

ORGANIZATIONAL CLIMATE AND ORGANIZATIONAL CULTURE IN THE AIR FORCE ACADEMY¹

CLIMA ORGANIZACIONAL E CULTURA ORGANIZACIONAL NA ACADEMIA DA FORÇA AÉREA

Sandro Avelino Toste Paim

Officer Aspirant in the Air Force Academy (AFA)
Master's degree in Military Aeronautical Sciences – Pilot specialty from the AFA
Granja do Marquês, 2715-311 Pêro Pinheiro, Portugal
sapaim@academiafa.edu.pt

Cristina Paula de Almeida Fachada

Lieutenant Colonel, Psychologist in the Portuguese Air Force
PhD in Psychology from the Faculty of Psychology, University of Lisbon
Professor at the Military University Institute (IUM)
Researcher at the IUM Research and Development Centre
Rua de Pedrouços, 1449-027, Lisbon, Portugal
fachada.cpa@ium.pt

Ana Patrícia Correia Gomes

Captain, Psychologist in the Portuguese Air Force
Master's degree in Data Analytics and Mining from the University Institute of Lisbon – ISCTE-IUL
Lecturer at the Air Force Academy (AFA)
Researcher at the AFA Research Centre
Granja do Marquês, 2715-311 Pêro Pinheiro, Portugal
apgomes@academiafa.edu.pt

Abstract

Studying variables of interest for decision-makers in organizations, such as climate and culture, increases their ability to understand and optimise situations that influence organizational outcomes. Therefore, this study aimed to analyse the organizational climate and culture to which the students of the Military Aeronautical Sciences Course

How to cite this article: Paim, S. A. T., Fachada, C. P. A., & Gomes, A. P. C. (2022). Organizational Climate and Organizational Culture in the Air Force Academy., *Revista de Ciências Militares*, November, X(2), 191-227. Retrieved from <https://www.ium.pt/s/wp-content/uploads/CIDIUM/Lista%20Pt/Lista%20de%20publica%C3%A7%C3%B5es%20Revista%20De%20Ci%C3%A7ncias%20Militares.pdf>

¹ Article adapted from the Master's dissertation carried out for the Master's degree in Military Aeronautics. The defence took place in July 2022 at the Air Force Academy. The full version of the paper is available from Portugal's Open Access Scientific Repositories (RCAAP).

(CCMA)² and of the Military Technical Training Programme (ETM) of the Air Force Academy (AFA) are exposed, to identify differences between them and identify dominant “typologies”. To that end, a survey sample of 244 students (90% of the population) was analysed using the *Organizational Climate Measure* (OCM) and the *Organizational Culture Assessment Instrument* (OCAI). The findings revealed significant differences between CCMA and ETM students in the human relations and hierarchy culture models, and between students enrolled in the 1st year of the CCMA and students enrolled in other years of the course in practically all analysed the models (except for the internal process model). Furthermore, aside from 1st year students, the internal process and market culture models were the only models where no differences were found. The data also showed that the dominant climates and cultures are the internal process model (hierarchy culture) and the rational goal model (market culture).

Keywords: Organizational Climate; Organizational Culture; Competing Values Framework.

Resumo

*Analisar variáveis de interesse para os decisores organizacionais, como sejam o clima e a cultura, traduz-se em maior capacidade de compreensão e otimização de situações que impactam sobre os resultados organizacionais. Esta investigação teve, então, por objetivo estudar o clima e cultura organizacionais dos alunos do Curso em Ciências Militares Aeronáuticas (CCMA)³ e do Estágio Técnico Militar (ETM) ministrados pela Academia da Força Aérea (AFA), por forma a averiguar a existência de diferenças e a identificar “tipologias” dominantes. Para tal, foi analisada uma amostra de 244 alunos (90% da população), com recurso aos instrumentos *Organizational Climate Measure* (OCM) e *Organizational Culture Assessment Instrument* (OCAI). Dos resultados obtidos, concluiu-se que existem diferenças significativas entre o CCMA e o ETM nos modelos de relações humanas e de cultura hierárquica, e entre o 1.º ano e os restantes anos do CCMA em praticamente todos os modelos estudados (excetuando o dos processos internos). Concluiu-se, igualmente, que, à parte do 1.º ano, apenas não existem diferenças em relação aos modelos de processos internos e cultura de mercado. As evidências encontradas permitiram, ainda, constatar que o clima e a cultura dominantes caracterizam-se pelos modelos de processos internos (cultura hierárquica) e objetivos racionais (cultura de mercado).*

Palavras-chave: Clima Organizacional; Cultura Organizacional; Modelo dos Valores Contrastantes.

² The designations used here are specified in Notice No. 5817/2022 of 21 March, which replaces the Master’s degree in Military Aeronautics (CCMA).

³ A notação utilizada é a presente no Aviso n.º 5817/2022, de 21 de março, e que substitui a anterior Curso de Mestrado em Aeronáutica Militar (CCMA).

1. Introduction

Human behaviour is not only determined by personal characteristics and other variables, but is also shaped by the environment in which people interact in the workplace, as well as by multiple organizational characteristics (Berberoglu, 2018), such as Organizational Climate and Organizational Culture.

Even though Organizational Climate and Organizational Culture are different concepts (which at times overlap), they have two aspects in common: they explain similar psychological phenomena and they are useful when combined, both from a conceptual and a practical perspective, to ascertain how employees experience their work environment as a whole (Schneider & Barbera, 2014).

Studies on Organizational Climate have shown that work environment has a significant impact on employees' attitudes towards the organization (Berberoglu, 2018; Schneider & Barbera, 2014), particularly regarding their sense of belonging, interpersonal relationships and job performance (Mullins, 2010).

On the other hand, Organizational Culture has been studied since the seventies and eighties of the 20th century, stems from the fields of anthropology and sociology, and focuses on characterising groups and identifying differences, particularly in terms of their intrinsic values (Schneider & Barbera, 2014). This approach has proved useful inasmuch as it provides (Cunliffe, 2008): insight on how employees and the external environment view the organization; a course of action and a defined mission, vision and values; a way to influence the organization's performance; methods of attracting and retaining motivated employees because "strong cultures" that employees agree with and assimilate are precisely the ones that can significantly influence their behaviour and commitment.

This study on *Organizational Climate and Culture in the Air Force Academy* is relevant because it will provide:

- Theoretical knowledge on the Organizational Climate and Organizational Culture constructs, which are key concepts for organizational science as indicators of organizational behaviour;
- Practical knowledge that can be used by the organization's decision-makers – in this case, the Air Force Academy (AFA) – should they decide to (re)consider and / or (re)define some aspects of the organization's policies.

Furthermore, the study will innovate, on the one hand, by analysing for the first time the AFA's Organizational Climate, and, on the other, by "revisiting" a study conducted in 2018 by Lopes, Fachada and Farinha on the Organizational Culture of this Military Higher Education Establishment [Estabelecimento de Ensino Superior Público Universitário Militar] (EESPUM)⁴, making it a quasi longitudinal study (Saunders et al., 2009, p. 155). Furthermore, the study will provide a combined analysis of two variables which are considered essential to describe and analyse organizations (Machado & Davim, 2018).

⁴ The designation used here is specified in Decree-Law 249/2015 of 28 October.

This study addresses the Organizational Climate and Organizational Culture of the AFA and has the following delimitations (Santos & Lima, 2019):

- Temporal: the study focuses on the present (23 December 2021, the deadline for answering the questionnaires, with the exception of 21 March, the date of Notice No. 5817/2022, which introduces the new CCMA nomenclature);

- Spatial: the study analyses the CCMA and ETM students in the AFA;

- Content: the study focuses on Organizational Climate and Organizational Culture.

The study will answer the following research question:

What are the characteristics of the Organizational Climate and Organizational Culture of the Air Force Academy?

The general objective, To examine the *Organizational Climate and Organizational Culture experienced by AFA students*, was achieved by accomplishing the following specific objectives: to identify differences in perceptions of Organizational Climate and Organizational Culture between the different types of training provided at the AFA and, in the CCMA, between different years and specialties; to assess the relationship between Organizational Climate and Organizational Culture; and to identify the predominant types of Organizational Climate and Organizational Culture in the AFA.

2. Theoretical framework

This chapter will describe the key concepts addressed in the study, that is, (organizational) Climate and Culture. It will be followed by a brief comparative analysis of both concepts and a list of hypotheses that will be tested in the study.

2.1. Organizational Climate

The definition of Organizational Climate has multiple interpretations in the literature – Verbeke et al. (1998) found 32 different meanings. Some interpretations refer to it as a “result” of perception. Specifically, Schneider and Reichers (1983), defined it as the set of shared perceptions regarding the policies, practices and procedures that an organization expects, supports and rewards, which makes it a “phenomenon” of perception rather than an objective characteristic of organizations, and Caetano et al. (2020, p. 325) operationalised it as the “set of perceived characteristics of an organizational unit, which are induced by [its] way of operating [...] and influence employee behaviour, which depends both on individual personality and on the perceptions people have of their environment”.

Organizational Climate is relatively long-lasting and (Moran & Volkwein, 1992): reflects the collective perceptions of the members of an organization about how the organization deals with dimensions such as autonomy, trust, cohesion, support, recognition, innovation and justice; is produced by the interaction of the organization’s members; provides a basis for the interpretation of any situation within the organization; reflects accepted values; and influences behaviour.

According to Schneider (1975), the literature on Organizational Climate can focus on:

- global climate, which means studying the work environment from a global perspective

(Kuenzi & Schminke, 2009) and quantifying all situational variables to predict all effects on the organizational environment, both in groups and employees (Litwin & Stringer, 1968);

- specific climates that illustrate specific aspects of the organization (Schneider, 1975).

This specialisation in the study of organizational climates led to a fragmentation in the literature on Organizational Climate because climates became “compartmentalised”, and there was no longer an Organizational Climate, but several specific ones (Kuenzi & Schminke, 2009).

Today, studies on climate usually analyse the effects of specific climates on organizations, groups and / or employees (Caetano et al., 2020).

2.2. Organizational Culture

Conceptually, Powell et al. (2021) identified 54 definitions of Organizational Culture in the literature, including the one proposed by Schneider et al. (2017), who defined it as the shared values and basic assumptions that explain why organizations do what they do and focus on what they focus on, as well as definitions that describe it as a set of artefacts, values and assumptions that emerge from the interaction between the members of an organization (Keyton, 2011), are created locally by individuals, and can have specific effects on people (Parker, 2000).

For Parker (2000), culture and organization are isomorphic, inseparable concepts that enrich each other because organizations do not have a culture, they are a culture (Smircich, 1983).

Other authors, such as Schein (2016), argue that culture can be analysed in three levels that correspond to different degrees of abstractness:

- *Artefacts*, which correspond to everything that can be observed, heard or felt in the organization. This level that is easy to observe but difficult to decipher because an external observer can describe what he or she sees, but cannot (based on a single observation) reconstruct the meaning that such acts have for the members of the group.

- *Values and Beliefs*, which correspond to the process in which a group faced with a new challenge finds a shared solution (which is collectively perceived as good and appropriate, and is, therefore, socially validated) that gradually becomes a value or a belief, and finally a shared assumption that becomes a roadmap for dealing with the uncertainty of uncontrollable or difficult events, which in turn reduces uncertainty in critical areas of the group’s functioning.

- *Basic assumptions*, which correspond to or result from the repeated and successful application of a shared solution. This shared solution then becomes internalised by the group as the correct course of action in similar situations, and there is little tolerance for different or opposite ways of dealing with the problem.

2.3. Climate versus Culture

As for their origin and evolution, these concepts have evolved since they first became a topic of study (James et al., 2008), as did the fields of knowledge in which they emerged (Schneider, 2000): culture as a concept came from the field of anthropology and climate from psychology (Kuenzi & Schminke, 2009).

Moreover, culture focuses on dimensions that are deeply rooted in the organization whereas climate refers to dimensions that are both different and more superficial, which

means that there is a clear distinction in their level of abstraction, as culture is a more abstract concept than climate (Kuenzi & Schminke, 2009).

The two concepts also differ in terms of mutability: culture tends to be more stable than climate, which is relatively temporary (Denison, 1996).

Furthermore, Falcione and Kaplan (1985) argue that, while climate focuses on the present and is an indicator of how well people adjust to the culture of an organization, Organizational Culture includes the history of the organization.

For Schein (2010), unlike climate, which is observable because it is perceived as “the feeling that is conveyed in a group by the physical layout” and the way members of an organization interact with outsiders, culture is abstract.

However, the two constructs are not incompatible, but complementary. Because it grows naturally from Organizational Culture, Organizational Climate is the most visible expression of that culture. In other words, Organizational Culture is expressed by Organizational Climate (Saraiva & Almeida, 2017).

2.4. Competing Values Framework

2.4.1. From organizational effectiveness to the Competing Values Framework

The discussion that led to the development of the competing values framework emerged from the concept of organizational effectiveness, analysed according to three dimensions (focus, structure and time horizons) (Quinn & Rohrbaugh, 1981).

The first dimension (x axis) is *Focus*, which can be (Quinn & Rohrbaugh, 1981, 1983):

- Internal, when it refers to the well-being and development of the members of the organization, and the organization is viewed as a social system in which participants have feelings and preferences that must be taken into account, and who require appropriate information and stability;

- External, when it addresses the well-being and development of the organization, which is a tool whose ultimate goal is to complete its tasks and acquire resources, with an emphasis on competitiveness.

The second dimension (y axis) refers to the structure of the organization, which can emphasise either control (on authority, structure, coordination and stability) or *flexibility* (diversity, change, individual initiative and organizational adaptability) (Quinn & Rohrbaugh, 1981, 1983).

The third dimension (z axis or depth axis) opposes *means and ends*, that is, important processes such as planning and goal setting, and goals such as achieving results and productivity (Quinn & Rohrbaugh, 1981, 1983).

When these dimensions are combined, four quadrants emerge (Quinn, 1988; Quinn & Rohrbaugh, 1983) which correspond to the following models:

- The Human Relations Model is defined by a flexible structure, a focus on people and concepts such as cohesion and morale (means) and human resource development (ends);

- The Internal Process Model is defined by a rigid structure, a focus on people and concepts such as information management and communication (means) and stability and control (ends);

- The Open Systems Model is defined by a flexible structure, a focus on the organization and concepts such as flexibility and readiness (means) and growth and resource acquisition (ends);
- The Rational Goal Model is defined by a rigid structure, a focus on the organization and concepts such as planning and goal setting (means) and productivity and efficiency (ends).

From an organizational perspective, the competing values framework is a way of describing the simple structures that underpin all organizational activities and the dimensions revealed by the study of organizational effectiveness can be applied to various aspects of the organization (Cameron et al., 2006; Hartnell et al., 2011), including climate (Patterson et al., 2004; Beus et al., 2020) and culture (Cameron et al., 2006; Cameron & Quinn, 2011; Hartnell et al., 2011).

2.4.2. The Competing Values Framework applied to Organizational Climate

Given that the study of Organizational Climate has branched into two main approaches (Schneider & Barbera, 2014), and bearing in mind that both have advantages, Patterson et al. (2004) argue that global climate and specific climate are opposite sides of the same coin, and use Quinn and Rohrbaugh's (1983) competing values framework to describe Organizational Climate because there is no model for Organizational Climate, and no consensus on the variable's dimensions.

Patterson et al. (2004) proposed 17 dimensions (innovation and flexibility are part of the same dimension), organized in a structure based on the competing values framework (Figure 1):

- Autonomy, or the extent to which employees' roles are defined in a way that gives them the freedom to do their job;
- Integration, or the trust and cooperation between departments;
- Participation, or the quantifiable influence that employees have on decision making, predictability and efficiency;
- Supervisory support, or the extent of the support and understanding supervisors provide employees;
- Training, or the organization's concern with developing the skills of its employees;
- Formalization, or the concern with formal rules and procedures;
- Tradition, or the the extent to which the established ways of operating are valued;
- Reflexivity, or the concern with reviewing and reflecting on objectives, strategies and processes;
- Innovation and Flexibility, or the support and encouragement with which innovative ideas / approaches are met and the organization's orientation toward change;
- Outward focus, or the organization's responsiveness to market needs;
- Clarity of organizational goals, or the concern for setting clear goals for the organization;
- Pressure to produce, or the pressure employees experience to meet targets;
- Quality, or the emphasis given to quality procedures;
- Performance feedback, or the measurement and feedback of job performance;
- Efficiency, or the importance placed on efficiency and productivity;
- Effort, or how hard employees work to achieve goals.

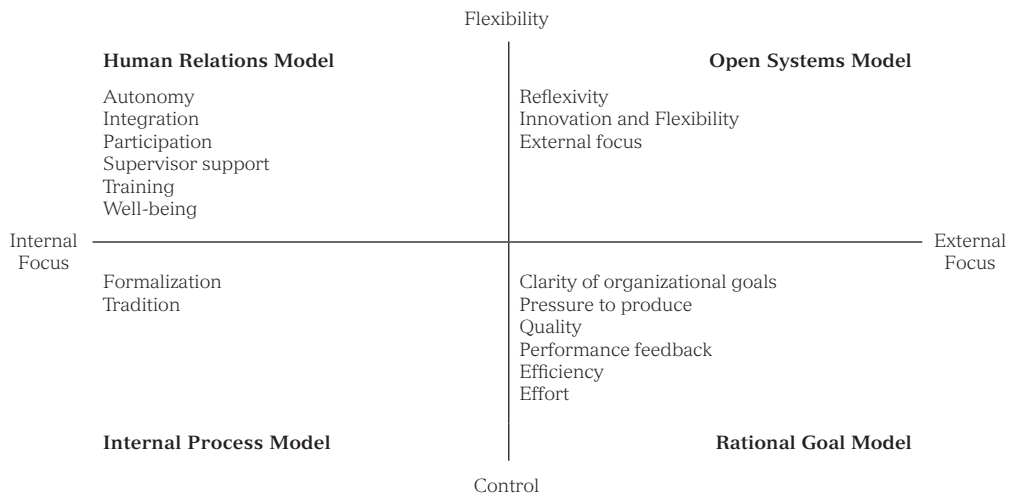


Figure 1 – Competing Values Framework applied to Organizational Climate

Source: Prepared from Patterson et al. (2004).

2.4.3. Competing Values Framework applied to Organizational Culture

When applied to the study of Organizational Culture, the competing values framework integrates and organizes many of the dimensions proposed in the literature (Cameron & Quinn, 2011).

It does this by combining the two axes to create four quadrants (Cameron & Quinn, 2011; Hartnell et al., 2011; Ployhart et al., 2014), with each quadrant corresponding to a specific type of culture (Cameron et al, 2006; Cameron & Quinn, 2011) (Figure 2).

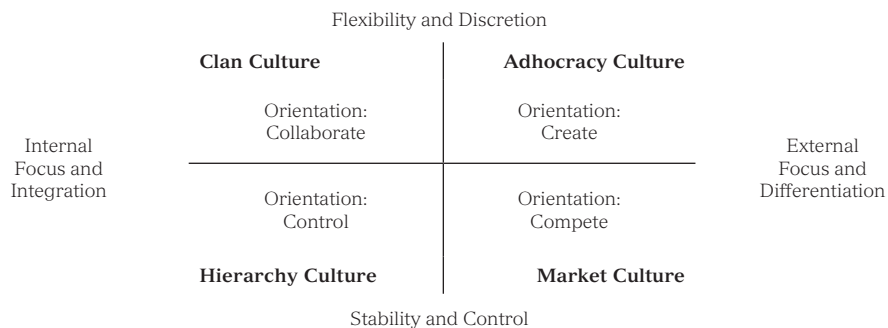


Figure 2 – Competing Values Framework applied to Organizational Culture

Source: Adapted from Cameron and Quinn (2011, p. 53).

The four types of culture that emerge (Figure 2) correspond, specifically, to (Cameron & Quinn, 2006; Caseiro, 2012):

- Clan Culture, which is characterised by the organization functioning as a large family where employees share a lot about themselves. Commitment is high, cohesion and morale are important, and the elements that foster group cohesion are loyalty and tradition. Success is defined by the concern for the employees and the internal climate;

- Adhocracy culture, which is associated with dynamism and entrepreneurship, and values experimentation, innovation and, if necessary, change, if that is what it takes for the organization to remain at the forefront of its field and create original and unique products and services;

- Hierarchy Culture, which is defined by formality, structure and rigid procedures and rules. Leaders are efficient coordinators and organizers who ensure the organization runs smoothly and achieves long-term stability, predictability and efficiency;

- Market Culture, which is oriented towards competitiveness and focuses on getting better results than competitors. Leaders are demanding, competitive and stress the need to meet the organization's long term business goals.

2.5. Research hypotheses

The Air Force Academy offers two types of courses for the career officers of the Portuguese Air Force's (PoAF). They are:

- The Master's Degree in Military Aeronautics (CCMA), which is usually attended by students who completed their secondary education in civilian institutions, and has (on "average") a duration of up to six years⁵ (depending on the area of specialty: Pilot, Aeronautical Administration, Aeronautical Engineering and Medicine) (AFA, 2015).

- The Military Technical Training Program (ETM), which is attended by military personnel with a higher education degree who received their basic military training at the Military and Technical Training Centre of the Air Force (CFMTFA) (Notice No. 3243/2021 of 23 February) – however, some civilian students can also enrol (e.g. psychologists, lawyers and doctors, as set out in Notice no. 3245/2021 of 23 February) –, has a duration of one academic semester and also provides access to the CS (Career Staff) (Decision No. 10545/2021 of 27 October).

Not only is the length of training in the AFA different for CCMA and ETM students, the latter group is more heterogeneous because ETM students have already had several different experiences of "contact with" and "working in" the PoAF (with the exception of psychologists, doctors and lawyers). In other words, this heterogeneity is due to the fact that, when they enroll in the AFA, they already have their own somewhat solidified perceptions of military experience and training as a result of belonging to different categories and being stationed in different units. Furthermore, greater age differences in a group are reported to have a negative impact on that groups' identification with the organization (Innocenti et al., 2013), which raises the following hypothesis:

⁵ On "average" because the PILAV course has a duration of 5 school years and 1 semester and the other specialties have a duration of 6 school years (AFA, 2015), and it is not uncommon for students to take one or even two years more to complete the course (a total of 7 / 8 years) due to operational reasons (such as insufficient grades or lack of available aircraft for flight training / lack of weather conditions, in the case of PILAV). For this reason, this study was expanded to include students that have been in the AFA for 7 years".

H1: CCMA students and ETM students have different perceptions of Organizational Climate

Hofstede (1991) argues that, when individuals join a new organization, they bring their culture into the collective culture, and Parker (2000) states that organization and culture are inseparable concepts. Even though CCMA and ETM students are trained in a common space (the AFA) where they have similar experiences, the different lengths of the courses and the students' background before enrolling in the AFA (most ETM students already have some military training and experience) provide a basis for the following hypothesis:

H2: CCMA students and ETM students have different perceptions of Organizational Culture

Guzzo et al. (2014) state that Organizational Climate is composed of multiple climates ("microclimates"), which differ between subgroups within the organization. In the case of the CCMA, the effects of these subgroups may be felt across different years. This leads to the following hypothesis:

H3: Students enrolled in different years of the CCMA have different perceptions of Organizational Climate

The following hypothesis regarding Organizational Culture is based on the arguments made by:

- Schein (2016), that in large organizations, sub-units develop their own subcultures that branch out from the predominant culture, which, in the case of the AFA, may indicate the presence of specific cultures in different course years;
- Hofstede (1991), regarding the fact that organizations can be subdivided into different cultures depending on their members' hierarchical level and role in the organization, which, in the case of the AFA, may indicate that students from different course years, who perform different roles in the academic and military student hierarchy, could be at different stages of acculturation to the military;
- Reichers (1987), that the training provided by the organization contains signs that allow its members to deduce some aspects of the Organizational Culture, which, in the case of the AFA, may indicate that culture could have different meanings as a result of different curricula, teachers and training methodologies.

H4: Students enrolled in different years of the CCMA have different perceptions of Organizational Culture

For Saraiva and Almeida (2017), climate emerges naturally from culture (i.e., Organizational Culture is expressed through Organizational Climate). Fontes (2011) describes climate as a superficial component of culture and Keyton (2011), as stated above, views climate as a manifestation of culture. Based on this, the following hypothesis was proposed:

H5: In the AFA, there is a relationship between Organizational Climate and Organizational Culture

3. Methodology and method

3.1. Methodology

Methodologically, the study uses deductive reasoning, which involves working from the general to the particular (Santos & Lima, 2019, p. 19), a quantitative research strategy and a case study research design.

3.2. Method

3.2.1. Participants and procedures

Participants. The pre-test phase sample consisted of seven previously selected potential participants from different course years and specialties / areas of activity. The test phase sample comprised 233 CCMA students (91% of N = 256) and 11 ETM students (73% of N = 15), most of whom are enrolled in the CCMA (specifically, PILAV = 99 and Engineering = 88, with ages from [18, 21], n = 155) (Table 1).

Table 1 – Descriptive analysis of the sample

Variable		n
Fields of activity⁶		
CCMA	PILAV	99
	Engineering	88
	ADMAER	36
	MED	10
ETM	Support	6
	Maintenance	1
	Operations	4
Ages		
18 – 21		155
22 – 25		76
26 – 29		4
30 – 33		8
34 – 37		1

Procedure. All potential participants were informed of the study objectives and assured that the data collected would be used exclusively for the purposes of this study or for future studies on the same topic, with the author's permission. The participants were also informed of their right to the anonymity and confidentiality of their responses. Concurrently,

⁶ The analysed areas of activity of ETM students correspond to the areas in which personnel is currently being trained, which are specified in the 2021 admission notices.

a questionnaire survey prepared using Google Forms was sent to each potential respondent, both in the pre-test phase (21-23 November 2021) and in the test phase (9-23 December 2021).

3.2.2. Data collection instruments

A three part questionnaire survey was prepared. The first part collected the participants' sociodemographic data. The other two parts contained questions related to Organizational Climate and Organizational Culture, as explained below.

Organizational Climate Measure (OCM). A version of the OCM proposed by Patterson et al. (2004) and adapted by the author⁷ was used in the survey, containing 52 items answered on a 4-point Likert scale (1 = Strongly disagree and 4 = Strongly agree), grouped into eleven dimensions and integrated into three models (Human Relations Model, Internal Process Model and Rational Goal Model). These dimensions had reliability coefficients (Cronbach's α^8) between 0.67 and 0.91, which Hill and Hill (2002, p. 149) considered poor and excellent, respectively.

Organizational Culture Assessment Instrument [OCAI]. The study used the version adapted by Lopes et al. (2018) for the AFA, based on the version of the OCAI translated and validated for Portugal by Machado (2002), which comprises 26 items answered on a 5-point Likert scale (1 = Strongly disagree and 5 = Strongly agree), grouped into four types of culture (Clan Culture, Hierarchy Culture, Adhocracy Culture and Market Culture), with reliability indices between 0.71 and 0.79, which are considered acceptable (Hill & Hill, 2002, p. 149).

3.2.3. Data processing technique

The data were processed using Statistical Package for Social Sciences (SPSS 28.0) and Jeffrey's Amazing Statistics Program (JASP 0.16.0.0) software.

4. Analysis of findings

This section contains the psychometric analysis of the instruments used in the study (which was carried out using reliability and confirmatory factor analysis) and the analysis of the mean differences obtained.

⁷ Using the same method as Diniz and Fachada (2019, p. 17), "[The scale was] adapted using the procedure devised by Fachada (2015, p.43), which involved first, translating the scales from English to current and fluent Portuguese. The translation was done by the author of this study (who is a proficient speaker of the language)" and a blind revision was performed by a service member from the AFA language department whose proficiency in English language corresponds to level C2 (Mastery) of the Common European Framework of Reference for Languages. Also using the same method as Diniz and Fachada (2019, p. 17), "[this] version was revised by two different people [who are English lecturers at the Academy]. The two revisions were then compared." This version was back-translated by a lecturer from the AFA language department. The final version obtained by comparing the back-translated version and the original scale (which did not differ much) was then pre-tested.

⁸ Cronbach's Alpha coefficient is considered poor from [0.6 ; 0.7], acceptable from [0.7 ; 0.8], good from [0.8 ; 0.9] and excellent when ≥ 0.9 (Hill, & Hill, 2002).

4.1. Psychometric analysis of the instruments

4.1.1. Reliability analysis

There are several ways to assess the reliability of the measurement instruments, one of which is Cronbach's Alpha (Sampieri et al., 2013).

The questionnaire on Organizational Climate included 52 items divided by three models. The reliability analysis of the autonomy dimension revealed a Cronbach's alpha of 0.448, which is considered unacceptable⁹. After removing items K3 and K5, the index increased to $\alpha = 0.645$ (considered poor). The reliability analysis of the tradition dimension revealed a Cronbach's alpha of 0.597 (unacceptable). After removing item K37, a Cronbach's alpha of $\alpha = 0.611$ (poor) was obtained for this dimension.

Although the OCM scale (Table 2) obtained a Cronbach's alpha of 0.941 (considered excellent), the Internal Process model obtained the lowest alpha, with a score of 0.505 (unacceptable). According to Pallant (2020) Cronbach's Alpha is influenced by the number of items. Therefore, an exception was made to the classification proposed by Hill and Hill (2002) by accepting Alphas greater than or equal to 0.5 for $n < 10$, as the Internal Process model had positive item-total correlation values.

Table 2 – Cronbach's Alphas of the factors and dimensions of Organizational Climate

Model	α	Dimension	Number of items	α
Human Relations	0.938	Autonomy	3	0.645
		Integration	5	0.715
		Participation	6	0.826
		Supervisor support	5	0.903
		Training	4	0.776
		Well-being	4	0.893
Internal Process	0.505	Formalization	5	0.723
		Tradition	3	0.611
Rational Goal	0.871	Effort	4	0.706
		Performance feedback	5	0.818
		Quality	4	0.706

The scale used to assess Organizational Culture contains 26 items divided into four models. The reliability analysis of the Hierarchy Culture model showed a Cronbach's alpha of 0.611 (poor). After removing item C12, the dimension had a Cronbach's alpha of $\alpha = 0.631$. The internal consistency analysis of the Market Culture model showed a Cronbach's Alpha

⁹ According to Hill and Hill (2002, p. 149) a Cronbach's Alpha ≥ 0.9 is considered excellent; good from $[0.8 ; 0.9]$; acceptable from $[0.7 ; 0.8]$; poor from $[0.6 ; 0.7]$; and unacceptable when < 0.6 . From this point on, the assessment of the "quality" of Cronbach's Alpha values will refer to this classification by Hill and Hill (2002, p. 149). To avoid unnecessary repetitions, the classification will not be described in full.

of 0.580 (unacceptable). After removing items C7 and C19, the dimension had a Cronbach's Alpha of $\alpha = 0.751$ (acceptable).

Table 3 contains the Cronbach's Alphas for the four Organizational Culture models. The OCAI scale had an Alpha of 0.920, which indicates that the scale's overall internal consistency index is excellent (Hill & Hill, 2002). The Clan Culture and Adhocracy Culture models showed good internal consistency, the Market Culture model had acceptable internal consistency and the Hierarchy Culture model had poor internal consistency. A previous study (Pierce, 2010) found that, in military contexts, the Hierarchy Culture model of this scale obtained a Cronbach's Alpha ($\alpha = 0.69$), which does not fall in the acceptability threshold. Another study on the AFA (Lopes et al., 2018) obtained similar results ($\alpha = 0.65$).

Table 3 – Cronbach's Alphas of the Organizational Culture factors

Model	Number of items	α
Clan	6	0.844
Adhocracy	6	0.828
Hierarchy	5	0.631
Market	4	0.751

4.1.2. Confirmatory factor analysis

To test the study's theoretical congruence, a confirmatory factor analysis (CFA) was performed on the original 3F solution (climate) and 4F solution (culture), which generated the diagrams in Figures 3 to 6.

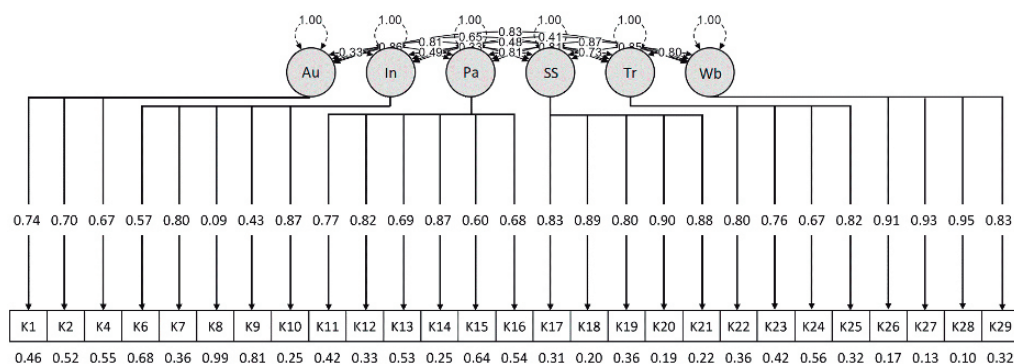


Figure 3 – CFA model generated for the Human Relations model

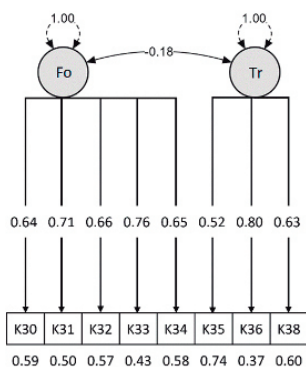


Figure 4 – CFA model generated for the Internal Process model

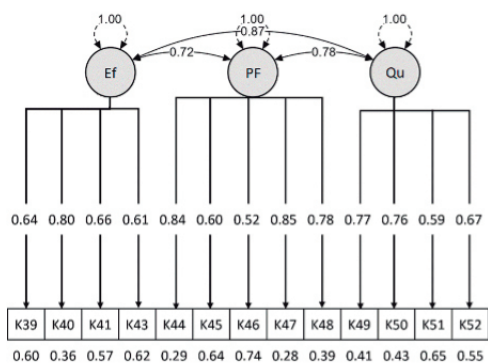


Figure 5 – CFA model generated for the Rational Goal Model

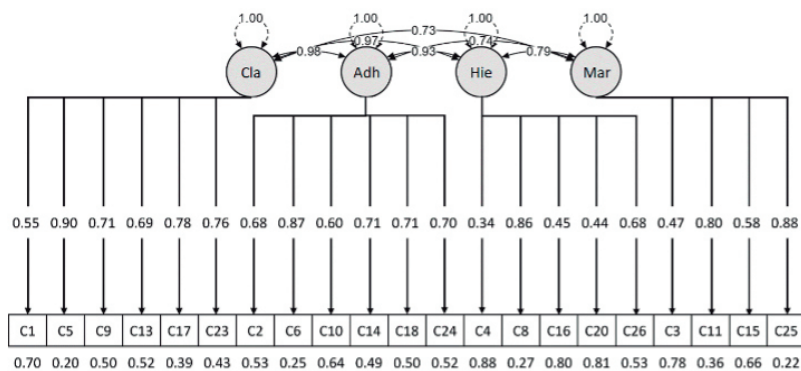


Figure 6 – CFA model generated for the Organizational Culture variable

After removing item K42 (from the effort dimension of the Rational Goal Model), the CFA of the climate factors showed the goodness of fit indices in Table 4. As for the culture factors, the CFA also showed adequate goodness of fit indices. Specifically, the goodness of fit indices in Table 4 correspond to: the CFI and TLI values considered good in all Organizational Climate and Culture models; the RMSEA values considered desirable in the Human Relations and Clan Culture models, and good in the remaining models; and the SRMR values considered desirable in all models of the two variables (Tabachnick & Fidell, 2019).

Table 4 – Goodness of fit indices obtained by the CFA¹⁰

		CFI	TLI	RMSEA	SRMR
Organizational Climate	Human Relations	0.992	0.991	0.067	0.074
	Internal Process	0.983	0.975	0.057	0.067
	Rational Goal	0.992	0.990	0.053	0.062
Organizational Culture	Clan	0.994	0.990	0.080	0.054
	Adhocracy	0.996	0.994	0.054	0.041
	Hierarchy	0.993	0.985	0.050	0.045
	Market	1.000	1.000	0.000	0.012

4.2. Analysis of mean differences

This section analyses the mean differences obtained by the Organizational Climate and Culture variables according to type of training, course year and specialty, as well as the correlations between the models.

4.2.1. Mean differences in the variable Organizational Climate

Given the significant difference between the dimensions of the sub-samples composed of CCMA (n = 233) and ETM (n = 11) students, a non-parametric Mann-Whitney test was used, which found significant mean differences ($p < 0.05$) (Table 5) between CCMA and ETM students in the Human Relations model.

Table 5 – Mann-Whitney test performed on the factors of the Organizational Climate variable

Model	Samples	n	Average ¹¹	Standard deviation	Significance
Human Relations	CCMA	233	2.352	0.529	0.012
	ETM	11	2.748	0.424	
Internal Process	CCMA	233	2.954	0.410	0.063
	ETM	11	3.209	0.330	
Rational Goal	CCMA	233	2.943	0.518	0.173
	ETM	11	3.122	0.344	

¹⁰ CFI and TLI values ≥ 0.95 are considered good, RMSEA values ≤ 0.06 are considered good and values from [0.06 ; 0.10] are desired, and SRMR values ≤ 0.08 are desired (Tabachnick & Fidell, 2019, pp. 560-564).

¹¹ Even though the Mann-Whitney test, which is non-parametric, assesses the significance of mean differences, the tables show the mean scores obtained by the items of the models for the sub-samples under analysis due to their descriptive value, as they make it easier to compare means regardless of the type of test that is used.

The significance of the mean differences in the Human Relations model was high, thus a Mann-Whitney test was performed on the model's dimensions, which revealed that the differences stem from the fact that ETM students have a stronger perception of support from supervisors ($p < 0.01$) (Table 6).

Table 6 – Mann-Whitney test performed on the dimensions of the Human Relations model

Model	Samples	n	Average	Standard deviation	Significance
Autonomy	CCMA	233	1.681	0.549	0.125
	ETM	11	1.939	0.512	
Integration	CCMA	233	2.898	0.535	0.057
	ETM	11	3.255	0.482	
Participation	CCMA	233	2.042	0.633	0.059
	ETM	11	2.394	0.651	
Supervisor support	CCMA	233	2.334	0.775	0.004
	ETM	11	2.946	0.336	
Training	CCMA	233	2.697	0.688	0.058
	ETM	11	3.046	0.445	
Well-being	CCMA	233	2.461	0.835	0.068
	ETM	11	2.909	0.701	

Table 7 shows the results of the One-Way ANOVA test with Welch correction applied to different course years in the Human Relations model, which had to be performed due to the significant difference in sample size and / or heterogeneity of variances. The Welch correction resulted in an index with a significance of 0.000, which confirms that the mean differences between course years are significant (Table 7).

Table 7 – One-Way ANOVA test performed on the Human Relations model

Model	Samples	n	Average	Standard deviation	Significance
Human Relations	1st year	44	3.131	0.271	0.000
	2nd year	73	2.204	0.420	
	3rd year	30	2.211	0.472	
	4th year	33	2.112	0.307	
	5th year	23	2.125	0.324	
	6th year	19	2.155	0.390	
	7th year in the AFA	11	2.142	0.379	
Total		233	2.352	0.529	

Table 8 shows the significance of the Games-Howell post-hoc test. This test was used due to the presence of heteroscedasticity, and the results revealed significant mean differences between 1st year students and students from other years ($p < 0.001$).

Table 8 – Games-Howell post-hoc test performed on the Human Relations model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.000	1.000	1				
4th year	0.000	0.863	0.956	1			
5th year	0.000	0.964	0.986	1.000	1		
6th year	0.000	0.999	0.999	1.000	1.000	1	
7th year in the AFA	0.000	0.999	0.999	1.000	1.000	1.000	1

A One-Way ANOVA test was also performed on the Internal Process model, but no significant mean differences were found ($p > 0.05$) (Table 9).

Table 9 – One-Way ANOVA test performed on the Internal Process model

Model	Samples	n	Average	Standard deviation	Significance
Internal Process	1st year	44	2.961	0.284	0.428
	2nd year	73	2.952	0.378	
	3rd year	30	2.986	0.458	
	4th year	33	2.974	0.485	
	5th year	23	2.752	0.441	
	6th year	19	3.059	0.499	
	7th year in the AFA	11	3.036	0.401	
Total		233	2.954	0.410	

Tables 10 and 11 show the mean scores of the Rational Goal Model obtained in the ANOVA and the significance of the mean differences obtained in the post-hoc Games-Howell test (which had to be performed due to heteroscedasticity). Table 10 shows that, in the Rational Goal Model, there are significant mean differences ($p < 0.001$) among CCMA students. Table 11 shows that there are significant mean differences between 1st year CCMA students and all other students ($p < 0.001$), and between 4th year CCMA students ($p < 0.05$), 5th year students ($p < 0.01$) and 6th year students ($p < 0.01$), when compared to 2nd year students.

Table 10 – One-Way ANOVA test performed on the Rational Goal Model

Model	Samples	n	Average	Standard deviation	Significance
Rational Goal	1st year	44	3.661	0.245	0.000
	2nd year	73	2.945	0.378	
	3rd year	30	2.804	0.456	
	4th year	33	2.702	0.348	
	5th year	23	2.516	0.412	
	6th year	19	2.557	0.323	
	7th year in the AFA	11	2.729	0.331	
Total		233	2.944	0.518	

Table 11 –Games-Howell post-hoc test performed on the Rational Goal Model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.000	0.748	1				
4th year	0.000	0.029	0.953	1			
5th year	0.000	0.002	0.216	0.575	1		
6th year	0.000	0.001	0.305	0.734	1.000	1	
7th year in the AFA	0.000	0.463	0.997	1.000	0.673	0.804	1

The post-hoc Games-Howell test (Table 11) showed significant mean differences in the Rational Goal Model between 2nd year students and 4th year ($p < 0.05$), 5th year ($p < 0.01$) and 6th year students ($p < 0.01$). Therefore, an analysis of the model's dimensions was performed. The result of the Mann-Whitney test (Table 12) provided a reason for the mean differences, as 2nd year students had higher perceptions of effort ($p < 0.001$) and quality ($p < 0.001$) than 4th, 5th and 6th year students.

Table 12 – Mann-Whitney test performed on the dimensions of the Rational Goal Model

Model	Samples	n	Average	Standard deviation	Significance
Effort	2nd year	73	3.065	0.402	0.000
	4th, 5th and 6th years	75	2.627	0.547	
Performance feedback	2nd year	73	2.548	0.626	0.089
	4th, 5th and 6th years	75	2.381	0.463	
Quality	2nd year	73	3.223	0.472	0.000
	4th, 5th and 6th years	75	2.817	0.528	

A Student's t-test, used to assess independent samples, was performed to analyse the mean differences found in the Organizational Climate factors between students who are enrolled exclusively in the AFA and those who are also attending another education establishment.

During the years in which students attend a Public Higher Education Institution (IESP), that is, from their 4th to 7th year in the AFA, significant differences were found in the Human Relations model ($p < 0.05$), as shown in Table 13.

Table 13 – Results of the Student's t-test performed on each factor of the Organizational Climate variable for 4th to 7th year AFA students

Model	Samples	n	Average	Standard deviation	Significance
Human Relations	AFA students	39	2.034	0.279	0.016
	Co-enrolled students	47	2.207	0.359	
Internal Process	AFA students	39	2.987	0.484	0.419
	Co-enrolled students	47	2.904	0.469	
Rational Goal	AFA students	39	2.615	0.385	0.417
	Co-enrolled students	47	2.631	0.349	

As the only mean differences obtained in the Human Relations model were found between AFA students and co enrolled students from the 4th year to the 7th year, a Mann-Whitney test was performed to analyse the model's dimensions, which revealed that they stemmed from significant differences in autonomy ($p < 0.01$) and participation ($p < 0.01$) (Table 14).

Table 14 – Mann-Whitney test performed on the dimensions of the Human Relations model

Model	Samples	n	Average	Standard deviation	Significance
Autonomy	AFA students	39	1.419	0.380	0.007
	Co-enrolled students	47	1.695	0.476	
Integration	AFA students	39	2.692	0.537	0.075
	Co-enrolled students	47	2.898	0.526	
Participation	AFA students	39	1.628	0.337	0.006
	Co-enrolled students	47	1.879	0.463	
Supervisor support	AFA students	39	1.985	0.559	0.786
	Co-enrolled students	47	2.064	0.670	
Training	AFA students	39	2.378	0.490	0.463
	Co-enrolled students	47	2.468	0.528	
Well-being	AFA students	39	2.103	0.603	0.327
	Co-enrolled students	47	2.239	0.612	

The statistical similarity in the means obtained by the 2nd and 3rd year students made it possible to treat them as a homogeneous group in the Student's t-test, which did not reveal significant mean differences among specialties during the years in which the students attend classes exclusively in the AFA (from the 1st to the 3rd course years), because no p-values < 0.05 were observed.

The analysis of the Organizational Climate dimensions showed that, as CCMA students advance (from the 1st to the 5th year), the mean values obtained for all the analysed variables decrease, except for the autonomy and tradition dimensions.

4.2.2. Mean differences in the variable Organizational Culture

Given the significant difference between the dimensions of the sub-samples composed of CCMA students and ETM students, a non-parametric Mann-Whitney test was performed, which found significant mean differences ($p < 0.05$) (Table 15) between CCMA and ETM students in the Hierarchy Culture model.

Table 15 – Mann-Whitney test performed on the factors of the Organizational Culture variable

Model	Samples	n	Average	Standard deviation	Significance
Clan	CCMA	233	3.348	0.851	0.710
	ETM	11	3.467	0.799	
Adhocracy	CCMA	233	2.964	0.854	0.299
	ETM	11	3.212	0.699	
Hierarchy	CCMA	233	3.528	0.644	0.028
	ETM	11	3.964	0.528	
Market	CCMA	233	3.557	0.771	0.897
	ETM	11	3.591	0.664	

Tables 16 to 19 contain the results of the One-Way ANOVA tests performed on the Clan Culture ($p < 0.001$), Adhocracy Culture ($p < 0.001$), Hierarchy Culture ($p < 0.001$) and Market Culture ($p < 0.001$) models, which show significant mean differences between all the models. The significance values of the mean differences between course years are highlighted in bold in Tables 20 to 23, which contain the results of the Tukey HSD post-hoc tests (this type of test was used due to homogeneity of variances).

Table 16 – One-Way ANOVA test performed on the Clan Culture model

Model	Samples	n	Average	Standard deviation	Significance
Clan	1st year	44	4.424	0.431	0.000
	2nd year	73	3.338	0.656	
	3rd year	30	3.161	0.816	
	4th year	33	2.808	0.708	
	5th year	23	2.913	0.570	
	6th year	19	2.702	0.647	
	7th year in the AFA	11	3.273	0.716	
Total		233	3.348	0.851	

Table 17 – One-Way ANOVA test performed on the Adhocracy Culture model

Model	Samples	n	Average	Standard deviation	Significance
Adhocracy	1st year	44	4.034	0.595	0.000
	2nd year	73	2.865	0.613	
	3rd year	30	2.844	0.869	
	4th year	33	2.662	0.515	
	5th year	23	2.623	0.676	
	6th year	19	2.114	0.671	
	7th year in the AFA	11	2.758	0.844	
Total		233	2.964	0.854	

Table 18 – One-Way ANOVA test performed on the Hierarchy Culture model

Model	Samples	n	Average	Standard deviation	Significance
Hierarchy	1st year	44	4.246	0.464	0.000
	2nd year	73	3.485	0.566	
	3rd year	30	3.427	0.492	
	4th year	33	3.236	0.556	
	5th year	23	3.130	0.469	
	6th year	19	3.263	0.718	
	7th year in the AFA	11	3.382	0.414	
Total		233	3.528	0.644	

Table 19 – One-Way ANOVA test performed on the Market Culture model

Model	Samples	n	Average	Standard deviation	Significance
Market	1st year	44	4.142	0.637	0.000
	2nd year	73	3.545	0.699	
	3rd year	30	3.625	0.694	
	4th year	33	3.356	0.753	
	5th year	23	3.294	0.714	
	6th year	19	2.947	0.775	
	7th year in the AFA	11	3.318	0.742	
Total		233	3.557	0.771	

As shown in Table 20, mean differences in Clan Culture were found between: 1st year students and all other students ($p < 0.01$); and between 2nd year students and 4th and 6th year students ($p < 0.05$).

Table 20 – Tukey HSD post-hoc test performed on the Clan culture model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.000	0.938	1				
4th year	0.000	0.010	0.537	1			
5th year	0.000	0.063	0.848	0.996	1		
6th year	0.000	0.011	0.324	0.998	0.921	1	
7th year in the AFA	0.004	1.000	0.999	0.524	0.763	0.350	1

As Table 21 shows, mean differences were found in Adhocracy Culture between: 1st year students and all other students ($p < 0.01$); 6th year and 2nd year students ($p < 0.01$) and 3rd year students ($p < 0.05$).

Table 21 – Tukey HSD post-hoc test performed on the Adhocracy Culture model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.000	1.000	1				
4th year	0.000	0.569	0.951	1			
5th year	0.000	0.726	0.941	1.000	1		
6th year	0.000	0.003	0.029	0.060	0.211	1	
7th year in the AFA	0.006	0.999	1.000	1.000	0.999	0.362	1

As Table 22 shows, mean differences were found in the scores obtained for Hierarchy Culture between 1st year students and all other years ($p < 0.001$).

Table 22 – HSD Tukey post-hoc test performed on the Hierarchy Culture model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.000	0.998	1				
4th year	0.000	0.353	0.777	1			
5th year	0.000	0.062	0.299	0.987	1		
6th year	0.000	0.868	0.974	1.000	0.992	1	
7th year in the AFA	0.000	0.988	1.000	0.965	0.693	0.997	1

As for Market Culture, Table 23 shows mean differences between 1st year students and all other years except students enrolled in their 7th year in the AFA ($p < 0.05$).

Table 23 – Tukey HSD post-hoc test performed on the Market Culture model

Sig.	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year in the AFA
1st year	1						
2nd year	0.000	1					
3rd year	0.030	0.998	1				
4th year	0.000	0.883	0.758	1			
5th year	0.000	0.755	0.622	1.000	1		
6th year	0.000	0.068	0.053	0.525	0.747	1	
7th year in the AFA	0.053	0.956	0.887	1.000	1.000	0.846	1

The mean differences obtained for the factors of the Organizational Culture variable between students attending classes exclusively at the AFA and students attending other IESP, that is, from their 4th to 7th year in the AFA, were ascertained through a Student's t-test, which is used to analyse independent samples. As Table 24 shows, significant differences were found in the Hierarchy Culture model ($p < 0.05$).

Table 24 – Student's t-test performed on the factors of the Organizational Climate variable for students attending their 4th to 7th year in the AFA

Model	Samples	n	Average	Standard deviation	Significance
Clan	AFA students	39	2.812	0.623	0.453
	Co-enrolled students	47	2.922	0.713	
Adhocracy	AFA students	39	2.483	0.614	0.456
	Co-enrolled students	47	2.592	0.720	
Hierarchy	AFA students	39	3.067	0.482	0.011
	Co-enrolled students	47	3.370	0.579	
Market	AFA students	39	3.192	0.804	0.562
	Co-enrolled students	47	3.287	0.709	

In the 2nd and 3rd years, no significant mean differences were found between AFA students and co enrolled students because no $p < 0.05$ values were observed. However, in the 1st year, significant mean differences were found between AFA students and co enrolled students (Table 25) in the Adhocracy Culture ($p < 0.05$) and Market Culture ($p < 0.05$) models.

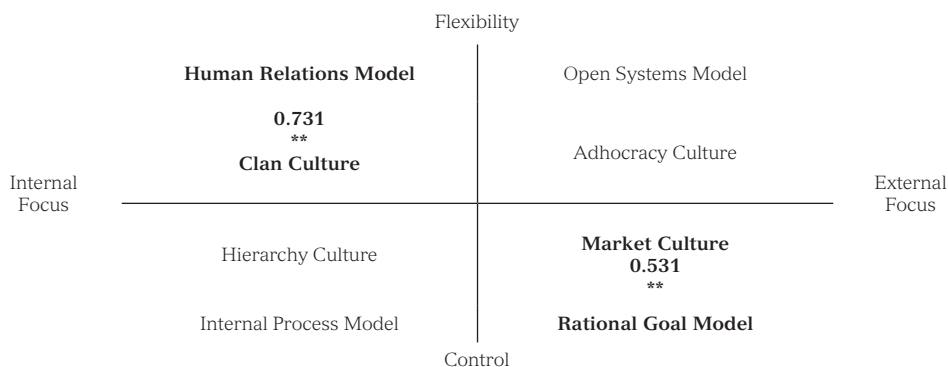
Table 25 - Student's t-test performed on each factor of the Organizational Culture variable for 1st year students

Model	Samples	n	Average	Standard deviation	Significance
Clan	AFA students	17	4.363	0.097	0.459
	Co-enrolled students	27	4.463	0.087	
Adhocracy	AFA students	17	3.794	0.159	0.032
	Co-enrolled students	27	4.185	0.098	
Hierarchy	AFA students	17	4.106	0.107	0.115
	Co-enrolled students	27	4.333	0.089	
Market	AFA students	17	3.868	0.193	0.021
	Co-enrolled students	27	4.315	0.086	

One-Way ANOVA tests were performed to assess the mean differences between specialties in the years corresponding to cadet-student graduation for each Organizational Climate and Organizational Culture model. The tests did not reveal significant mean differences among specialties in any course year ($p > 0.05$).

4.3. Correlations between the variables in the models

Figure 7 shows strong, statistically significant correlations between the Human Relations model and Clan Culture ($p = 0.731$) and between the Rational Goal and Market Culture models ($p = 0.531$). Furthermore, a strong, significant correlation was found between Organizational Climate and Organizational Culture ($p = 0.752$).



* Correlation is significant when $p < 0.05$; ** correlation is significant below 0.01 (2 tails).

Figure 7 – Pearson correlations between the Organizational Climate and Organizational Culture models

Figure 8¹² shows the Organizational Climate and Organizational Culture profiles that correspond to the means of the quadrants of the competing values framework for all AFA students. The Internal Process and Rational Goal models and the corresponding types of culture (Hierarchy Culture and Market Culture) obtained the highest mean scores.

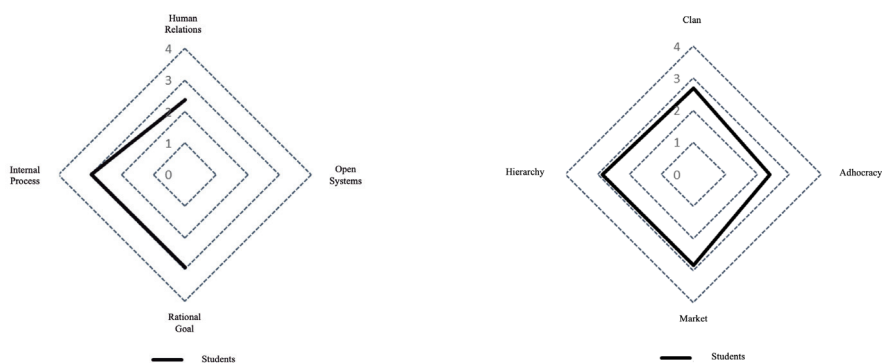


Figure 8 – Competing Values Framework applied to Organizational Climate and Culture

⁷ The Organizational Culture model was resized to a 1:4 scale.

5. Discussion of findings

The empirical evidence obtained in the above analyses confirmed the five hypotheses, three of which were “fully” confirmed (H3 to H5). The remaining two (H1 and H2) were partially confirmed, as explained below.

H1 test: *CCMA students and ETM students have different perceptions of Organizational Climate.*

H1 is partially confirmed because significant differences were only found between CCMA students (with the exception of 1st year students) and ETM students in the Human Relations model. The greater support perceived by ETM students, as well as by 1st year students, may be due the fact that, at the time the questionnaire was delivered, they had only recently enrolled in the AFA and were still in the initial stages of learning the (appropriate) way of being, behaving and thinking as new members of the organization (Rousseau, 1990; Schein, 1990), and needed more support from those who have been in the organization for longer (Schein, 2010). This means that leadership plays a crucial role because: leadership is one of the main antecedents of organizational climate (Ehrhart & Schneider, 2016, p. 5), leaders are expected to provide direction and purpose (Martin & McCausland, 2002, p. 429, cited in Pierce, 2010); and, by helping subordinates, leaders show concern for their well-being, which is one of the characteristics of the Human Relations model (Cameron et al., 2006, p. 79). Moreover, and as shown by González-Romá and Gamero (2012, p. 98), a positive correlation was found between a supportive climate and performance.

H2 test: *CCMA students and ETM students have different perceptions of Organizational Culture.*

H2 is partially confirmed because significant mean differences were only found in Hierarchy Culture, where ETM students had higher scores than CCMA students. In a study by Lopes et al. (2018), ETM students had slightly lower mean scores in Hierarchy Culture than CCMA students. However, it was not expected that this study would have similar results, as the group enrolled in the ETM is not the same in both studies, and different groups can develop different subcultures, which may be stronger or weaker than others (Ehrhart & Schneider, 2016, p. 10). However, the results are consistent with Breslin (2000, p. 16), who found that higher ranking officers had higher mean scores regarding their perceptions of the military as a culture of discipline, authority and uniformity, which are characteristic of Hierarchy Culture (Cameron & Quinn, 2011).

H3 test: *Students enrolled in different years of the CCMA have different perceptions of Organizational Climate.*

H3 is confirmed because significant mean differences were found between 1st year students and all other CCMA students in the Human Relations Model (cf. what was stated above regarding H1) and the Rational Goal Model. In the second model, this could be related to the fact that 1st year students are in the initial stages of training, and therefore receive more feedback from supervisors, which results in more positive perceptions regarding the quality of the work and effort they produce. The mean differences found for 1st year

students are higher than for CCMA students in all the analysed dimensions, except in the tradition dimension, in which they had significantly lower scores than older CCMA students. These lower scores could be related to the fact they need more time and experiences in the organization to learn how things are done (Schein, 2010).

Furthermore, the fact that 1st year students obtained high scores in all climate quadrants is consistent with the findings of Lopes et al. (2018), as well as Schneider (2000), that climate creates culture. That is, that specific climates that are created are manifestations of the values of the cultures that underpin them (Beus et al., 2020, p. 1). Significant mean differences were also found between 2nd year and 4th, 5th and 6th year students (2nd year students have higher scores regarding their perceptions of effort and quality). This could be due to the fact that they are about to begin the military phase of their training, which is highly demanding and intense, and thus requires resilience (effort), as described by Saltzman et al. (2013, cited in Redmond et al., 2015, p. 9). On the other hand, co enrolled students had higher mean scores in the Human Relations model than PILAV students in the same year. The analysis performed on the dimensions showed that this could be due to the fact that co enrolled students (from the 4th to the 7th year in the AFA) have stronger perceptions of autonomy and participation, which are characteristics often associated with civilian university education (Feng, 2018, p. 34; Sokol et al., 2015, p. 285).

H4 test: *Students enrolled in different years of the CCMA have different perceptions of Organizational Culture.*

H4 is confirmed because there are clear differences in all Organizational Culture models between 1st year students and all other CCMA students, as the scores they obtained were significantly high. Even though each year corresponds to a subculture, which can be a more intense version of Organizational Culture (Martin & Siehl, 1983), 1st year students generally had higher mean scores than all other students, but which tend to decrease and stabilise over the following years, confirming the findings of Lopes et al. (2018). This culture change over time is in line with Schein (2000, p. xxv), who found that subgroups within the organization may deviate from the established culture because they do not have enough shared experiences to adopt common assumptions.

In addition to the differences between 1st year students and students from other years, differences were also found in Clan Culture between 2nd year students and 4th and 6th year students (the latter obtained lower scores). As expected, these high scores are lower than those obtained by 1st year students, and higher than the ones obtained by older students. The 2nd year is the beginning of the downward curve identified by Lopes et al. (2018) and by the present study. However, at the time of the survey, 2nd year students were in the most intense stage of their acculturation – e.g., in terms of continued “exposure” to situations where they will acquire the military characteristics consistent with the Clan Culture model, such as a sense of community (esprit de corps), cohesion, willingness to cooperate (camaraderie) and the ability to form lasting partnerships (Cameron et al., 2006). This influence could be strong enough to push the 2nd year scores closer to the 1st year scores. On the other hand, the close contact that the current 2nd year had with the current 5th year in the year before this study

was carried out – during which 2nd and 5th year students had more shared experiences and assimilated more cultural clues (Denisson, 1996) – may be one of the reasons why there are differences in Clan Culture between 4th and 6th year students and 2nd year students, but not between the latter and 5th year students.

With regard to Adhocracy Culture, significant differences were found between 1st year students and students from other years; however, 6th year students obtained lower mean scores than 2nd and 3rd year students, which indicates a weak adhocracy subculture (Ehrhart & Schneider, 2016; Schein, 2016). The fact that the mean scores obtained for this type of culture by all years of the CCMA, with the exception of the 1st year, were not significantly high is positive because it means that there are no differences between subcultures in any aspects that are considered strategic for the organization (Cameron et al., 2006, p. 120), and because it indicates greater organizational commitment and, as a result, greater productivity (Beus et al., 2019, cited in Beus et al., 2020).

Regarding Hierarchy Culture, differences were observed between 1st year students and students enrolled in other years of the CCMA, as the former obtained higher mean scores. This was to be expected because these students are still in a very early stage of their adaptation to the AFA and are constantly adjusting to a military culture defined by structure, framework and rules (Redmond et al., 2015, p. 9), which are characteristics associated with Hierarchy Culture (Cameron & Quinn, 2011; Quinn & Rohrbaugh, 1983). Furthermore, the high mean scores obtained in this culture as a whole (i.e. by all years, when compared to the other culture types), are likely due to the fact that students perceive the organization as an effective higher education establishment because it is stable, predictable and mechanical (Cameron & Quinn, 2011, p. 38).

With regard to Market Culture, differences were only found between 1st year students and students from other years. This culture was as pronounced as Hierarchy Culture (the dominant culture in this type of organization, which is also the case here). According to Cameron and Quinn (2011), this finding is highly significant because it supports the fact that the AFA, in addition to having the cultural identity traits of a military organization, also has cultural traits typical of task oriented, demanding cultures in which winning is emphasised.

The lower mean scores of 1st year PILAV students in the quadrants with external focus, compared to those of students from different specialties, appears to be “paradoxical” because it simultaneously *contradicts* and *echoes* Schein (2016, p. 25), who argues that people who are trained in the same way, are taught the same values, and have a high degree of socialisation during that period have similar cultural values. It *contradicts* it because the conditions and training provided to 1st year students are largely the same, especially during their first months in the AFA. It *echoes* it because students from the PILAV specialty have some hours of pilot training every week, which may play a significant role in these differences.

H5 test: *In the AFA, there is a relationship between Organizational Climate and Organizational Culture.*

H5 is confirmed because significant correlations were found between the dimensions of the Organizational Climate models proposed by Patterson et al. (2004) and the Organizational

Culture models proposed by Cameron and Quinn (1999), and between these two variables as a whole. This is in line with the literature because: it confirms Schneider's (2000) reflection that climate is correlated with culture, in addition to creating it; the concepts of climate and culture are conceptually similar (Beus et al., 2020); climate is the superficial manifestation of culture (Parker et al., 2003); while quantitative studies about culture measure organizational values, studies on climate measure perceptions of organizational characteristics which are the manifestation of those values (Schneider et al., 2011).

6. Conclusions

This study aimed to answer the following research question: *What are the characteristics of the Organizational Climate and Organizational Culture of the Air Force Academy?* This question was operationalised using a theoretical model (competing values framework) to analyse three types of Organizational Climate (Human Relations, Internal Process and Rational Goal) and four types of Organizational Culture (Clan, Adhocracy, Hierarchy and Market) using a questionnaire survey that consisted of an Organizational Climate scale (OCM) and an Organizational Culture scale (OCAI).

With regard to the study's **findings**, a more granular analysis of the data (by course and year) showed significant differences between ETM students and CCMA students (with the exception of 1st year students) in the Human Relations and Hierarchy Culture models. The analysis of the responses of CCMA students revealed several important aspects. First year students had higher mean scores in all Organizational Climate and Culture models, except in the Internal Process model, due to their low perceptions of tradition. Overall, the means values of the models tend to decrease as students progress in the course. On the other hand, the perceptions about Organizational Climate and Organizational Culture of the 2nd and 7th year students enrolled in the AFA were relatively homogeneous. The only significant differences in perceptions about climate were found in the Rational Goal Model, between 2nd year students and 4th, 5th and 6th year students; and in perceptions about culture, between 2nd year students and 4th and 6th year students (Clan Culture was more pronounced in the former) and between 6th year students and 2nd and 3rd year students (the former had lower scores in Adhocracy Culture). With regard to specialties, students enrolled in other IESP obtained higher scores in the Human Relations and Hierarchy Culture models; and 1st year PILAV students identified less with the externally focused cultural models (Adhocracy Culture and Market Culture) when compared to other students.

A more macro analysis of the data collected and summarised above showed that, even though the student sample can be subdivided (to reduce the variability of the means) into three groups (1st year students, 2nd to 7th year students from the AFA and ETM students), the global profiles of Organizational Climate and Culture have a similar "geometry", which emphasises control and hierarchy. This shows that students perceive the Internal Process and Rational Goal models as the ones that best describe the Organizational Climate that they experience, and that the types of culture that correspond to them (Hierarchy Culture and Market Culture) best describe the culture of their organization.

This study shows that the AFA was / is perceived: on the one hand, as an organization defined by formality, structure and formal procedures and rules, where management and communication are used to achieve a state of stability and control that promotes efficiency, consistency and uniformity; and, on the other hand, as an organization oriented towards results and goals, with high standards of quality, which are enforced by demanding leaders who assess and give relevant, timely feedback to students about their performance and effort. Therefore, in addition to the cultural traits characteristic of a military organization, the AFA also has cultural traits typical of task oriented, demanding cultures in which winning is emphasised.

The **theoretical contribution** of this dissertation is the empirical data it provided on the benefits of adopting the competing values framework (the most extensively used model in quantitative studies on Organizational Culture) to group specific climates in sub-models / quadrants corresponding to types of Organizational Culture.

As for **practical contributions**, this dissertation provides the AFA's decision-makers, for the first time, a measurement of students' perceptions about Organizational Climate, as well as an updated measurement of their perceptions about Organizational Culture. Both concepts are important in the study of organizations because they have an impact on numerous outcomes, such as job satisfaction (Johnson & McIntye, 1998, p. 848), innovation and effectiveness (Glisson, 2015, p. 247), safety (West et al., 2014, p. 339), well-being in the school environment (Lombardi et al., 2019, p. 7) and organizational commitment (Grant, 2002, p. 139), among others.

The main **limitation** of this research – which was unrelated to it and did not affect the validity of the findings (which was reinforced by the quasi longitudinal design) – refers to the fact that it was not possible to conduct a longitudinal study covering at least two course years, as suggested by several authors who have studied both Organizational Climate and Organizational Culture (Ashkanasy, Broadfoot & Falkus, 2000; González-Romá & Gamero, 2012; Wilderom et al., 2000).

Therefore, **future studies** should include a longitudinal study to assess possible changes in the profile of the competing values framework used in the AFA over time, and to integrate them in planning and decision making, which, as noted by Bacharach and Mundel (1993, cited in Paparone, 2003), tends to change with the arrival of new members with different ways of thinking in the organization. It would also be of interest to conduct a study on Organizational Culture and Climate in the different functional areas of the AFA and the PoAF, based on the studies conducted by Paparone (2003, p. 121), who found that the education, research and managerial departments of a military university of the US Department of Defence had different dominant cultures, and Erhardt (2018), who found differences in culture profile between different units of the US Air Force. It would also be of interest to broaden / replicate this study to all Portuguese military higher education establishments, in order to assess possible trends and establish potential parallels between the climate and culture experienced by the future officers of the AAF, given the impact of these variables on several outcomes.

References

- Air Force Academy. (2015). *Regulamento dos Mestrados Integrados da Academia da Força Aérea*. [Regulation of the Integrated Master's degrees of the Air Force Academy] Pêro Pinheiro: Author.
- Ashkanasy, N. M., Broadfoot, L., & Falkus, S. (2000). Questionnaire measures of organizational culture. In N. M. Ashkanasy, C. P. Wilderom & M. F. Peterson (Ed.), *The Handbook of Organizational Culture & Climate* (pp. 131-146). California: Sage.
- Berberoglu, A. (2018). Impact of organizational climate on organizational commitment and perceived organizational performance: Empirical evidence from public hospitals. *BMC Health Services Research*, 18(1). Retrieved from <https://doi.org/10.1186/s12913-018-3149-z>
- Beus, J.M., Solomon, S. J., Taylor, E. C., & Esker, C. A. (2020). Making sense of climate: A meta-analytic extension of the competing values framework. *Organizational Psychology Review*, 20(10). Retrieved from <https://doi.org/10.1177/2041386620914707>
- Breslin, C. B. (2000). *Organizational culture and the military*. Carlisle Barracks: U.S. Army War College.
- Caetano, A., Neves, J. G., & Ferreira, J. M. (2020). *Psicossociologia das Organizações*. Lisbon: Sílabo.
- Cameron, K., & Quinn, R. (1999). *Diagnosing and Changing Organizational Culture Based on the Competing Values Framework*. Massachusetts: Addison-Wesley.
- Cameron, K., & Quinn, R. (2006). *Diagnosing and Changing Organizational Culture Based on the Competing Values Framework* (2.nd Ed.). San Francisco: Jossey-Bass.
- Cameron, K., & Quinn, R. (2011). *Diagnosing and Changing Organizational Culture Based on the Competing Values Framework* (3.rd Ed.). San Francisco: Jossey-Bass.
- Cameron, K., Quinn, R., DeGraff, J., & Thakor, A. (2006). *Competing Values Leadership: Creating Values in Organizations*. Massachusetts: Edward Elgar Publish.
- Caseiro, C. M. R. (2012). *Cultura Organizacional: um estudo de caso* [Organizational Culture: a case study] (Master's dissertation in Human Resource Management). Lisbon School of Economics and Management [ISEG], Lisbon.
- Cunliffe, A. L. (2008). *Organization Theory*. London: Sage.
- Decision No. 10545/2021 of 27 October (2021). *Regulamenta a tipologia de ensino e formação dos estágios técnico-militares*. [Regulates the types of teaching and training provided in technical military internships] Journal of the Republic, 2nd Series, 209, 28-29. Lisbon: National Defence – Office of the Minister of National Defence.
- Decree-Law No. 236/99 of 25 June (1999). Approves the Status of Armed Forces Personnel. Journal of the Republic, 1st Series, 146, 3792-3843. Lisbon: Ministry of National Defence.
- Decree-Law n. 249/2015 of 28 October (2019). *Aprova a orgânica do ensino superior militar, consagrando as suas especificidades no contexto do ensino superior, e aprova o Estatuto do Instituto Universitário Militar*. [Approves the organizational structure of the military higher education system and establishes its specific features, and

- approves the Status of the Military University Institute.] Journal of the Republic, 1st Series, 211, 9298-9311. Lisbon: Ministry of National Defence.
- Denison, D. R. (1996). What is the difference between organizational culture and organizational climate? A native's point of view on a decade of paradigm wars. *Academy of Management Review*, 21, 819-854. Retrieved from <https://doi.org/10.5465/amr.1996.9702100310>
- Diniz, P., & Fachada, C. P. A. (2019). *Percepção dos Pilotos da Força Aérea para os Comportamentos de Risco na Operação Normal* [Perceptions of Risky Behaviour during Normal Operation among Air Force Pilots] (Individual Research Work carried out for the CPOS). Military University Institute [IUM], Lisbon.
- Ehrhart, M. G., & Schneider, B. (2016). Organizational Climate and Culture. *Oxford Research Encyclopedia of Psychology*. Retrieved from <https://doi.org/10.1093/acrefore/9780190236557.013.3>
- Erhardt, R. (2018). *Cultural Analysis of Organizational Development Units: A Comprehensive Approach based on the Competing Values Framework* (PhD thesis in Administration). Georgia State University, Georgia.
- Fachada, C. P. A. (2015). *O Piloto Aviador Militar: Traços Disposicionais, Características Adaptativas e História de Vida* [The Military Pilot: Dispositional Signature, Characteristic Adaptations and Life Story] (PhD thesis in Psychology). Faculty of Psychology, University of Lisbon [FPUL], Lisbon.
- Falcione, R., & Kaplan, E. (1985). Organizational Climate, Communication, and Culture. *Communication yearbook*, 8, 285-309. Retrieved from <https://doi.org/10.1080/23808985.1984.11678579>
- Feng, W. (2018). *The Relationship between Institutional Climate and Student Engagement and Learning Outcomes in Ontario Community Colleges* (PhD thesis in Philosophy). Universidade de Toronto, Toronto.
- Fontes, R. (2011). *Cultura Organizacional e Gestão de Recursos Humanos* (Master thesis in Sociology). Instituto Superior de Ciências Sociais e Políticas [ISCSP], Lisboa.
- Glisson, C. (2015). The Role of Organizational Culture and Climate in Innovation and Effectiveness. *Human Service Organizations: Management, Leadership & Governance*, 39(4), 245-250. Retrieved from <https://doi.org/10.1080/23303131.2015.1087770>
- González-Romá, V., & Gamero, N. (2012). Does positive team mood mediate the relationship between team climate and team performance? *Psicothema*, 24(1), 94-99.
- Grant, W. S. (2002). *Organizational Climate and Commitment: A Case Study of an Urban Nonprofit Organization* (PhD thesis in Philosophy). Old Dominion University, Norfolk.
- Guzzo, R., Nalbantian, H., & Parra, L. (2014). A Big Data, Say-Do Approach to Climate and Culture: A Consulting Perspective. Em: B. Schneider & K. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 197-212). Nova York: Oxford University Press.

- Hartnell, C. A., Ou, A. Y., & Kinicki, A. (2011). Organizational Culture and Organizational Effectiveness: A Meta-Analytic Investigation of the Competing Values Framework's Theoretical Suppositions. *Journal of Applied Psychology*, 96(4), 677-694. Retrieved from <https://doi.org/10.1037/a0021987>
- Hill, M. M., & Hill, A. (2002). *Investigação por questionário* (2nd Ed). Lisbon: Sílabo.
- Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. London: McGraw-Hill.
- Innocenti, L., Profili, S., & Sammarra, A. (2013). Age as moderator in the relationship between HR development practices and employees' positive attitudes. *Personnel Review*, 42(6), 724-744. Retrieved from <https://doi.org/10.1108/PR-Jan-2012-0009>
- James, L. R., Choi, C. C., Ko, C. H. E., McNeil, P. K., Minton, M. K., Wright, M. A., & Kim, K. I. (2008). Organizational and psychological climate: A review of theory and research. *European Journal of work and organizational psychology*, 17(1), 5-32. Retrieved from <https://doi.org/10.1080/13594320701662550>
- Johnson, J., & McIntye, C. (1998). Organizational culture and climate correlates of job satisfaction. *Psychological Reports*, 82(3), 843-850. Retrieved from <https://doi.org/10.2466/pr0.1998.82.3.843>
- Keyton, J. (2011). *Communication and organizational culture: a key to understanding work experiences* (2.^a Ed.). California: Sage.
- Kim, H. (2013). *Statistical notes for clinical researchers: assessing normal distribution using skewness and kurtosis*. University College of Health Science, Seoul. Retrieved from <https://doi.org/10.5395/rde.2013.38.1.52>
- Kuenzi, M., & Schminke, M. (2009). Assembling fragments into a lens: A review, critique, and proposed research agenda for the organizational work climate literature. *Journal of Management*, 35(3), 634-717. Retrieved from <https://doi.org/10.1177/0149206308330559>
- Litwin, G. H., & Stringer, R. A. (1968). *Motivation and organizational climate*. Cambridge: Harvard University Press.
- Lombardi, E., Traficante, D., Bettoni, R., Offredi, I., Giorgetti, M., & Vernice, M. (2019). The Impact of School Climate on Well-Being Experience and School Engagement: A Study With High-School Students. *Frontiers in Psychology*, 10, 2482. Retrieved from <https://doi.org/10.3389/fpsyg.2019.02482>
- Lopes, G. D., Fachada, C. P. A., & Farinha, A. P. G. (2018). Relação entre a Cultura Organizacional e a Liderança nos Estabelecimentos de Ensino dos Oficiais da Força Aérea. [Relationship between organizational culture and leadership in the two Air Force schools that train officer-students] *Journal of Military Sciences*, 6(1), 221-254. Retrieved from <https://www.ium.pt/cisdi/index.php/pt/publicacoes/revista-de-ciencias-militares>.
- Machado, C., & Davim, J. P. (2018). *Enhancing Competitive Advantage With Dynamic Management and Engineering*. Hershey: IGI Global.
- Machado, M. V. (2002). *A Influência da Cultura Empresarial na Produtividade das Organizações* [The Influence of Business Culture in Organizational Productivity] (Master's dissertation in Organizational Behaviour). Institute of Applied Psychology [ISPA], Lisbon.

- Martin, J., & Siehl, C. (1983). Organizational culture and counterculture: An uneasy symbiosis. *Organizational Dynamics*, 12(2), 52-64. Retrieved from [https://doi.org/10.1016/0090-2616\(83\)90033-5](https://doi.org/10.1016/0090-2616(83)90033-5).
- Moran, E. T., & Volkwein, J. F. (1992). The Cultural Approach to the Formation of Organizational Climate. *Human Relations*, 45(1), 19-47. Retrieved from <https://doi.org/10.1177/001872679204500102>
- Mullins, L. J. (2010). *Management and Organizational Behaviour*. Essex: Pearson.
- Notice No. 3243/2021 of 23 February (2021). *Concurso para admissão ao estágio técnico-militar - licenciatura - ano letivo de 2021-2022*. [Admission notice for the technical and military internship – first degree – 2021/2022]. Journal of the Republic, 2nd Series, 37, 46-67. Lisbon: Chief of Staff of the Air Force.
- Notice No. 3245/2021 of 23 February (2021). *Concurso para admissão ao estágio técnico-militar - Mestrado para as Especialidades de Juristas, Psicólogos e Médicos - ano letivo de 2021-2022*. [Admission notice for the technical and military internship – Master's degree for the Lawyers, Psychologists and Doctors specialties – 2021/2022]. Journal of the Republic, 2nd Series, 37, 79-94. Lisbon: Office of the Chief of Staff of the Air Force.
- Notice No. 5817/2022 of 21 March. (2022). *Concurso para admissão aos Cursos em Ciências Militares Aeronáuticas da Academia da Força Aérea — Ano letivo 2022/2023* [Admission notice for the Military Aeronautics courses of the Air Force Academy (AFA) for 2022/2023]. Journal of the Republic, 2nd Series, 56, 45-54. Lisbon: Chief of Staff of the Air Force.
- Pallant, J. (2020). *SPSS Survival Manual A step by step guide to data analysis using IBM SPSS* (7.^a Ed.). Londres: Routledge.
- Paparone, C. R. (2003). *Applying the competing values framework to study organizational subcultures and system-wide planning efforts in a military university* (PhD thesis in Philosophy). Pennsylvania State University, Pennsylvania.
- Parker, M. (2000). *Organizational culture and identity: unity and division at work*. Washington: Sage.
- Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., Lacost, H. A., & Roberts, J. E. (2003). Relationships between psychological climate perceptions and work outcomes: a meta-analytic review. *Journal of Organizational Behavior*, 24, 389-416. Retrieved from <https://doi.org/10.1002/job.198>
- Patterson, M., West, M., Shackleton, V., Lawthom, R., Maitlis, S., Robinson, D., Dawson, J., & Wallace, A. (2004). *Development and Validation of an Organizational Climate Measure*. Birmingham: Aston University.
- Pierce, J. G. (2010). *Is the organizational culture of the U.S. Army congruent with the professional development of its level officer corps?* U.S. Army War College, Carlisle.
- Ployhart, R., Hale Jr., D., & Campion, M. (2014). Staffing Within the Social Context. In B. Schneider & K. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 23-43). Oxford: Oxford University Press.

- Powell, B., Mettert, K., Dorsey, C., Weiner, B., Stanick, C., Lengnick-Hall, R., Ehrhart, M., Aarons, G., Barwick, M., Damschroder, L., & Lewis, C. (2021). Measures of organizational culture, organizational climate, and implementation climate in behavioral health: A systematic review. *Implementation Research & Practice*, 2, 1-29. Retrieved from <https://doi.org/10.1177/26334895211018862>
- Quinn, R. E., & Rohrbaugh, J. (1981). A Competing Values Approach to Organizational Effectiveness. *Public Productivity Review*, 5(2), 122-140. Retrieved from <https://doi.org/10.2307/3380029>
- Quinn, R. E., & Rohrbaugh, J. (1983). Spatial Model of Effectiveness Criteria: Towards a Competing Values Approach To Organizational Analysis. *Management Science*, 29(3), 363-377. Retrieved from <https://doi.org/10.1287/mnsc.29.3.363>
- Quinn, R. E. (1988). *Beyond rational management: Mastering the paradoxes and competing demands of high performance*. Nova York: Jossey-Bass.
- Redmond, S. A., Wilcox, S. L., Campbell, S., Kim, A., Finney, K., Barr, K., & Hassan, A. M. (2014). A brief introduction to the military workplace culture. *Work: A Journal of Prevention, Assessment and Rehabilitation*, 50, 9-20. Retrieved from <https://doi.org/10.3233/wor-141987>
- Reichers, A. (1987). An Interactionist Perspective on Newcomer Socialization Rates. *Academy of Management Review*, 12, 278-287. Retrieved from <https://doi.org/10.2307/258535>
- Rousseau, D.M. (1990). New Hire Perceptions of Their Own and Their Employer's Obligations: A Study of Psychological Contracts. *Journal of Organizational Behavior*, 11, 389-400. Retrieved from <https://doi.org/10.1002/job.4030110506>
- Sampieri, R. H., Collado, C. F., & Lucio, M. P. B. (2013). *Metodologia de Pesquisa* (5.th Ed.). Porto Alegre: Penso.
- Santos, L. A. B., & Lima, J. M. M. V. (Coords.) (2019). *Orientações Metodológicas para a Elaboração de Trabalhos de Investigação* [Methodological Guidelines for the Elaboration of Research Papers] (2nd Ed.). Lisbon: Military University Institute.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th Ed.). Londres: Pearson Education.
- Saraiva, D., & Almeida, A. (2017). Distinguir cultura organizacional e clima organizacional. [Distinguishing organizational culture from organizational climate] *Revista Portuguesa de Gestão & Saúde*, 22, 24-31.
- Schein, E. H. (1990). Organizational culture. *American Psychologist*, 45(2), 109-119. Retrieved from <https://doi.org/10.1037/0003-066X.45.2.109>
- Schein, E. H. (2000). Sense and nonsense about culture and climate. Em: N. M. Ashkanasy, C. P. Wilderom & M. F. Peterson (Eds.), *The Handbook of Organizational Culture & Climate* (pp. xxiii-xxx). California: Sage.
- Schein, E. H. (2010). *Organizational culture and leadership* (4.^a Ed.). San Francisco: Jossey-Bass.
- Schein, E. H. (2016). *Organizational culture and leadership* (5.^a Ed.). London: McGraw-Hill.

- Schneider, B., & Barbera, K. (2014). Introduction and Overview of the Handbook. Em: B. Schneider & K. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 3-20). Oxford: Oxford University Press.
- Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology*, 36(1), 19-39. Retrieved from <https://doi.org/10.1111/j.1744-6570.1983.tb00500.x>
- Schneider, B. (1975). Organizational climates: An essay. *Personnel Psychology*, 28(4), 447-479. Retrieved from <https://doi.org/10.1111/j.1744-6570.1975.tb01386.x>
- Schneider, B. (2000). The Psychological Life of Organizations. In N. M. Ashkanasary, C. P. M. Wilderom & M. F. Peterson (Eds.), *Handbook of Organizational Culture & Climate* (pp. xvii-xxii). California: Sage.
- Schneider, B., Ehrhart, M. G., & Macey, W. H. (2011). Perspectives on organizational climate and culture. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (pp. 373-414). Washington: American Psychological Association.
- Schneider, B., González-Romá, V., Ostroff, C., West, M. A. (2017). Organizational climate and culture: Reflections on the history of the constructs in the Journal of Applied Psychology. *Journal of Applied Psychology*, 102(3), 468-482. Retrieved from <https://doi.org/10.1037/apl0000090>
- Smircich, L. (1983). Concepts of culture and organizational analysis. *Administrative Science Quarterly*, 28(3), 339-358. Retrieved from <https://doi.org/10.2307/2392246>
- Sokol, A., Gozdek, A., Figurska, I., & Blaskova, M. (2015). Organizational climate of higher education institutions and its implications for the development of creativity. *Social and Behavioral Sciences*, 182, 279-288.
- Tabachnick, B. G., & Fidell, L. S. (2019). *Using Multivariate Statistics*. Boston: Pearson.
- Verbeke, W., Volgering, M., & Hessels, M. (1998). Exploring the conceptual expansion within the field of organizational behaviour: Organizational culture. *Journal of Management Studies*, 35, 303-330.
- West, M., Topakas, A., & Dawson, J. (2014) Climate and Culture for Health Care Performance. In B. Schneider & K. Barbera (Eds.), *The Oxford Handbook of Organizational Climate and Culture* (pp. 335-358). Nova York: Oxford University Press.
- Wilderom, C. P. M., Glunk, U., & Maslowski, R. (2000). Organizational culture as a predictor of organizational performance. Em: N. M. Ashkanasy, C. P. Wilderom, & M. F. Peterson (Eds.), *The Handbook of Organizational Culture & Climate* (pp. 193-209). California: Sage.