Armed Forces, namely a significant difference between the assessment given to "Ambiguity" in the Army and the Air Force, with the sample of the latter Branch feeling this dimension more strongly than the first (mean value of 3.0600 *versus* 2.0387). With regard to the "Impotence" dimension, there is a significant difference between the samples from the Navy and the Army (the Navy is more affectedby this factor –mean value of 2.9600 - than the Army – mean value of 2.4234), and lastly, with regard to the "Boredom" dimension, it appears that the Navy (mean value of 3.1300) is also more affected than the Army (mean value of 2.5242).

Addressing the results obtained from the perceived stress scale, we find that the mean values are not particularly high (a maximum value of 3.86 illustrates that), meaning that, despite everything, a generally strong perception of stress by respondents does not exist.

In this case, the values among Branches are also relatively stable, with the only significant difference appearing between the samples of the Navy and Army (mean value of 2.3829 versus 2.0138).

Table 2 presents the results of the leadership dimensions in the MLQ. As can be seen, there is great uniformity among the values of the six dimensions that comprise the FSLT (which is measured by the QML).

Table 2 - statistical values of the QML leadership dimensions

	N	Minimum	Maximum	Mean	Standard Deviation
Inspirational Motivation	101	1,75	5,00	3,8292	,87531
MEA	101	1,00	5,00	3,7351	,86517
Satisfaction	101	1,00	5,00	3,7178	1,10999
Contingent Reward	101	1,00	5,00	3,7030	,98597
Individualized Consideration	101	1,20	5,00	3,6535	,98788
Extra Effort	101	1,00	5,00	3,6403	1,02272
Valid number (list)*	101				

Source: Ferreira (2014)

Thus, when assessing the Branches separately, there are noticeable differences: in general, the six dimensions in question are significantly more taken into account by the Army and the Navy samples when compared to the Air Force sample.The discrepancy is more pronounced in the case of the Army/Air Force comparison. The Air Force was the Branch where the perception of leadership effectiveness was lower, as evidenced by the very low values in leadership outcomes, namely "Satisfaction", in contrast with the Army, where the mean value obtained for five of the six dimensions of the FSLT was greater than four.

We now turn to the analysis of the results concerning the "Resilience" dimension. Once again relatively high mean values can be verified, meaning that the sample recognises resilience characteristics in their direct superiors (Table 3).

Table 3 - Statistical values of the resilience dimension

	N	Minimum	Maximum	Mean	Standard Deviation
Resilience	101	1,76	5,00	3,8128	,76780
Valid N (list)	101				

Source: Ferreira (2014)

The differences between Branches also persist here.The degree of resilience pointed by the samples from the Army and the Navy is consistently higherthan the sample from the Air Force. The difference is, again, higher in theArmy/Air Force comparison (mean values of 4.2374 and 3.0746 versus 3.8448versus 3.0746, respectively).

The analysis of the results extracted from the Social Support questionnaire brings, once again, curious results: the social support of the direct superior is the least valued of the three dimensions under review, with amean value of 3.2887, as opposed tosocial support provided by the family, which is the most valued dimension, with amean value of 4.6328.The social support provided by peers also presents a high mean value (4.0934). The high valuation attributed to family social support helps explain why the "Isolation"dimension, related precisely with factors such as family estrangement and the existence of unreliable means of communication, is the highest of the six dimensions ofstressors arising from MMO.

Table 4 - Statistical values of the social support dimensions

	N	Mínimo	Máximo	Média	Desvio Padrão
Apoio_Social_Familia	101	2,33	5,00	4,6328	,56689
Apoio_Social_Camarada s	93	2,17	5,00	4,0934	,72237
Apoio_Social_Chefe	84	1,00	5,00	3,2887	1,01185
N válido (de lista)	84				

Source: Ferreira (2014)

Another piece of data that can be extracted is that social support from the direct superior presents a greater dispersion of answers than the other two dimensions, meaning that the assessment of this dimension will vary according to thedirect superior. In contrast, social support from family and peers are much more stable concepts (lower standard deviation).

An independent analysis by Branchshows, at the outset,that the Army is the only Branch in which social support from the Direct Superior presents a mean value greaterthan four, which means that there are significant differences between this Branch and the other two. The results from the Navy sample also show significant differences compared to the sample from the Air Force, where social support of the direct superior is concerned: mean value of 3.1970 *versus* 2.6167.

b. Correlations between concepts and variables

Using the SPSS tools, we correlated the variables assessed in this study. We will beginwiththe "Resilience" dimension, correlating it with the "Perceived stress" dimension (Table 5).

Table 5 - Correlation between the"Perceived stress" and "Resilience" variables

		Perceived Stress	Resilience
Perceived Stress	Pearson's Correlation	1	-,255*
	Sig. (2 tails) ades)		,010
	N	101	101
Resilience	Pearson's Correlation	-,255*	1
	Sig. (2 tails) ades)	,010	
	N	101	101

* The correlation is significant at the 0.05 level (2 tails)

Source: Ferreira (2014)

It can be verified that the two variables have a significant negative correlation, meaning that the higher the resilience (in leaders), the lower the perceived stress (in subordinates).

As additional data, we can also mention the fact that this correlation is only seen in the Army. For the Navy and Air Force, it was found that the psychological robustness of leaders does not have a measurable impact on reducing the stress levels of subordinates.

Correlating the "Resilience" dimension with various dimensions of stressors (Table 6) resulting from MMO, it was found that there is a significant negative correlation for the dimensions "Ambiguity", "Impotence" and "Boredom", that is, greater resilience (in leaders) corresponds to a decrease in the perception of three dimensions of stressors (by subordinates).

Table 6 - Correlation between the "stressors arising from MMO" and "resilience" variables

		Resilience	Isolation	Ambiguity	Impotence	Boredom	Danger	Workload
Resilience	**Pearson's correlation**	1	0,035	-0,375 **	-0,300 **	-0,225 *	0,042	-0,178
	Sig. (2 tails)		0,727	0,000	0,002	0,023	0,676	0,075
	N	101	101	101	101	101	101	101

* The correlation is significant at the 0.005 level (2 tails)
** The correlation is significant at the 0.001 level (2 tails)

Source: Ferreira (2014)

Analysing the correlations by AFBranch, we found that the sample from the Army adds "Workload" to the three dimensions mentioned above. In the case of the Air Force no correlation occurs, showing that, in this Branch, the resilience of leaders does not contribute in any way to decrease the perception of eitherof the stressors.The sample from the Navy

presents a correlation in the "Impotence" and "Boredom" dimensions. Moreover, taking into account the statistical mean values of the "Resilience" dimensionscored by each sample, these results point to the possibility that, to increasing levels of resilience in direct superiors, correspondan increased number ofdimensions ofattenuatedstressors, as that is the trend observed in the three samples.

We have also found that the dimensions of stressorsthemselves correlate positively with each other in many cases, that is, the manifestation of certain stressors enhances the perception of others.

Table 7 displays correlations between various leadership dimensions of the MLQ and the three dimensions of perceived support. With respect to the correlations between the various leadershipdimensions in the MLQ and the three dimensions of perceived support, we can observe the positive correlation between any of the six leadership dimensions inthe FSLT and the social support of the direct superior. This is no longer true, however, for the case of the "Social support of the family" and "Social support of peers" dimensions[1]. The results obtained point not only to the two transformational leadership dimensions of the FSLT,leading to a greater perception of perceived support from subordinates, but that it is also true with respect to the two dimensions of transactional leadership and to the"Extra effort" and "Satisfaction" dimensions, which speaks well of this leadership theory.

Table 7 - Correlation between the MLQleadership dimensions and "Perceived support"

		Individualized consideration	Inspirational Motivation	Contingent Reward	MAE	Satisfaction	Extra Effort	Social Support Family	Social Support Direct Superior
Social Support Family	Pearson's Correlation	,078	,104	,097	,094	,093	,036	1	,224*
	Sig. (2 tails)	,439	,302	,334	,348	,356	,721		,041
	N	101	101	101	101	101	101	101	84
Social Support Direct Superior	Pearson's Correlation	,588**	,563**	,617**	,520**	,645**	,666**	,224*	1
	Sig. (2 tails)	,000	,000	,000	,000	,000	,000	,041	
	N	84	84	84	84	84	84	84	84
Social Support Peers	Pearson's Correlation	,084	,145	,148	,161	,171	,245*	,294**	,324**
	Sig. (2 tails)	,424	,165	,157	,124	,102	,018	,004	,003
	N	93	93	93	93	93	93	93	84

*The correlation is significant at the 0.05 level (2 tails)

**The correlation is significant at the 0.01 level (2 tails)

Source: Ferreira (2014)

Regarding the correlation between the variables of perceived support and "perceived stress", it was shown that there is no correlation between any of the three dimensions of social support and "perceived stress", which means that although the sample fully appreciates

[1] Considering what is being dealt withis the correlation of leadership variables with social support, it does not make sense to consider any dimensions of social support other than the direct superior.

these three dimensions, as previously noted in this chapter, it does not perceive them as mitigating factorsof stress.The only correlations that can be verified are those between the actual dimensions of social support. Interestingly, when we assess each Branch of the AF separately, different information is extracted. We observedthat, for the sample from the Air Force, the perceived support of peers contributes to the reduction of perceived stress, while in the Armyit is the perceived support of family that contributes to the same effect.This means that, even in the TO, it is not the perceivedsupport from the direct superiorthat is the most important factor in stress mitigation.This support, in its most relevant aspect, can come from as far as family is, thousands of kilometres away (Army), frompeers (Air Force) or may even not be perceived at all (Navy).

We will nowpointtoTable 8, where the correlation between the leadership dimensions of the FSLT and "perceived stress" is made clear.

Table 8 - Correlation between the leadership dimensions of the FSLT and "Perceived stress"

		Perceived Stress	Individualised Consideration	Inspirational Motivation	Contingent Reward	MAE	Satisfaction	Extra Effort
Perceived Stress	Pearson's Correlation	1	-,312**	-,420**	-,381**	-,310**	-,317**	-,283**
	Sig. (2 tails)		,001	,000	,000	,002	,001	,004
	N	101	101	101	101	101	101	101

**The correlation is significant at the 0.01 level (2 tails)

Source: Ferreira (2014)

In the case of the correlation between the leadership dimensions of the FSLT and "perceived stress", it can be observed that all six dimensions of the FSLT correlate negatively and significantly with "perceived stress", which means that an increase inleadership effectiveness represents a decrease in perceived stress in subordinates. Moreover, it is not only the two dimensions of transformational leadership that correlate. The remaining four, included in the FSLT, also do so.

As an informative note, the inter-Branchcomparison of the AF found that the Air Force is the only sample where the answers showno correlation between the dimensions under analysis. This result is not surprising, if we remember that the sample from this Branch was the one that reported less satisfaction with the leadership of their direct superiors, as mentioned earlier in this chapter, leading us to conclude that, aslong as leadership is conveniently perceived by subordinates, it will act as a mitigating element of stress.

From the analysis of the correlations found, however, other relevant data can be extracted that, despite not being the focus of analysis in this research, nevertheless represent new information and addedknowledge in this field. Examples of this are the strong positive

correlation between the leadership dimensions of the FSLT and resilience, or the positive correlation between resilience and social support by direct superiors and peers.

Conclusions and recommendations

The review of the essentially foreign literature that was performed, andwhich is presented throughout the first chapter of this work shows, indeed, that, on the one hand, stress is ubiquitous in MMO and, second, the attitude of military leaders in the face of this reality can play a decisive role in how subordinates deal with that certainty.Such features as psychological robustness and leadership style are not negligible factors in this equation, combined with the supportprovided by leaders that is perceived by their respective subordinates, seem to be able to mitigate the influence of stressors and stress levels.

The investigation was carried outusing the hypothetical-deductive method, and in the observation phase of the scientific method, a sample was usedto represent the universe of Portuguese military personnel participating in MMO, hence including elements from the three Branches of the AF to ensure the greatest possible homogeneity.

It could be confirmed that the psychological robustness of military leaders contributes to their subordinates presenting with lower stress levels. It was also confirmed that the psychological robustness of leaders has implications on the reduction of different types of stressors, although this only happens to somedimensions of stressors, especially in the cases of "Ambiguity", "Impotence" and "Boredom". Nevertheless, the trend observed, based on the individual interpretation of the results for each Branch of the AF, seems to indicate that the increase of resilience in leadersleads to the perception of a decreasing number of stressors.

With regard to leadership, a ruling concept in the military institution, it was important to ascertain to what extent it influenced the issue of mitigating the effects of stress in subordinates. Here, too, it was confirmed that a transformational leadership style leads to greater perception of Perceived Support by subordinates, which shows to some extenthow leadership action can also produce effects onthe emotional support experienced by subordinates.

The issue of the influence of perceived support, assessed in this work by studying three social support variables, is widely commented in the literature, where it is presented as moderator of the effects of stress, even in studies carried out in military environments. However, the fieldwork led us to conclude that perceived support does not lead to lower levels of stressin subordinates.These were some of thesurprising results ofthis research, in contrast to what would be expected and which was consistently found throughout the literature review. Nevertheless, it was found that the sample used in this study significantly valued the three dimensions of social support assessed and that, of these, the social support of the direct superior is the less valued.

Based on the answers obtained we could respond accordingly to the CQ, which guided and framed the conduct of this research and that we now recall: *"Bearing in mind that military personnel in modern military operations is subject to stressors that may affect their*

performance, to what extent can leadership and the psychological robustness of leaders contribute to a reduction in the stress levels of subordinates?"

We are, then,led to answer that: *In a complex and unpredictable environment like the one that characterizes MMO, military leaders play a key role in improving the quality of life of their subordinates. The characteristics of these leaders, such as psychological robustness and the effectiveness and quality of their leadership decisively contribute to a reduction in the stress levels of theirsubordinates.Family and peers also constitute a strong pillar in the emotional stability of troops deployed in this type of mission, though not directly contributing to a reduction in stress levels.*

The CQ having been answered, there is still some work to be done on a side aspect of this research, which eventually became one of its most important contributions to knowledge. Although the present research did not intend to scrutinize the differences that might occuramong each Branch of the AF in the sample, the truth is that these disparities soon proved evident, and were another surprising and unexpected result of this work.

Systematizing some of the most noteworthy results, it was found, for example, that there are differences in perceivedstressorsand perceived stress, which may be related to the specificity of the type of missions that each Branch performs, but also possibly with leadership effectiveness. Indeed, the sector that least valued the leadership dimensions of the FSLT, including the leadership outcomes - the Air Force - was also the one where lower (or no) correlation was found between leadership and the decrease in perceived stress or stressors. In contrast,the Army was theBranch where leadership was most valued and where, cumulatively, higher correlations were found between this concept and the reduction of perceived stress. The results showed that the issue of leadership was the most differentiating factor amongBranches.

The aspect of psychological robustness also showed measurable differences among the three samples: again, the Army was the Branch in which the resilience of the leaders was most scored and where the highest correlation was effectively found between this concept and a reductionin perceived stress. It should be noted, moreover, that thisis the only sector where this correlation is expressed significantly.

Finally, with regard to the issue of social support, the differences were again significant. If, on the one hand, the social support provided by family and peers is the most consensual factor among the three Branches, with each Branch significantly appreciating these two dimensions, in the case of the social support provided by the direct superior, the Army is the only Branch where this dimension is significantly appreciated, compared to the Navy and Air Force. Still, this has not caused any significant correlation between this dimension and the decrease of perceived stress.

Studies on this type of topic are sparse in Portugal, taking into account the already extensive national presence in various types of international military missions. The differences in the

results identifiedamong the three Branches of the AF arouse curiosity and deserve, in our opinion, a new, deeper evaluation that would enablethe assessment of the causes of those differences, and is thus, as of now, our main recommendation.

Portugal, despite its limited size and resources, is internationally known today as a solid and reliable producer of security. On a level where, as a result of a well-established and active presence in various TO and in various types of missions over the world, the Portuguese AF have seen their role recognized and praised, we are of the opinion that it is necessary to continue investing in the training of our military leaders, giving them the tools to become more efficient in the conduct of the men and women intheir service.This will translate into theAF being increasingly well adapted to the vicissitudes of the currentoperational environment in MMO.

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