

PREDICTION OF LEADERSHIP SELF-EFFICACY: A CASE STUDY IN A JOINT MILITARY SAMPLE

PREDIÇÃO DA AUTOEFICÁCIA EM LIDERANÇA: ESTUDO DE CASO NUMA AMOSTRA MILITAR CONJUNTA

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Abstract

The main objective of the present study was to analyze the impact of personality factors (Big Five), participation in operational missions, leadership styles and competencies on Leadership Self-Efficacy. This case study employed a quantitative methodology, through the application of a questionnaire to a sample of 103 officers from the Senior Officer Promotion Course 2022/2023 (2nd edition). The main results suggest an explanatory model of Leadership Self-Efficacy (with an explanatory power of 64.2%), where the following variables were identified as predictors: Transformational Leadership, Neuroticism (negative relationship), the importance attributed to Teamwork and Communication competencies, and the quality of Team Interaction. Participation in operational missions (frequency) was not significant in the model, and no significant differences were found in Leadership Self-Efficacy between military personnel with and without experience in operational missions.

Keywords: Self-Efficacy, Big Five, leadership competencies, leadership styles

Resumo

O presente estudo teve como principal objetivo analisar o impacto dos fatores de personalidade (Big Five), participação em missões operacionais, estilos e competências de liderança na Autoeficácia em Liderança. Este estudo de caso apresentou uma metodologia quantitativa, através da aplicação de um questionário a uma amostra de 103 oficiais do Curso de Promoção a Oficial Superior 2022/2023 (2ª edição). Os principais resultados obtidos sugerem um modelo explicativo da Autoeficácia em Liderança (capacidade explicativa de 64.2%) tendo sido identificadas como variáveis preditivas: a Liderança Transformacional, o Neuroticismo (relação negativa), a importância atribuída às competências Trabalho de Equipa e Comunicação, e a qualidade da Interação com a Equipa. A participação em missões operacionais (frequência) não foi significativa no modelo e não foram encontradas diferenças significativas na Autoeficácia em Liderança entre militares com e sem experiência em missões operacionais.

Palavras-chave: Autoeficácia, Big Five, competências de liderança, estilos de liderança

1. Introduction

The military is a highly hierarchical structure. As a result of this, the terms Command and Leadership are almost inseparable, and it is widely accepted that the exercise of Command is interlinked with a commander's leadership ability. Leadership remains a particularly relevant issue in the military. In a rapidly changing world, military leaders must display strength of character and military virtues such as loyalty, self-discipline, willpower, intelligence, initiative, sound judgement, the ability to make decisions and the courage to do the right thing at the right time (Vieira, 2002, p.6).

Whether in a normal context or in situations of crisis (e.g. pandemic crises), the dynamic, ever-changing environment of military life creates challenges on a daily basis which require leadership. The Armed Forces (AAFF) must adapt and respond to those challenges, not

only by organising the resources to operate in volatile, uncertain, complex and ambiguous environments, but also by fostering a constructive mindset, promoting well-being and increasing self-confidence among its members (Ribeiro, 2021). To deal with this reality where uncertainty and chaos are a constant, modern military leaders must possess remarkable mental agility, creativity and willpower, in addition to abilities such as self-confidence, courage, honesty, competence and, above all, the ability to inspire their subordinates and, in doing so, gain their obedience and respect (Vieira, 2002, p.6).

Leadership is the process of influencing people, providing purpose, direction and motivation to accomplish the mission and improve the organisation (US Army, 2012). It is an essential and unifying element in any organisation.

Aware of the importance of leadership in the exercise of command, as well as the correlation shown in the literature between leadership self-efficacy and its effectiveness (Paglis & Green, 2002), it became pertinent to identify the variables that promote leadership self-efficacy. The authors of this research have endeavoured to analyse the relationship between personality factors, participation in operational missions, leadership styles and competences and Leadership Self-Efficacy, efficacy through the lens of the main theories of this area of knowledge, applied to a case study of a combined convenience sample of 103 military officers who audited the 2nd edition of the Field Grade Officers Course (CPOS) 2022/2023. The study was guided by the following research question: What is the influence of personality traits, leadership styles and leadership competencies on perceived leadership self-efficacy among officers from the three branches of the AAF and the GNR?

The following general objective (GO) was defined to ascertain if there is a correlation between the characteristics of leaders and the experiences of officers from the three branches of the Armed Forces and the National Republican Guard, both during military operations or in their daily routine: GO – To analyse the influence of personality traits (Big Five), participation in operational missions, leadership styles and leadership skills on perceived leader self-efficacy among officers from the three branches of the AAF and the GNR. Two specific objectives (SO) were derived from the general objective: SO1 – To analyse the relationship between leadership styles and Leadership Self-Efficacy in the Armed Forces and the National Guard; SO2 – To analyse the relationship between personality factors and Leadership Self-Efficacy in the FFAA and GNR; SO3- To analyse the relationship between the importance attributed to leadership skills and leadership self-efficacy in the Armed Forces and the National Guard; SO4- To analyse the relationship between participation in operational missions and Leadership Self-Efficacy in the Armed Forces and GNR.

2. Theoretical and conceptual framework

This chapter contains the literature review and the analytical framework around which the study will be structured.

2.1. Military leadership: the role of commanders

Leadership is one of the most complex and multifaceted organisational phenomena

(Bass, 2008; Bryman et. al., 2011; Yukl, 2012). The scope of the concept, its importance and the breadth with which it is studied, means that there are multiple definitions and in these the focus sometimes appears on the leader and not the process (Jesuino, 2005). The definition of leadership continues to be the subject of debate and divergence in academic literature, and the concept is often adapted to reflect social changes and organisational needs (Gomes et al., 2023). More recent literature reveals that the role of the leader has evolved beyond the simple ability to influence, to also encompass the promotion of inclusive and positive work environments. Choi et al. (2022) highlight the complexity of leadership in a diverse context, emphasising the need for leaders to adapt their practices to a wide range of employee experiences and needs.

In this study we consider leadership to be a complex, dynamic and multifaceted process in which different organisational roles are played by several individuals (Rosinha, 2016), resulting in a social dynamic wherein a group is influenced to work towards a common goal (Northouse, 2004).

The military, as an organisation in which all members take an oath to fulfil their duties, even if it means sacrificing their own lives, is the ideal setting for studying this topic. In this environment, leadership means the ability to influence a group of people to do what is required by doing more than simply exercising the authority afforded by their rank (Vieira, 2002).

The concept of Command is inherent to the military. Over the last centuries, it has been explored by military leaders such as Clausewitz and Wellington (King, 2019) and, like the concept of leadership, it has changed several times. In its doctrinal documents, the North Atlantic Treaty Organisation (NATO) defines Command as the “authority vested in a member of the armed forces for the direction, coordination and control of military forces” (NATO, 2019). King added decision-making and the ability to communicate in an effective, motivating way as essential skills to perform this military function (King, 2019).

Leadership and command are not inseparable terms. The exercise of Command is directly linked to leadership ability, but is more encompassing. Military Command integrates three connected functions: “mission definition, mission management and mission motivation” (King, 2019, p.69). Successful leadership is closely linked to a commander’s ability to connect and manage these three functions in a motivating way. It is an essential skill, especially in adverse situations.

2.2. Leadership theories

The theories of leadership can be divided into models. The first four presented below are based on classical theories, while the last model integrates several contemporary theories.

- **Type I Models – Universal Leader Traits**

Type I Leadership Models, also known as Universal Leader Trait Models, are based on the idea that certain innate characteristics are essential for leadership effectiveness, regardless of context or culture. This approach suggests that personal traits are decisive for a leader’s success (Bilhim, 2005). Northouse (2018) explains that although personal traits contribute to leadership, other elements such as the environment and acquired competences are equally

fundamental to a leader's effectiveness. Judge et al. (2002) identified significant relationships between leadership and personality traits such as extroversion and emotional stability, emphasising that the application of these traits depends on the specific circumstances. Zaccaro (2007), argues that leadership is a complex and multifaceted function, which involves the interaction between traits, competences and environmental conditions.

- Type II Models – Universal Leader Behaviours

These models focus on what the leader does, his actions and behaviour towards the team. Kurt Lewin's theory (Lewin et al., 1939) identifies three styles of leadership based on the leader's behaviour: autocratic leaders, who leadership the group's policies; democratic leaders, who encourages group members to decide their own policies; and laissez-faire leader, with a non-participatory, distant and indifferent attitude (Jesuino, 2005). Blake & Mouton (1985) developed the management grid, identifying five leadership styles, obtained by crossing two variables: people-orientation vs. task-orientation.

- Type III / IV Models – Contingency / Second Generation Contingency Models

In these models, leaders are considered a product of the situations in which they operate, which have an impact on them (Jesuino, 2005). The first approach is Fiedler's contingency theory, which states that followers' performance depends on how the leaders' leadership style fits the situation (Fiedler, 1967). The theory distinguishes two leadership styles: task-oriented leaders and relationship-oriented leaders (Jesuino, 2005). The model was further developed by Hersey and Blanchard (1988), who added situational variables that affect leaders' behaviour (Jesuino, 2005). To influence subordinates to achieve the goals set by the organisation, leaders must adapt their leadership style both to the level of maturity of their subordinates and to the situation (Hersey & Blanchard, 1988).

- Type V Models – Emerging Models

The Full Range Leadership Model (FRLM) is one of the emerging models, developed by Bass & Avolio (1995) and differs from the others in that it is a model of leadership development – transforming followers into leaders (Figure 1). Originally, Burns (1978) presented transformational and transactional leadership as a binomial, describing transactional leadership (Odumeru & Ifeanyi, 2013) as an exchange relationship between leader and followers, where the focus is on satisfying immediate needs and exchanging rewards/punishments to achieve specific goals, and transformational leadership as a process whereby the leader inspires and motivates their followers to transcend their own interests in favour of the collective good and personal development. Bass (1985) expanded on Burns (1978) idea by proposing that leaders can exhibit transactional or transformational styles/behaviours, depending on the circumstances, defending the idea that these should exist in a continuum model, where effective leaders can apply various styles as necessary, having introduced the FLRM with Avolio (Bass & Avolio, 1990, 1995). The laissez-faire style is characterised by the absence of leadership, leaving the team adrift (Barbuto & Lance, 2007).

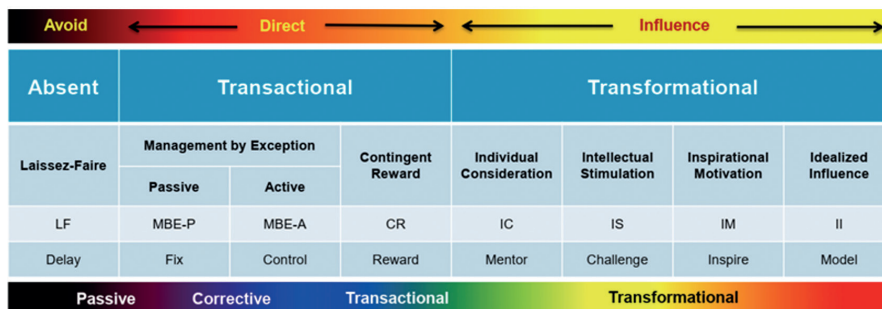


Figure 1 – Leadership Styles according to the FRLM (Barbuto & Lance, 2007)

The transactional style comprises two components (Barbuto & Lance, 2007; Bass & Avolio, 1995): Management by Exception (active and passive) and Contingent Reward. In Management by Exception, the leader actively monitors mistakes (active) or intervenes only when problems arise (passive). The transformational style, considered to be the most effective, encompasses four components (Barbuto & Lance, 2007; Bass & Avolio, 1995): Individualised Consideration (the leader offers support and personalised attention, promoting followers' personal development), Intellectual Stimulation (the leader challenges followers to think creatively), Inspirational Motivation (the leader communicates a stimulating vision that engages and motivates the team), and Idealised Influence (the leader serves as a role model, earning respect and trust). The theory has shown substantial validity not only in the motivation and satisfaction of those being led, but also in terms of predicting leadership behaviour (Judge & Piccol, 2004). The authors (Bass & Avolio, 1995) also made some final considerations about the model: transformational leadership increases the effectiveness of transactional leadership - it does not replace it; different circumstances require different behaviours, and articulating different types of behaviour is critical for success. Based on the FRLM model, the authors (Bass & Avolio, 1995) presented an instrument designed to assess leaders' perceptions of their leadership style and behaviours - the Multifactor Leadership Questionnaire (MLQ).

2.3. Personality theories (Big Five)

Scholars have attempted to establish a relationship between personality traits and competencies since the beginning of the second half of the 21st century. However, the first studies on the topic did not find any links between personality and competence, largely due to the lack of a commonly accepted taxonomy for categorising and dividing the personality types (Barrick & Mount, 1991). Until recently, success in most activities (such as academic achievement) was analysed in comparative terms, by measuring a person's intelligence using a variety of methods (Chamorro-Premuzic et al., 2006).

Personality, as we can infer from the etymological root, is unique to each person and depends on physiological, social and cultural factors (Martinho, 2008). Nevertheless, personality is made up of traits which researchers can use to identify patterns of behaviour to

create a taxonomy that eliminates the ambiguity and superficiality for which the research in this area has been criticised (Costa & McCrae, 1992).

The Big Five theory was introduced in the 1970s. In 1980, five personality traits were identified, based on which various personality types were categorised and classified, allowing factorial and comparative studies to be carried out (Barrick & Mount, 1991). Over time, as different authors analysed them, these trait categories changed. However, the differences are more semantic than formal (ibidem). The five personality domains recognised in current research are: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience (Goldberg, 1981; Young et al, 2007).

Extraversion refers to a person's tendency to be sociable and the energy they put into their social interactions. It is positively correlated to leadership emergence (Taggar et al., 1999) because people with high levels of this personality trait tend to stand out in their group because they talk more and are more assertive and emotional (Costa & McCrae, 1986).

Agreeableness means that a person is cooperative, empathetic, altruistic, compassionate and trusting. It also refers to a person's tendency to be generous and whether or not they react to adversity by becoming irritable towards others (Costa & McCrae, 1986). Low levels of agreeableness may indicate a competitive, individualistic and inflexible individual (Peterson, 2017).

Conscientiousness describes a person's ability to focus on a specific task, their capacity for organisation, persistence and goal-oriented motivation (Peterson, 2017). A high level of Conscientiousness represents someone who is hard-working, ambitious and persevering (Costa & McCrae, 1986).

Neuroticism is a negative indicator. High levels of this trait may negatively affect performance in various areas. It reveals a person's instability, anxiety levels, stress and negative emotions in response to difficult situations (Peterson, 2017). Costa and McCrae (1986) include in this domain characteristics such as the tendency to worry, temperament and feelings of guilt and vulnerability.

Openness to Experience is a personality trait that reflects an individual's willingness to try imaginative, creative and original solutions. It represents a person with high levels of curiosity, who prefers variety over routine (Costa & McCrae, 1986). This dimension describes someone who is not conservative in the way they see the world and in the decisions they make.

2.4. Leadership competencies

To perform their duties in an effective way, leaders must adapt to their employees or subordinates and to the tasks that they have been assigned. Competence, as defined by Cunha et al. (2010), is an intrinsic quality that is associated with exceptional performance in a given role. Boyatzis (1994) states that individual leader performance is influenced by three critical components: individual competences, the demands of the task and the organisational environment.

Rouco (2012) analysed a sample comprising mainly military personnel and identified 113 leadership competencies, 53 of which were later validated by experts. Other authors,

including Spencer and Spencer (1993), Vieira (2002) and Adair (2004), have also outlined various leadership competencies that are manifested in individual (e.g. communication, initiative and decision-making), task (e.g. planning and organisation) and group (e.g. teamwork).

The study by Rouco (2012), which focused on military leadership, also identified competencies associated with Emergent Leadership, which are particularly relevant to the Armed Forces. Spencer and Spencer (1993), Adair (2004) and Rouco (2012) define several competencies associated with leadership; however, these studies focus on emergent leadership in small informal groups. Some essential competencies for the emergence of leadership in informal groups include planning, communication, decision-making, initiative and conflict management.

Ellert (2008) stresses the importance of communication and divides it into six associated components: Determining information-sharing strategies; Employing engaging communication techniques; Conveying thoughts in such a way so as to ensure understanding; Presenting recommendations so others understand benefits; being sensitive to cultural factors in communication; listening actively (according to the author, the latter is essential for effective communication).

However, when they are in operational environments, leaders may need to use different competencies, such as flexibility and the ability to adapt and change (Wong et al., 2003).

Azevedo's study confirms that leadership competences play a crucial role in predicting the emergent leadership variable, in line with the literature that emphasises the importance of these competences in leadership effectiveness. Competences related to the dimension of the individual, such as ascendancy, communication and decision-making, proved to be particularly relevant, reinforcing the link between the ability to influence and effectiveness in decision-making as determining factors in the emergence of leadership. In addition, a significant moderation of the leadership experience variable was observed, suggesting that individuals with more experience are able to use their competences more effectively to emerge as leaders (Azevedo, 2022).

2.5. Leadership Self-Efficacy

Self-efficacy, a concept introduced by Albert Bandura in 1977, is associated with the transformational leadership. A study by Hannah et al. (2012) confirmed this positive correlation. Self-efficacy refers to a person's perception of their ability to complete a specific task and achieve a desired goal or outcome, even when faced with challenges that may require effort and perseverance. According to Bandura (1994), self-efficacy beliefs influence people's emotions, thoughts, actions and motivation.

Anderson et al. (2008) suggest that leaders with higher levels of leadership self-efficacy are more likely to engage in leadership activities more often and more effectively than those with lower levels of self-efficacy. Other studies, such as Paglis and Green (2002), also found a positive relationship between self-efficacy and leadership effectiveness. Therefore, studying self-efficacy implies examining people's judgements of their abilities and the way those beliefs influence their future actions as leaders. This aspect is called Leadership Self-Efficacy (LSE),

a construct that represents a person's judgement of their own ability to successfully exert leadership by providing direction to the work group, building relationships with followers to get them to commit to change goals and collaborating with them to overcome resistance to change (Paglis & Green, 2002, p.217).

Hannah et al. (2012) compared the performance of military officers serving as leaders in two units, one engaged in tactical training and the other in garrison, and found that LSE has higher predictive validity in more challenging contexts. This finding confirms LSE is useful to predict effectiveness in tasks that require high levels of cognitive ability and / or adaptive thinking.

2.6. Study hypothesis and analytical framework

In order to analytically structure the answer to the Central Research Question (CRQ) and its Derived Questions (DQ), as well as to meet the study's objectives (General and Specific), an analysis model (Figure 2) was drawn up based on the literature review, which translates into the formalisation of hypotheses that establish relational concepts between the concepts and variables under study. The respective conceptual map is shown in Table 1.

Recently, there has been an increase in the number of studies attempting to establish a relationship between Bandura's (1997) theories of self-efficacy and Bass's (1985) theories of transformational leadership. Fitzgerald and Schutte (2010) found that leaders with high levels of self-efficacy also have high levels of transformational leadership. A study by Hannah et al. (2012) found that leadership self-efficacy is associated with transactional leadership, albeit to a lesser degree than with transformational leadership. According to Barbuto (2007), transformational behaviour tends to elicit extra effort from employees and result in higher levels of satisfaction and productivity, as well as greater organisational effectiveness. This allows us to propose the following hypotheses:

H1: Transformational leadership positively predicts leadership self-efficacy.

Several studies have attempted to establish a relationship between personality traits and different styles of leadership and their effectiveness. However, as noted above, most were inconclusive or contradictory due to the vagueness of the domains that represent an individual's personality, and it was not until the late 1990s that a direct quantitative relationship between leadership and personality was established (Booth et al., 2013). Neuroticism stands out for its negative relationship with performance and Self-Efficacy, while Conscientiousness has shown a positive relationship with the same variables (Johar et al., 2013; Judge et al., 2002; Sarubin et al., 2015). The following hypotheses were established regarding the relationship between personality factors and Self-efficacy in military leadership:

H2a: Neuroticism is negatively related to leadership self-efficacy.

H2b: Conscientiousness is positively related to leadership self-efficacy.

Azevedo (2020) identified the importance of leadership competencies in predicting the emergence of leadership in military cadets during a field exercise. The Communication and Decision-Making competencies proved to be significant predictors of effective leadership. This suggests that these competencies could also be associated with leadership self-efficacy:

H3a: The Communication competency has a positive correlation with leadership self-efficacy.

H3b: The Decision-making competency has a positive correlation with leadership self-efficacy.

No correlations were found between the respondents' participation in operational missions and the self-efficacy dependent variable. Given the specificity of the independent variable, as well as its narrower scope, this was to be expected. Nevertheless, a study by Kwok (2020) found that formal leadership training leads to higher levels of leadership self-efficacy, providing an exploratory conceptual framework. As such, the authors of this study propose that participation in operational missions is a type of "on-the-job-training", allowing us to formulate the following hypothesis:

H4: Participation in operational missions is positively correlated with leadership self-efficacy.



Figure 2 – Conceptual analytical framework

Table 1 – Conceptual map representing the analysis model underlying the study

Specific Objectives	Derived Questions	Concepts	Dimensions	Variables	Indicators
SO1 To analyse the relationship between leadership styles and Self-Efficacy in Leadership in the Armed Forces and GNR.	DQ1 What is the relationship between leadership styles and Leadership Self-Efficacy in the AAF and GNR?	Leadership Styles	Transformational	Idealised Influence (II)	Multifactor Leadership Questionnaire (MLQ) 21 items (Likert scale)
				Inspirational Motivation (IM)	
				Individualised Consideration (IC)	
				Intellectual Stimulation (IS)	
			Transactional	Management by exception	
				Contingent reward	
			<i>Laissez-Faire</i>	<i>Laissez-Faire</i>	

[Cont.]

SO2 To analyse the relationship between personality factors and Leadership Self-Efficacy in the Armed Forces and the GNR.	DO2 What is the relationship between personality factors and Leadership Self-Efficacy in the AAFF and GNR?	Personality Factors	Big Five	Neuroticism	Big Five Personality Inventory 10 items (Likert scale)
				Openness to Experience	
				Amiability	
				Extroversion	
				Conscientiousness	
SO3 To analyse the relationship between the importance attributed to leadership skills and leadership self-efficacy in the Armed Forces and the GNR.	DO3 What is the relationship between the importance attributed to leadership competences and leadership self-efficacy in the AAFF and GNR?	Leadership competences	Individual	Communication	Importance attributed to leadership competences six items (Likert scale)
				Initiative	
				Decision-making	
			Task	Planning	
			Group	Organisation	
SO4 To analyse the relationship between participation in operational missions and Leadership Self-Efficacy in the Armed Forces and the GNR.	DO4 DQ4 What is the relationship between participation in operational missions and Leadership Self-Efficacy in the AAFF and GNR?	Operational experience	Participation in operational missions	Experience of taking part in operational missions	Dichotomous indicator (yes/no)
					Frequency (number of missions)
SO1 SO2 SO3 SO4	DO1 DO2 DO3 DO4	Leadership Self-Efficacy	Leadership Self-Efficacy	Leadership Self-Efficacy	Questionnaire (17 items - Likert scale)

3. Methodology and Method

This chapter describes the methodology and method used in the study.

3.1. Methodology

This research is based on deductive reasoning, associated with a quantitative strategy and a case study research design (Santos & Lima, 2019).

3.2. Participants

The convenience sample used in this study consisted of auditors of the 2022-2023 CPOS (2nd edition). The study surveyed 103 military officers (Captain/First Lieutenant), most of

whom are male (79.6%), with ages between 35 and 40 (n=52; 50.5%). The other participants were in the age-range 41-46 (n=25; 24.3%), 29-34 (n=21; 20.4%) and 4.9% were 47 or older (n=5). The most represented branch of the AAFF is the Portuguese Air Force (n=31; 30%), followed by the Portuguese Navy (n=28; 27.2%), the Portuguese Army (n=25; 24.3%) and the GNR (n=16; 15.5%). Three officers stated that they belong to a foreign military institution (2.9%). Most had participated in operational missions (n=56; 54.4%), with 32% having been deployed in one or two missions, 10.8% in 3-9 missions, 6.8% in 10-20 missions and 6% in more than 20 missions. The average length of the most recent mission was approximately two months, and the answers ranged between 0 and 10 months.

3.3. Instruments

3.3.1. Sociodemographic questions

The questionnaire designed for this study included the following sociodemographic variables: branch of the armed forces, participation in operational missions (number of missions). The question 'how would you rate the interaction with your team over the last year?' was also included, assessed on a scale of (1) extremely negative to (5) extremely positive.

3.3.2. Multifactor Leadership Questionnaire

This study used a 21-item version of the Multifactor Leadership Questionnaire (MLQ) (Bass & Avolio, 1995; Portuguese version adapted for use in military contexts by Lopes, et al., 2018). The questionnaire assessed the officers' perceptions about their leadership behaviours, and they were asked to indicate, on a scale of 1 (never) to 5 (always or almost always), how often they used those behaviours during their last experience as managers / leaders. The questionnaire assesses seven dimensions of leadership (Table 2), which are organised into three second-order dimensions: Transactional Leadership (Contingent Reward and Management by Exception), Transformational Leadership (Inspirational Motivation, Idealised Influence, Intellectual Stimulation, Individualised Consideration) and Laissez-faire Leadership. When the average value of the inter-item correlations was accounted for, and not only Cronbach's Alpha, the internal consistency values obtained in this study were found to be adequate or acceptable for all dimensions (Hill & Hill, 2012): Idealised Influence (e.g., "I made people feel comfortable around me"; $\alpha=.74$; $p=.49$), Intellectual Stimulation (e.g., "I inspired people to think about problems in new ways"; $\alpha=.76$; $p=.52$), Individualised Consideration (e.g., "I helped people to develop"; $\alpha=.61$; $p=.35$), Contingent Reward (e.g., "I conveyed to subordinates what they need to do to be rewarded for their work"; $\alpha=.73$; $p=.48$), Inspirational Motivation (e.g., "I explained what had to be done succinctly"; $\alpha=.46$; $p=.24$), Management by Exception (e.g., "I was happy when my subordinates achieved goals"; $\alpha=.25$; $p=.16$), and Laissez- faire (e.g., "I was happy to let my subordinates do their work as they usually do"; $\alpha=.53$; $p=.28$). Item 13 was removed ($\alpha=.52$) to increase the internal consistency of the Management by Exception factor. Likewise, item 2 was removed from the Inspirational Motivation factor $\alpha=.67$).

Table 2 – Leadership factors included in the MLQ

Types of leadership	Variables	Operationalisation	Questions
Transformational	Idealised influence (II)	Is respected and trusted by followers.	1,8,15
	Inspirational motivation (IM)	Helps followers focus on work by articulating inspiring and motivating images and visions. Makes them feel that their work is meaningful.	9,16
	Intellectual stimulation (IS)	Encourages and motivates followers to think creatively by fostering an environment of tolerance in extreme situations.	10,17
	Individualised consideration (IC)	Shows interest in the well-being of subordinates, assigns projects according to their competencies and pays attention to those who are less involved in the group.	4,11,18
Transactional	Contingent reward (CtR)	These leaders emphasise that followers will be rewarded by meeting set goals.	5,12,19
	Management by exception (ME)	These leaders explain the requirements of the work to subordinates and give feedback on their performance.	6,20
	Laissez-faire (LF)	These leaders do not ask much of followers, have a hands-off approach and are happy to let the work flow normally without having to interfere.	7,14,21

Source: Adapted from Lopes et al. (2018).

3.3.3. Leadership Self-Efficacy Questionnaire

This study used the Portuguese version of the Leadership Self-Efficacy Questionnaire (Anderson et al., 2008; adapted for use in the military by Coelho et al., 2016). The questionnaire assesses officers' beliefs about their leadership abilities through 17 items (e.g., "Do you believe in your ability to achieve your goals?") on a scale of 1 (I don't believe it at all) to 5 (I believe it totally). In this study, an excellent internal consistency was obtained for the self-efficacy dimension overall $\alpha=.94$; $\rho=.49$).

3.3.4. Big Five Personality Inventory (BFI-10)

The Big Five Inventory (short 10-item version) (Rammstedt & John, 2007; Portuguese version by Bártolo-Ribeiro & Aguiar, 2008) was used to assess the five personality factors – Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience. The 10 inventory items used the wording "I see myself as someone who..." and were answered on a scale of (1) strongly Disagree to (5) strongly Agree. Five items (one for each dimension, i.e., 1, 3, 4, 5, 7) should be reversed to make the higher scores of each factor represent higher levels of the respective personality factor.

The following internal consistency values were obtained: Extraversion (e.g., "is sociable and finds it easy to express his or her thoughts / emotions"; $\alpha=.41$; $\rho=.26$), Agreeableness

(e.g., “inspires trust in others and believes that people are intrinsically good”; $\alpha=.20$; $\rho=.12$), Conscientiousness (e.g., “is diligent in his or her work”; $\alpha=.30$; $\rho=.18$), Neuroticism (e.g., “is easily unnerved”; $\alpha=.34$; $\rho=.21$) and Openness to Experience (e.g., “has an active imagination”; $\alpha=.23$; $\rho=.13$). As shown above, using Cronbach’s alpha, the internal consistency values are all poor, which is to be expected, as that this measure of reliability is sensitive to the small number of items in each dimension. Even so, if we account for the average inter-item correlations, acceptable values were obtained for all dimensions ($\rho > .15$) (Clark & Watson, 1995), with the exception of Agreeableness and Openness to Experience.

3.3.5. Leadership Competencies Questionnaire

The participants’ opinions about the importance of different leadership competencies for their job performance was assessed through a questionnaire adapted from Azevedo (2022). This questionnaire is used at the Air Force Academy (AFA) for competency training and assessment. The survey focuses on a set of individual competencies (Communication, Initiative and Decision-making), task-related competencies (Planning and Organisation), and group-related competencies (Teamwork). The items were answered on a scale of 1 (not important) to 5 (very important).

3.4. Data collection and analysis procedures

The data were collected between 15 June and 4 July 2023 using Google Forms. All officers were informed of the requirements to participate in the survey before they filled out the questionnaires.

The data were analysed using SPSS (Statistical Package for the Social Sciences)® Statistics, version 29.0. First, descriptive analyses were performed to characterise the participants. Next, the internal consistency of the dimensions included in the study was analysed using Cronbach’s alpha and the average inter-item correlations. To test the hypotheses, the correlations between the main variables were analysed and comparison of means tests were performed (Marôco, 2014). A Student’s t-test was used to compare the means between two groups and ANOVA was used to compare the means among three or more groups. A Multiple Linear Regression analysis was carried out to test the effect of the variables (the Big Five factors, the leadership dimensions of the MLQ and the perceptions about the relevance of the various leadership competencies) on leadership self-efficacy.

4. Findings

This study analysed the factors included in the instruments listed in the previous chapter, after making the changes mentioned above to increase the reliability of the measuring instrument.

4.1. Descriptive statistics of the variables

The tables below contain the descriptive statistics for the factors of the main variables analysed in this study (means, standard deviation and minimum and maximum values per variable).

Table 3 shows the mean values for Management by Exception (ME) ($\bar{x}$ =4.234; SD=0.506) and Idealised Influence (II) ($\bar{x}$ =4.234; SD=0.56) in the Multifactor Leadership measure. Of the Big Five factors, Conscientiousness had the highest mean values ($\bar{x}$ =4.041; SD=0.469).

Table 3 – Descriptive statistics: MLQ, Self-efficacy and Big Five highest mean values*

	Min.	Max.	$\bar{x}$	SD
Idealised Influence (II)	3.00	5.00	4.234	.506
Inspirational Motivation (IM)	2.50	5.00	4.077	.593
Intellectual Stimulation (IS)	2.67	5.00	3.890	.539
Indirect Consideration (IC)	2.67	5.00	4.093	.486
Transformational	3.09	5.00	4.072	.436
Transactional	3.00	5.00	4.148	.490
Contingent Reward (CR)	2.00	5.00	3.977	.640
Management by Exception (GE)	3.00	5.00	4.402	.475
<i>Laissez-Faire (LF)</i>	2.00	5.00	3.216	.606
Self-efficacy	2.24	5.00	4.200	.473
Extroversion	1.00	5.00	3.142	1.01
Amiability	1.00	5.00	3.602	.930
Conscientiousness	1.00	5.00	4.041	.969
Neuroticism	1.00	5.00	2.531	.964
Openness Expertise	1.00	5.00	3.345	.927

Table 4 shows the mean scores for the leadership competencies. The highest mean value was in the Communication competency ($\bar{x}$ =4.70; SD=0.502) and the Decision-Making competency ($\bar{x}$ =4.69; SD=0.486).

Table 4 – Descriptive statistics of the leadership competencies

	Min.	Max.	$\bar{x}$	SD
Communication	3	5	4.70	.502
Initiative	3	5	4.34	.619
Decision-making	3	5	4.69	.486
Planning	3	5	4.48	.609
Organisation	3	5	4.38	.659
Teamwork	3	5	4.66	.534

4.2. Correlation between variables

A Pearson's correlation analysis was performed to identify the correlations between the variables. In the Multifactor Leadership Questionnaire, significant correlations were detected between all leadership factors ($p<0.001$) and Self-Efficacy (Table 5), including a strong significant correlation with Transformational Leadership ($r=0.742$; $p<0.001$).

Table 5 – Leadership dimensions/behaviours

		Self-Efficacy
II	Pearson's correlation Sig. (2-tailed) N	.616** <.001 103
IM	Pearson's correlation Sig. (2-tailed) N	.630** <.001 103
IS	Pearson's correlation Sig. (2-tailed) N	.588** <.001 103
IC	Pearson's correlation Sig. (2-tailed) N	.643** <.001 103
Transformational	Pearson's correlation Sig. (2-tailed) N	.742** <.001 103
Transactional	Pearson's correlation Sig. (2-tailed) N	.560** <.001 103
CR	Pearson's correlation Sig. (2-tailed) N	.462** .003 103
GE	Pearson's correlation Sig. (2-tailed) N	.510** .003 103
LF	Pearson's correlation Sig. (2-tailed) N	.289** .003 103

**The correlation is significant at the 0.01 level

With regard to the Big Five factors, Openness to Experience ($r=0.302$; $p<0.001$), Neuroticism ($r=-0.282$; $p<0.001$), Conscientiousness ($r=0.251$; $p<0.005$), and Extraversion ($r=0.244$; $p<0.005$) showed significant correlations with Self-Efficacy (Table 6).

Table 6 – Correlations between the Big Five factors

		Self-efficacy
Extroversion	Pearson correlation Sig. (2-tailed)	.244* .016
Agreeableness	Pearson correlation Sig. (2-tailed)	.169 .097
Conscientiousness	Pearson correlation Sig. (2-tailed)	.251* .014
Neuroticism	Pearson correlation Sig. (2-tailed)	-.282** .005
Openness to experience	Pearson correlation Sig. (2-tailed)	.302** .003

* The correlation is significant at 0.05.

** The correlation is significant at 0.01 level.

Significant correlations were found between all leadership competencies: Decision-making ($r=0.417$; $p<0.001$), Teamwork ($r=0.400$; $p<0.001$), Planning ($r=0.374$; $p<0.001$), the Organisation ($r=0.359$; $p<0.001$), Communication ($r=0.343$; $p<0.001$) and Initiative ($r=0.301$; $p<0.005$).

A correlation was also found between leadership self-efficacy, the length and number of operational missions and the score given to interaction with the team in the previous year. The latter was the only significant correlation ($r=0.240$; $p<0.005$).

4.3. Explanatory model of Self-efficacy

Based on the statistically significant correlations, a Multiple Linear Regression analysis was performed to find an explanatory model of Self-efficacy (dependent variable). A Stepwise method was used and any variables with significant correlations with Self-efficacy were included in the model. The model's assumptions were analysed in terms of homogeneity, independence of errors (Durbin-Watson close to 2) and normal distribution of results. Model 5 was the model with the best explanatory capacity for the dependent variable, explaining 64.2% of self-efficacy (Table 7).

Table 7 – Overview of the linear regression model

	R	R²	Adjusted R²	Durbin-Watson
1	.709 ^a	.502	.497	
2	.754 ^b	.569	.559	
3	.781 ^c	.610	.596	
4	.797 ^d	.636	.619	
5	.813 ^e	.662	.642	1.857

As Table 8 shows, all the tested models are significant¹ (<0.001).

Table 8 – Significance of the regression model

ANOVA						
Model		Sum of squares	df	Mean squares	F	Sig.
1	Regression	10.071	1	10.071	89.803	<.001
2	Regression	11.412	2	5.706	58.116	<.001
3	Regression	12.223	3	4.074	45.277	<.001
4	Regression	12.743	4	3.186	37.485	<.001
5	Regression	13.270	5	2.654	33.263	<.001

¹ Model 1: Transformational Lid. Model 2: Transformational Lid. Model 3: Transformational Lid. Transformational Lid, Neuroticism and Teamwork; Model 4: Transformational Lid. Transformational Lid, Neuroticism, Teamwork and Interaction with team in the last year; Model 5: Transformational Lid. Model 5: Transformational Lid, Neuroticism, Teamwork, Interaction with team in last year and Communication.

A multicollinearity diagnosis was made for each variable. The Variance Inflation Factor (VIF) values should be lower than 4 and Tolerance should be lower than 0.25 (Marôco, 2014). All the variables met these requirements. The best predictive model of Self-efficacy was Model 5, which consisted of the predictor variables: Transformational Leadership ($p < 0.001$), Neuroticism (negative correlation; $p < 0.001$), Teamwork ($p < 0.001$), Interaction with the team in the previous year ($p < 0.005$) and Communication ($p < 0.005$).

4.4. Differences in means between AAFB branches

A test was performed to compare the mean differences among three or more groups (ANOVA). The only significant differences were found in the LF factor of the Leadership variable ($p < 0.005$). Significant differences were found between the PoAF and the Army (PoAF=2.950, Army=3.413; $p < 0.005$) and between the PoAF and the Navy (PoAF=2.950, Navy=3.411; $p < 0.005$) with regard to the LF dimension of the MLQ.

4.5. Differences in means – participation in operational missions

The variable “participation in operational missions (number of months)” was categorised as a dichotomous variable (Yes / No). A Student’s t-test was performed to compare the means between two groups. No significant differences were found in leadership self-efficacy between officers with and without operational experience ($p > 0.005$). IS was the only other variable in which significant differences were found between officers with operational experience ($\bar{x}=3.78$) and officers without operational experience ($\bar{x}=4.01$).

5. Discussion of findings

Having presented the study’s findings, this chapter will describe the inferences that can be drawn from the analytical model. The hypotheses are discussed and an explanation is given for why they were rejected or confirmed. When needed, this section will also include the literature from which the hypotheses were derived (chapter 2).

Table 9 – Overview of the study hypotheses

H1: Transformational leadership positively predicts leadership self-efficacy.	✓
H2a: Neuroticism is negatively related to leadership self-efficacy.	✓
H2b: Conscientiousness is positively related to leadership self-efficacy	✓
H3a: The Communication competency has a positive correlation with leadership self-efficacy.	✓
H3b: The Decision-making competency has a positive correlation with leadership self-efficacy.	✓
H4: Participation in operational missions is positively correlated with leadership self-efficacy.	✗

Based on the analysis of the data collected, H1 was confirmed, as not only was there a significant positive correlation between the dimension and all the transformational leadership behaviours, but the causal explanatory effect of the Transformational Leadership dimension in predicting Leadership Self-Efficacy was also confirmed. These results are in

line with the literature (Barbuto, 2007; Hannah et al., 2012) and extend the same conclusions to the military sphere.

H2a is confirmed, with the data supporting evidence of a significant negative relationship between Leadership Self-Efficacy and Neuroticism, which is in line with the literature (Johar et al., 2013; Judge et al., 2002; Sarubin et al., 2015). H2b was also confirmed, showing that conscientiousness has a positive relationship with Leadership Self-Efficacy.

H3a was confirmed, showing a positive causal relationship between Communication and Leadership Self-Efficacy. These results are supported by the study presented by Azevedo (2022), in which Communication was identified as one of the main predictors of Emergent Leadership in a military academic context. There is also a significant positive relationship between Decision Making and Leadership Self-Efficacy, which confirms H3b, and it should be noted that with regard to the correlations between Leadership competences and Leadership Self-Efficacy, Decision Making was the variable that showed the highest correlation with Self-Efficacy, although it was not significant in the prediction model. These results are also in line with those of Azevedo (2022).

Finally, the data analysed rejects H4, as there is no positive relationship between participation in operational missions and Leadership Self-Efficacy. Participation in operational missions (duration in months) was not significant in the model and no significant differences were found in Leadership Self-Efficacy between soldiers with and without experience in operational missions. This hypothesis, which is not sufficiently supported by existing literature, derives from an exploratory conceptual line that standardised missions as ‘practical events’ of training, while previous studies have linked self-efficacy with formal leadership training (Kwok et. al., 2020). Therefore, if this relationship was not confirmed, it could be due to the fact that the number of participants who reported having taken part in operational missions was small compared to the size of the sample.

6. Conclusions

In military environments, leadership and command are different but interlinked concepts, and effective Commanders also tend to be effective leaders.

This study is based on a quantitative strategy (operationalised through questionnaire data collection from a sample of 103 military personnel), based on a case study design (Yin, 2005). The investigation was guided by a research question: *What is the influence of personality traits, leadership styles and leadership competencies on perceived leadership self-efficacy among officers from the three branches of the AAF and the GNR?*

With regard to OE1, Analyse the relationship between leadership styles and Leadership Self-Efficacy in the FFAA and GNR, and in response to the corresponding QD1, it was found that Transformational Leadership showed a positive relationship with Leadership Self-Efficacy, demonstrating that all Transformational leadership behaviours have a positive and significant relationship with Leadership Self-Efficacy. The Transformational Leadership dimension also showed excellent predictive capacity for the dependent variable, and was the variable that contributed most to the predictive model. These results reinforce the importance of adopting

a style that tends to be transformational, which in addition to increasing leaders' self-efficacy, also acts very positively in terms of subordinates' satisfaction, motivation and commitment (Judge & Piccol, 2004). Nevertheless, as suggested in the FRLM model (Bass & Avolio, 1995), and based on the significant correlations established between Transactional Leadership and Leadership Self-Efficacy, it should be emphasised that transformational leadership increases the effectiveness of transactional leadership and should not replace it. In this way, and as suggested by the authors (Bass & Avolio, 1995), different contexts require different leadership behaviours, and articulating different types of behaviours is essential for success. The results obtained regarding the differences in the means of the leadership dimensions/behaviours between soldiers with/without mission experience are noteworthy. The only difference in means was in Intellectual Stimulation (Transformational dimension), which had a significantly lower mean in the group with operational experience in missions, suggesting that there may be a tendency to use some leadership behaviours from the transformational spectrum less frequently in more adverse environments.

With regard to SO2, analyse the relationship between personality factors and Leadership Self-Efficacy in the FFAA and GNR, and in response to the corresponding QD2, it was found that both Conscientiousness and Neuroticism have a significant relationship with Leadership Self-Efficacy. Also noteworthy was the fact that Conscientiousness had the highest average value of the Big Five. The Neuroticism personality factor stands out for having a (negative) predictive relationship with Leadership Self-Efficacy, being the second variable with the highest predictive capacity in the Self-Efficacy prediction model (after Transformational Leadership). It should also be emphasised that although they did not show predictive capacity in the model, there is a significant and positive relationship between the Extroversion and Openness to Experience factors and Leadership Self-Efficacy.

With regard to SO3, analyse the relationship between the importance attributed to leadership competences and Leadership Self-Efficacy in the Armed Forces and GNR, and in response to the corresponding QD3, a causal relationship was identified between the perceived importance attributed to Communication and Leadership Self-Efficacy. Although it was not identified in the predictive model, Decision Making showed a significant correlation with Leadership Self-Efficacy. In addition, the importance attributed to Teamwork was identified as significant in the causal model.

With regard to SO4, analysing the relationship between participation in operational missions and Leadership Self-Efficacy in the Armed Forces and GNR, no significant relationship was identified between the two variables under analysis.

With regard to the OG, analysing the impact of personality factors (Big Five), participation in operational missions, leadership styles and competences on Leadership Self-Efficacy, and in response to the resulting QC, an explanatory model of Leadership Self-Efficacy in the military context was identified (explanatory capacity of 64.2% of the dependent variable), made up of the following variables (in order of importance in the model): Transformational Leadership, Neuroticism (negative relationship), importance attributed to the Teamwork Competence, quality of interaction with the team in the last year, and importance attributed to the Communication competence.

The contribution of this study is reflected in the empirical evidence found regarding the identification of an explanatory model of Leadership Self-Efficacy.

There were two limitations to the study, which were unrelated to the research and which did not restrict the nature of the conclusions identified. The first concerns the fact that data collection was limited to a convenience sample, which included only the category of officers of a single rank (Captain/First Lieutenant), which makes it impossible to generalise the results to the universe under study. The second refers to the nature of the instruments used, as they are self-report measures, based on the perception of each respondent, and which by their nature may be subject to bias. However, the nature of the conclusions reached was in line with the existing literature.

As for future studies, it is suggested that more demographic variables be included, such as age and gender, and that a larger and more diverse sample be considered in terms of rank/category. We also suggest including real measures of leadership effectiveness and cross-referencing them with Leadership Self-Efficacy (perception).

As a practical recommendation, we recommend continued investment in leadership training throughout one's career, with particular emphasis on the development and training of competences (namely in terms of Communication, Teamwork and Decision Making), and the applicability of the FRLM model (Bass & Avolio) in the training and development of leaders.

References

- Adair, J. (2009). *Effective Leadership* (Rev. ed.). London: Pan Macmillan.
- Anderson, N., Krajewski, H. T., Goffin, R. D., & Jackson, D. N. (2008). A leadership self-efficacy taxonomy and its relation to effective leadership. *Journal of Leadership Studies*, 2(1), 1-22. <https://doi.org/10.1002/jls.20150>
- Azevedo, P. (2022). *Predição de Liderança Emergente: Estudo de caso num exercício de campo na Academia da Força Aérea Portuguesa*. [Predicting Emergent Leadership: A case study in a field exercise at the Portuguese Air Force Academy] (Dissertation for a Master's Degree in Military Aeronautics). Portuguese Air Force Academy [AFA], Sintra.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior*, 4, 71-81. New York: Academic Press.
- Barbuto, J., & Lance L. (2007). *Full Range Leadership*. University of Nebraska-Lincoln Extension.
- Barrick, M., & Mount, M. (1991). The Big Five Personality Dimensions and Job Performance: A Meta-Analysis. *Personnel Psychology*, 44(1), 1-26. <https://doi.org/10.1002/1744-6570.199100001001>
- Bártolo-Ribeiro, R., & Aguiar, R. (2008). *Avaliação rápida da personalidade: Estudo preliminar da versão portuguesa reduzida de 10 itens do big five inventory*. [Rapid personality assessment: Preliminary study of the 10-item reduced Portuguese version of the big five inventory.] Paper presented at the 13th International Congress on Evaluation: Forms and Context. In Proceedings of the 13th International Conference on Assessment: Forms and Contexts, Braga, Portugal.
- Bass. (1985). *Leadership and Performance Beyond Expectations*. New York: Free Press.

- Bass, B. M. (2008). *The Bass handbook of leadership: Theory, research, and managerial applications* (4th ed.). New York, NY: Free Press.
- Bass, B. M., & Avolio, B. J. (1990). *Transformational leadership development: Manual for the Multifactor Leadership Questionnaire*. Menlo Park, CA: Mind Garden.
- Bass, B. M., & Avolio, B. J. (1995). *Multifactor Leadership Questionnaire*. Palo Alto, CA: Consulting Psychologists Press.
- Bass, B. M., & Riggio, R. E. (2006). *Transformational Leadership* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bilhim, J. (2005). *Teoria Organizacional: Estruturas e Pessoas*. Lisbon: Institute of Social and Political Sciences.
- Blake, R. R., & Mouton, J. S. (1985). *The Managerial Grid III: The Key to Leadership Excellence*. Houston, TX: Gulf Publishing
- Booth, T., Murray, A. L., Marples, K., & Batey, M. (2013). What role does neuroticism play in the association between negative job characteristics and anxiety and depression. *Personality and Individual Differences*. <https://doi.org/10.1016/J.PAID.2013.04.001>
- Boyatzis, R. E. (1994). Stimulating self-directed learning through the managerial assessment and development course. *Journal of Management Education*, 18(3), 304-323. <https://doi.org/10.1177/105256299401800305>
- Bryman, A., Collinson, D., Grint, K., Jackson, B., & Uhl-Bien, M. (Eds.). (2011). *The Sage handbook of leadership*. Thousand Oaks, CA: Sage Publications.
- Burns, J. M. (1978). *Leadership*. New York, NY: Harper & Row.
- Chamorro-Premuzic, T., Furnham, A., & Ackerman, P. L. (2006). Incremental Validity of the Typical Intellectual Engagement Scale as Predictor of Different Academic Performance Measures. *Journal of Personality Assessment*, 87(3), 261–268. https://doi.org/10.1207/s15327752jpa8703_07
- Choi, S. B., Jung, K. & Kang, S. W. (2022). What hinders team innovation performance? Three-way interaction of destructive leadership, intra-team conflict, and organizational diversity. *Journal of Organizational Behavior*, 13. <https://doi.org/10.3389/fpsyg.2022.879412>
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309–319.
- Coelho, P., Palma, P., Jorge, A. & Gomes, A. (2018, February). *A liderança e a autoeficácia no contexto militar e civil: estudo comparativo do desenvolvimento de competências num exercício de campo*. Paper presented at the 3rd International Symposium on Command and Leadership. Academia Militar: Lisboa.
- Costa, P. T., & McCrae, R. R. (1986). Personality stability and its implications for clinical psychology. *Clinical Psychology Review*, 6(5), 407-423. [https://doi.org/10.1016/0272-7358\(86\)90029-2](https://doi.org/10.1016/0272-7358(86)90029-2)
- Costa, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders*, 6(4), 343–359. <https://doi.org/10.1177/08980101920600040343>

- Cunha, M. P., Rego, A., Cunha, R. C., & Cabral-Cardoso, C. (2010). *Manual de Gestão de Pessoas e do Capital Humano*. Lisboa: Edições Sílabo.
- Ellert, R. K. (2008). *Leadership Competencies Needed by Future Army Education Services Officers*. Georgia Southern University. Retrieved from <https://digitalcommons.georgiasouthern.edu/etd/252>
- Fiedler, F. E. (1967). *A Theory of Leadership Effectiveness*. New York, NY: McGraw-Hill.
- Fitzgerald, S. & Schutte, N. (2010). Increasing transformational leadership through enhancing self-efficacy. *Journal of Management Development*, 29(5), 495-505. <https://doi.org/10.1108/02621711011039240>
- Goldberg, L. R. (1981). Language and Individual Differences: The search for universals in Personality lexicons. *Review of Personality and Social Psychology*, 2(1), 141–165. Beverly Hills, CA: Sage Publication.
- Gomes, D., Ribeiro, N. & Ludwikowska, K. (2023). Leadership, Diversity and Inclusion in Organizations. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1184939>
- Hannah, S. T., Avolio B. J., Walumbwa, F. O. & Chan, A. (2012). Leader Self and Means Efficacy: A multi-component approach. *Organizational Behavior and Human Decision Processes*, 118(2), 143-161. <https://doi.org/10.1016/j.obhdp.2012.03.007>
- Hersey, P., & Blanchard, K. H. (1988). *Management of Organizational Behavior: Utilizing Human Resources* (5th ed.). Englewood Cliffs, NJ: Prentice Hall.
- Hill, M. M., & Hill, A. (2012). *Investigação por Questionário*. (2a Ed.). Lisbon: Sílabo.
- Jesuino, C. (2005). *Processos de liderança*. Lisbon: Livros Horizonte.
- Johar, S. S., Shah, I. M., & Bakar, Z. (2013). Neuroticism Personality and Emotional Intelligence of Leader, and Impact Towards Self-esteem of Employee in Organization. *Social and Behavioral Sciences*. <https://doi.org/10.1016/J.SBSPRO.2013.06.580>
- Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and Leadership: A Qualitative and Quantitative Review. *Journal of Applied Psychology*, 87, 765–780. <https://doi.org/10.1037//0021-9010.87.4.765>
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755-768. <https://doi.org/10.1037/0021-9010.89.5.755>
- King, A. (2019). *Command – The Twenty First Century General*. Nova Iorque: Cambridge University Press.
- Kwok, K., Shen, W., & Brown, D. J. (2020). I can, I am: Differential predictors of leader efficacy and identity trajectories in leader development. *The Leadership Quarterly*, 32(5). <https://doi.org/10.1016/j.leaqua.2020.101422>
- Lewin, K., Lippitt, R., & White, R. K. (1939). *Patterns of aggressive behavior in experimentally created social climates*. *Journal of Social Psychology*, 10(2), 271–299. <https://doi.org/10.1080/00224545.1939.9713366>

- Lopes, G., Fachada, C. & Gomes, A. (2018). Relação entre a Cultura Organizacional e a Liderança nos Estabelecimentos de ensino dos Oficiais da Força Aérea. *Portuguese Journal of Military Sciences*, VI(1), 221-253. Retrieved from <https://www.ium.pt/art/89/256/0>
- Marôco, J. (2014). *Análise Estatística com o SPSS Statistics* (6ª Ed.). Pêro Pinheiro: Report Number.
- McLeod, S. (2023, 21 March). Maslow's Hierarchy of Needs. [Online]. Retrieved from <https://simplypsychology.org/maslow.html>
- NATO. (2019). *NATO Military Terms and Definitions*. [Online] Retrieved from <https://archives.nato.int/nato-military-terms-and-definitions>
- Northouse, P., (2004). *Leadership*. Thousand Oaks, CA: SAGE Publications.
- Northouse, P. G. (2018). *Leadership: Theory and practice* (8th ed.). Sage Publications.
- Odumeru, J., & Ifeanyi, G. (2013). Transformational vs. Transactional Leadership Theories: Evidence in Literature. *International Review of Management and Business Research Journal*, 355-361. <https://doi.org/10.12691/ajnr-7-5-20>
- OTAN. (2019). *NATO Military Terms and Definitions*. [Online] Retirado de <https://archives.nato.int/nato-military-terms-and-definitions>.
- Paglis, L. L., & Green, S. G. (2002). Leadership self-efficacy and managers' motivation for leading change. *Journal of Organizational Behavior*, 23(2), 215-235. <https://doi.org/10.1002/job.137>
- Peterson, J. (2017). *20 Minutes on Understand Myself*. [Video] Retrieved from <https://www.youtube.com/watch?v=4IdzC6mJzLA&list=LL&index=4>
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the big five inventory in english and german. *Journal of Research in Personality*, 41, 203-212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Ribeiro, A. S. (2021). *Ser chefe militar em tempo de crise*. [Being a military leader in times of crisis.] [Online] Retrieved from <https://caecplp.org/wp-content/uploads/2021/02/Almirante-Silva-Ribeiro-CAE-CPLP-Ser-chefe-militar-em-tempo-de-crise.pdf>
- Rouco, J. (2012). Modelo de Gestão de Desenvolvimento de Competências de Liderança em Contexto Militar. Universidade Lusíada.
- Rouco, J., & Sarmento, M. (2010). Perspetivas do Conceito de Liderança. *Proelium – Revista da Academia Militar*, março, Série VI, n.º 13, 71-90.
- Rosinha, A. P. (2023). *Construção da identidade de liderança enquanto processo social*. Revista Militar, 2663, 983-1019.
- Santos, L. A. B. & Lima, J. M. M. V. (Coords.). (2019). *Orientações metodológicas para elaboração de trabalhos de investigação*. [Methodological guidelines for writing research papers.] IESM Notebooks, 8. Lisbon: Institute of Higher Military Studies.
- Sarubin, N., Wolf, M., Giegling, I., Hilbert, S., Naumann, F., Gutt, D., Jobst, A., Sabaß, L., Falkai, P., Rujescu, D., Böhner, M., & Padberg, F. (2015). Neuroticism and extraversion as mediators between positive/negative life events and resilience. *Personality and Individual Differences*. <https://doi.org/10.1016/J.PAID.2015.03.028>

- Spencer, L. e Spencer, S., 1993. *Competence at work: models for superior performance*. New York: John Wiley e Sons.
- Taggar, S., Hackett, R., & Saha, S. (1999). Leadership emergence in autonomous work teams: Antecedents and outcomes. *Personnel Psychology*, 52(4), 899–926. <https://doi.org/10.1111/j.1744-6570.1999.tb00184.x>
- US Army (2012). *Army Doctrine Reference Publication (ADRP) 6-22 – Army Leadership* alteração nº1. Washington DC: Department of the Army Headquarters.
- Vieira, B. (2002). *Liderança Militar*. Lisboa: Editora Atena.
- Wong, L., Bliese, P. & McGurk, D. (2003) *Military leadership: A context specific review*. *The Leadership Quarterly*, 14(6), 657-692. <https://doi.org/10.1016/j.leaqua.2003.08.001>
- Yin, R. (2005). Estudo de Caso. Planejamento e Métodos. Porto Alegre: Bookman.
- Young, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between Facets and Domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, 93(5), 880–896. <https://doi.org/10.1037-3514.93.5.880>
- Yukl, G. (2012). *Leadership in organizations* (8th ed.). Upper Saddle River, NJ: Pearson.
- Zaccaro, S. J. (2007). Trait-based perspectives of leadership. *American Psychologist*, 62(1), 6-16. <https://doi.org/10.1037/0003-066X.62.1.6>

