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## of Human Social Sciences: H

# Interdisciplinary



Depths of Existential Inquiry

The Initial Formation of the Teacher

Highlights

Exploring Existential Questions

Analysis of Psychological Literature

Discovering Thoughts, Inventing Future

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# Global Journal of Human-Social Science: H

## Interdisciplinary

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# Exploring Existential Questions: A Comprehensive Review of Psychological Literature (2000-2023) – Part I

By Kenia Cristiana de Lima Alencar & Marta Helena de Freitas

*Abstract-* The systematic review and meta-analysis presented in this study aim to provide an overview of the literature on the meaning of life and existential vacuum within the contemporary field of psychology, investigating the approaches and methodologies employed in this area from 2000 to 2023. The review encompassed five databases, including CAPES portal, APA PsycArticles, SCOPUS, SCIELO, and PEPSIC, utilizing combinations of descriptors such as "existential vacuum" and "meaning of life," along with related terms, in conjunction with "mental health" and "clinical psychology," both in English and their respective Portuguese counterparts.

The inclusion criteria involved selecting articles that centered on the themes of existential vacuum or meaning of life as the primary focus, published between 2000 and 2023, and written in English, Spanish, or Portuguese. A total of 671 articles were initially identified, with 264 meeting the inclusion criteria and subsequently subjected to meta- analysis.

*Keywords: existential vacuum, meaning of life, mental health, psychology, systematic review.*

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EXPLORINGEXISTENTIALQUESTIONSACOMPREHENSIVEREVIEWOFPSYCHOLOGICALLITERATURE20002023PARTI

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# Exploring Existential Questions: A Comprehensive Review of Psychological Literature (2000-2023) – Part I

Kenia Cristiana de Lima Alencar [α] & Marta Helena de Freitas [σ]

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The analysis revealed a prevalence of international and high- level journal publications in Europe and the United States, with notable contributions from Brazilian authors. The peak in publications occurred in 2021, notably during the COVID- 19 pandemic, which underscored the increased interest in existential questions during times of crisis. The predominant theoretical frameworks included existential/ humanist perspectives, particularly among standout authors, and the utilization of instruments associated with positive psychology in survey research.

Overall, this systematic review provides valuable insights into the evolution and current landscape of research on the meaning of life and existential vacuum within the field of psychology, shedding light on the diverse approaches and methodologies employed in the study of these essential existential constructs.

*Keywords: existential vacuum, meaning of life, mental health, psychology, systematic review*

## I. Introduction

The existential vacuum and the meaning of life are core themes in the field of Psychology. Both constructs relate to all aspects of the lifeworld, whether psychological aspects linked to mental suffering, associated more with the existential vacuum, or with subjective and intersubjective wellbeing, more closely related to the meaning of life. It is such a fundamental theme that its scope is global, studied all over the world in diverse cultures: Asian - Indian (*e.g.* Mohanty et al., 2015) and Iranian (*e.g.*, Abdollahi et al., 2020), and also the Western nations, in countries in South America (*e.g.*, Aquino et al., 2016), North America (*e.g.* Thill et al., 2020) and Europe (*e.g.* Vötter, 2019), especially during the recent period of the pandemic, faced with the crisis of Covid-19 and the landscape today where the prevailing tone is one of Psychopolitics, the philosophy of digital "dataism" (Han, 2018) and liquid modernity (Bauman, 2004).

Moreover, in the context of the science of the psyche, the topic is also explored through a variety of epistemological approaches ranging from existentialist perspectives (*e.g.*, Vos et al., 2015) to humanist (*e.g.*, Edberg et al., 2023), psychoanalytical (*e.g.*, Mendes, 2018), phenomenological (*e.g.*, Larsson & Bolmsjö, 2017), and positive (*e.g.*, Wong, 2017) perspectives and, via the logotherapy approach (*e.g.*, Roehe, 2006; Nassif et al., 2010; Medeiros et al., 2020), a dimension centered explicitly on the question of meaning. This bears witness to the global dimension and the importance of the topic in question to the field of mental health, justifying it not only as the focal point of diverse studies but also in its cross-sectional approach in a variety of contemporary studies in psychology.

Previous studies largely focused on the measurement of constructs, using psychometric instruments to analyze the level of existential vacuum and/or meaning of life, as experienced in a diversity of populations (*e.g.,* de Vries et al., 2022; Kiang & Fuligni, 2010; Martínez et al., 2011). In addition, systematic reviews concentrated on the study of the relationship between meaning of life and illnesses like cancer (*e.g.*, Martinez-Calderon et al., 2023; Winger & Mosher, 2016), borderline personality disorder (*e.g.*, Liu, et al., 2023) and social isolation (*e.g.*, Yung et al., 2021); studies evaluating psychometric instruments (*e.g.*, Brandstätter et al., 2012; Li et al., 2021), with a limit on the number of studies with comprehensive reviews, focusing on the extent and nature of the phenomenon and which were epistemological in nature. Included here is the review by Vos et al. (2015) of the efficacy of different types of existential therapy to deal with life issues.

The aim of this research is to find out what was published and how the literature produced in English, Spanish and Portuguese on this theme, in the period between 2000 and 2023, is characterized, with a view to systemizing it and discussing the practical and epistemological implications. Specifically, the aim is to compile data on which type of approach (qualitative or

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quantitative) and which type of study (extended, naturalistic) has been employed in published periodicals focusing on existential issues. The purpose is to discover the underlying scientific paradigm that has been predominant in Psychology studies, signaling the way in which the lifeworld has been studied, and whether it incorporated an idiographic or a nomothetic approach. In this way, aiming to map this literature from the last two decades, the present study results from a systematic review and meta-analysis of works in psychology from 2000 to 2023, on the topics of existential vacuum and meaning of life. The manuscript develops through the perspective of contributing to the sphere of clinical psychology in the care of mental health, in order to describe the current state and prevailing paradigm of contemporary psychology with regard to the handling of existential questions, highlighting their contributions and their limitations, evidencing their suitability, pertinence and efficacy to deal with such issues, especially in a contemporary context where people have experienced veritable crises of meaning.

Having completed this brief contextualization, there follows a description of the method adopted in the study that gave rise to this article, designated as Part I.

## II. Method

The systematic review evolved out of a bibliographic search by way of the concept of existential vacuum, meaning of life and its correlates as the core topic in articles indexed in five databases, as follows: CAPES Periodicals Portal (260 articles), APA PsycArticles (53 articles), SCOPUS (226 articles), SCIELO (64 articles) and PePSIC (68 articles). The search for articles was carried out between May 29 and July 23, 2023, with the Publication Year field being restricted to the last twenty-three years (2000 to 2023). During this period, the search frequency produced an arithmetic mean of three days of investigation per week, to be precise, three queries at the end of May, twelve during June and twelve in July. Updated searches were performed between August 4 and August 8. It should be mentioned that, prior to the official search, a preliminary search was conducted each day between May 21 and May 28 in order to become familiar with the databases and to obtain a quantitative and qualitative understanding of the emerging issues on the theme.

These databases were selected following the following criteria: a) having international scope, and specificity to area of psychology, such as SCOPUS and APA[1]; b) databases with Latin American scope, as they deal with the location of the origins of said study, such as PePSIC[2] and SCIELO[3], both of which are sources for the virtual health library (BVS[4]), the latter being considered the principal digital library of Latin America (Tumelero, 2019); c) including a Brazilian periodical portal like CAPES[5], which brings together the scientific content from a variety of databases.

The CAPES portal is a platform developed in Brazil which conducts a generic sweep of works published both in and outside Brazil, compiling diverse scientific content as well as offering detailed search filters such as languages, peer reviews, subject matter, types of resource (articles, book chapters, entire books, etc.), and is a benchmark for research in Brazil. PePSIC is a virtual library source in the area of health, the result of a partnership between psychology entities in Brazil and other countries in Latin America, offering specific content in the field of psychology. Both SCIELO and SCOPUS are databases with a global, international outreach, and both are references used in Brazil, indexed using Qualis grade 'A1' evaluation criteria. As for the APA, this is an American and Canadian representation of Psychology, recognized by editors in the field of psychology as well as being a research reference in Brazil. Thus, the selected databases complement each other by embracing national, Latin American and international publications covering most of the continents as well as some of them being specifically directed toward the area of Psychology, and is the scientific basis for the present systematic review.

As for the APA database, it should be noted that there are two distinct search fields, one denominated PsycINFO and the other entitled PsycArticles. The former is a more comprehensive database which covers academic literature about psychology, grey literature, including dissertations, books, periodicals, and critiques. As for the second field, this covers only articles in periodicals published by the APA and its affiliated journals concerning the topics of psychology and health in general. The present study was limited to this second database, PsycArticles, as the category of articles was more specific, as the focus of the research was the scientific production in periodicals in psychology, excluding other forms of resource such as books and dissertations. Moreover, this database provides full, publicly available articles reviewed by peers. Thus, there follows an explanation of the method employed, which is systematized via a description of the search strategy, eligibility criteria and selection of studies.

### *a) Search Strategy*

To search each of the databases mentioned above, the following initial filters were employed for the article search: a) peer reviews, b) qualitative, quantitative and, or mixed methods approaches, c) articles published in English, Spanish or Portuguese.

[1] *APA – American Psychological Association.*
[2] *PePSIC – Electronic Psychology Journals.*
[3] *SCIELO – Scientific Electronic Library Online.*
[4] *BVS – Virtual Health Library - Brazil.*
[5] *CAPES – Coordination of Superior Level Staff Improvement.*

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It should be noted that articles in other languages were also found during the search process, including those published in the languages of Iran (*e.g.*, Hoseimi, & Zadehmohammadi, 2021) and Indonesia (e.g., Prahastini et al., 2021), which contained abstracts in the English language and content in the language of origin. As these languages did not satisfy the inclusion criteria, these articles were excluded. For the descriptors, to identify the articles, the following expressions were used: 'existential emptiness'; 'existential void'; 'existential vacuum'; 'existential loneliness'; 'meaning of life'; 'meaning in life'; 'mental health'; and 'clinical psychology', as well as their correlates in Portuguese, namely 'vazio existencial'; 'sentido de vida'; 'psicologia'; 'saúde mental'; and 'psicologia clínica'.

As the study seeks to explore existential issues and their contributions to mental health in the area of psychology, it was sought to use descriptors that mainly focused on meaning of life and existential vacuum, expressions deemed to be the centerpiece of the investigation. Complementarily, other associated expressions were employed, 'existential emptiness' for example, which produced a significant number of results. In addition, as in the preliminary search process, prior to the official search, the expression 'existential loneliness' was identified, it was decided to perform a prior investigation of the concept and, as a result, incorporate it into the study's official search process. In the meantime, an English language article was found entitled "Existential loneliness and end-of-life care: a systematic review" (Ettema et al., 2010), whose proposition was to perform a systematic review of the term 'existential loneliness'. On reading the article, it was noted that the term referred to a feeling of emptiness which takes hold of human beings in the face of death, and may be considered a specific type of existential vacuum experience.

The word AND was employed as the Boolean operator. Quotation marks were used with all the descriptors as it was found that the search without quotation marks resulted in a large number of studies, many of which had no relation to the study theme, as the Portuguese word *sentido* possesses a broad semantic spectrum in translation. In other words, as it is a polysemic word, the term 'meaning' together with the terminology "of life", when used without quotation marks in the search, resulted in various studies of different kinds, meaning, among other potential semantics, "sensation", "logic", "reason", "purpose", "awareness", "direction", "judgment". Given this breadth of meanings, resulting in a large number of articles unrelated to the theme, it was decided to use quotation marks, which produced results more in harmony with the semantics of purpose of life. In addition, the term *revisão sistemática* was also included in the search using the Boolean operator "AND", and the corresponding term in English, "systematic review", was used as a descriptor and not as a filter, as articles in this category specify this typology in their titles and, or abstracts. The purpose of adding these terms as descriptors was to identify potential systematic reviews performed on the theme, to obtain an understanding of the type of study conducted, the trends and the content covered. Moreover, it was ascertained if comprehensive systematic reviews of existential questions, such as the one presented in this study, had already been published by any researchers, in order to ensure it was something original, making a contribution to science. On this occasion, through a combination of said descriptors, a total of twenty-two combinations were used, thirteen in English and nine in Portuguese, to make the study more comprehensive. This detailed strategy was applied to the different databases and can be viewed in Table 1.



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*Table 1:* Database search strategy used.

| Databases | Language | Concept | Descriptors used |
|---|---|---|---|
| 1. CAPES<br>2. APA PSYCINFO<br>3. SCOPUS<br>4. SCIELO<br>5. PEPSIC | Portuguese | Vazio existencial | 1- "Vazio existencial" |
| | | | 2- "Vazio existencial" AND "levantamento sistemático" |
| | | | 3- "Vazio existencial" AND "revisão sistemática" |
| | | Sentido de vida, Sentido na vida | 4- "Sentido de vida" |
| | | | 5- "Sentido na vida" |
| | | | 6- "Sentido de vida" AND "levantamento sistemático" |
| | | | 7- "Sentido de vida" AND "revisão sistemática" |
| | | | 8- "Sentido na vida" AND "levantamento sistemático" |
| | | | 9- "Sentido na vida" AND "revisão sistemática" |
| | English | Existential Emptiness, Existential Void, Existential Vacuum, Existential Loneliness | 10- "Existential emptiness" |
| | | | 11- "Existential void" |
| | | | 12- "Existential vacuum" |
| | | | 13- "Existential loneliness" |
| | | | 14- "Existential emptiness" AND "clinical psychology" |
| | | | 15- "Existential emptiness" AND "systematic review" |
| | | | 16- "Existential loneliness" AND "systematic review" |
| | | Meaning of life, Meaning in life | 17- "Meaning of life" AND "mental health" |
| | | | 18- "Meaning in life" AND "mental health" |
| | | | 19- "Meaning of life" AND "systematic review" |
| | | | 20- "Meaning in life" AND "systematic review" |
| | | | 21- "Meaning of life" AND "clinical psychology" |
| | | | 22- "Meaning in life" AND "clinical psychology" |

In the search relating to the descriptors "meaning of life" and "meaning in life", due to a large number of findings, and having applied the filters specified above (e.g., in CAPES, there were 213 results for MoL-meaning of life and 1,111 for MiL- meaning in life; while in SCOPUS, the corresponding numbers were 237 and 1,241, respectively), the search was restricted by adding the descriptors "mental health" and "clinical psychology". With these additional descriptors, the combinations refined the search, producing articles focusing more on the clinical area. Moreover, some databases, such as SCOPUS, provided a field entitled "search by title, abstract or keywords", which was used, bearing in mind that if the analyzed descriptors are deemed essential to the study, they have to appear in at least one of these three fields: title, abstract or keyword.

Table 1a, below, illustrates the search strategy employed in the method. It includes examples of descriptor combinations and Boolean operators applied to one of the databases used in the study. Subsequently, Table 1b exhibits the list of articles selected.



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*Table 1a:* Descriptor combinations

| Search date | Database | Search number | Descriptors | | Filters | N- no. located articles | n- no. selected articles | z- no. repeated articles | Excluded |
|---|---|---|---|---|---|---|---|---|---|
| Jul 9, 2023 | SCOPUS | Search 13 | MEANING | "Meaning of life" AND "mental health" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 25 | 6 | 4 | 15 |
| Jul 9, 2023 | | Search 14 | | "Meaning in life" AND "mental health" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 35 | 3 | 20 | 32 |
| Jul 9, 2023 | | Search 15 | | "Meaning of life" AND "systematic review" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 1 | 0 | 1 | 1 |
| Jul 9, 2023 | | Search 16 | | "Meaning in life" AND "systematic review" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 7 | 3 | 1 | 3 |
| Jul 9, 2023 | | Search 17 | | "Meaning of life" AND "clinical psychology" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 2 | 0 | 1 | 2 |
| Jul 9, 2023 | | Search 18 | | "Meaning in life" AND "clinical psychology" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 4 | 2 | 1 | 1 |

*Table 1b:* Descriptor combinations and articles selected

| Database | Descriptors | Filters | N (located) | n (selected) | Z (repeated) |
|---|---|---|---|---|---|
| **SCOPUS** Search 14 | "Meaning in life" AND "mental health" | Portuguese, English, Spanish/ 2000-2023/ peer reviewed/ psychology | 35 | 3 | 20 |



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| | Search date | Included ? | Selection type | Article-Title | Year | Author | Abstract | DOI | Journal |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Jul 10, 2023 | OK | Abstract | Meaning, will to meaning, and Frankl's existential psychiatry | 2022 | Bailey (2022) | "Recent decades have witnessed a growing interest in the topic of a meaningful life among philosophers, psychologists, and the general public. Yet despite this interest, the thinker who is perhaps most closely associated with meaning and mental health, the Austrian psychiatrist Viktor Frankl, has been largely overlooked by academic researchers. **This article offers some redress to this situation by exploring the status of his central idea, the Will to Meaning, by locating it within contemporary philosophical discussions of Meaning in Life, and examining the coherence of the difference elements of Frankl's published works...**". | 0.1080/09515089.2022.2156854 | Philo-sophical Psychology |
| 2 | Jul 10, 2023 | OK | Abstract | Relationship between Psycho-pathology and Sources of Meaning in Psycho-thera-peutically Treated Patients: A Naturalistic Cross-Sectional Analysis | 2022 | Chmielewski et al. (2022) | "Introduction: The experience of meaning seems to be crucial for psychic well-being. In the literature, there are reports of relationships between personality, illness, and life meanings. **The objective of this study was to investigate types of experiences of meaning (meaningfulness, crisis of meaning, existential indifference) and their associations with some psychopathological categories in a clinical population**. Methods: In a naturalistic and cross-sectional design, 56 German patients in outpatient psychotherapy… were assessed by the Sources of Meaning and Meaning in Life Questionnaire (SoMe) Questionnaire (meaning of life, hedonism, eudaemonia). Psychopathology (Beck Depression Inventory (BDI)..." | 0.1159/000524688 | Psycho-pathology |
| 3 | Jul 10, 2023 | OK | Abstract | Focusing, the felt sense, and meaning in life | 2022 | Vanhooren et al. (2022) | "Making sense of our existence is one of the most demanding aspects of being human. Studies have shown that meaning is robustly associated with well-being and mental health. In this study with 358 Dutch-speaking participants during the covid-19 pandemic, **we tested if the practice of contacting one's felt sense (focusing attitude) would predict life satisfaction, psychological distress, and existential anxiety. We also tested whether the effect of this focusing attitude would be partially mediated by the experience of meaning in life.** Our hypotheses were confirmed..." | 0.1080/14779757.2022.2028660 | Person-Centered and Experiential Psychotherapies |

*b) Eligibility criteria*

As far as inclusion criteria are concerned, only articles that had existential vacuum or meaning of life as their central theme, and which were published in the abovementioned languages, were considered. In other words, articles were considered that included the theme as the main objective of the study, whether in the title of the work or in the keywords. In addition, the following were employed as filters: a) Portuguese, English, and Spanish language articles to ensure coverage and comprehensiveness; b) articles published in the area of psychology; c) articles reviewed by peers, ensuring greater scientific rigor; d) articles available in full and with a year of publication between 2000 and the beginning of 2023. This timeline establishes the limits of contemporaneity, where the prevailing paradigm involves psychopolitics, digital "dataism" (Han, 2018) and liquidity (Bauman, 2004).

As for the exclusion criteria, articles that only dealt with the topic of existential vacuum or meaning of life in a cross-sectional or tangential way, as well as those that were not available in total, were discarded. Tangential studies were considered to be those that only dealt with the theme as a secondary objective or that only mentioned it in the results. Nor was grey literature considered for the current study.

*c) Selection of Studies and the Process of Meta-Analysis Described in this Article*

In the initial phase of the study, described in this article, a reading of the article titles and abstracts was carried out, paying close attention to the aims of each study, seeking to ascertain if they complied with the



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inclusion criteria proposed for this systematic review. Potentially, when the exclusion criterion was unclear in these sections of the articles, a complete reading was carried out, ensuring more excellent reliability.

In this phase of the quantitative analysis, a descriptive analysis of the data was performed, aimed at describing the emerging trends based on the scenarios and variables studied, as a way to evidence what was found in the data collection, how it is distributed, how it has spread and where it has spread to. Visual resources were used such as a flow diagram, column graphs, grouped column graphs, clustered column graphs, bar charts, grouped bar charts, line graphs and tables, using Microsoft Excel software.

The analysis of the metadata in this initial phase included the following variables: year of publication, periodicals (name of journal), *Qualis*, thematic area of the journal in which the article was published, journal region, name and country of the most cited authors, language of publication of the articles, approach and nature of the articles, population studied, instruments for collecting and analyzing the data employed, and types of theoretical articles, as shown in Table 2. It should be pointed out that *Qualis* refers to a Brazilian system of periodical evaluation created by CAPES (Coordination of Superior Level Staff Improvement) which classifies and evaluates the scientific journals of *stricto sensu* postgraduation programs. This qualification stratifies the journals, ranging from excellent, including high-quality publications of international scope, through to standard journals of lesser importance. This categorization was employed in the present study in order to present the distribution of publications on the theme in accordance with the different qualifications, with a view to ascertaining the quality of scientific production in the area.

*Table 2:* Categories Searched

| Variables searched | | |
|---|---|---|
| 1 | Year of Publication | |
| 2 | Periodical (name of journal) | |
| | 2.1 | *Qualis* |
| | 2.2 | Thematic area of journal in which the article was published |
| | 2.3 | Journal region |
| 3 | Name and country of most cited authors | |
| 4 | Language of publication of the articles | |
| 5 | Approach and nature | |
| 6 | Population studied | |
| 7 | Data collection instruments | |
| 8 | Data analysis instruments | |
| 9 | Types of theoretical article | |

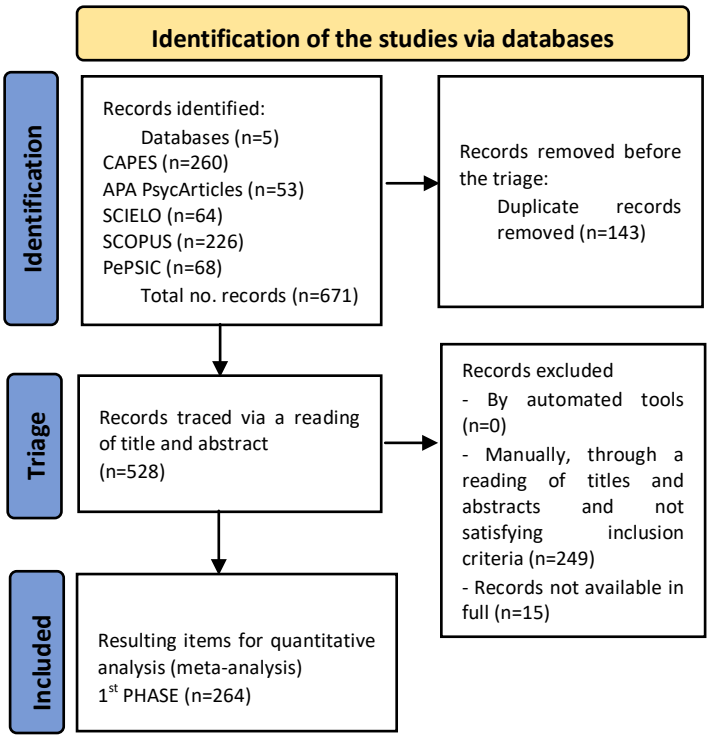
The analysis of the metadata in this initial phase included the following variables: year of publication, periodicals (name of journal), Qualis of the thematic area of the journal in which the article was published, journal region, name and country of the most cited authors, language of publication of the articles, approach and nature of the articles, population studied and instruments for collecting and analyzing the data employed.

## III. Results

The electronic search of the databases produced 671 articles (CAPES n=260, APA PsycArticles n=53, SCIELO n=64, SCOPUS n=226, PePSIC n=68). Of these, 143 were eliminated as duplicates, 249 were excluded as they did not satisfy the principal inclusion criteria, since they only discussed the theme of existential vacuum or meaning of life as a secondary objective, or as results, which is not consistent with the main thrust of the study. A further 15 were excluded as they were not available in full (See Figure 1). A total of 264 records were selected by way of a reading of the title and abstract and were subjected to quantitative analysis, corresponding to the first phase of the meta-analysis, as described in this article, for which the following categories were considered: year of publication, periodical, Qualis, thematic area, region, the home country of the journal, names of the authors and their respective countries of origin, approach, and nature, population studied and instruments employed. Figure 1 exhibits the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram adapted for the present study.



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*NB*. Model adapted from the PRISMA flow diagram. (Page *et al*., 2020).

*Fig. 1:* Flow Diagram – Article Identification and Selection Procedures

*a) Year of Publication*

Figure 2a exhibits the evolution of the studies on this topic throughout the period under review (2000-2023). Only 2001 failed to register any publication on the topic, the resulting arithmetic mean being 11.08 articles a year. As for the period with the highest number of publications, 2021 saw 30 articles published, followed by 2020, with 25 articles, and 2022 with 24. Figure 2a depicts a clear trend towards an increasing rate of publication over the period of 23 years, particularly during the period of the pandemic, with a leap in output of studies of a quantitative nature, as evidenced by the orange line, in comparison with qualitative studies, which are represented by the blue line.

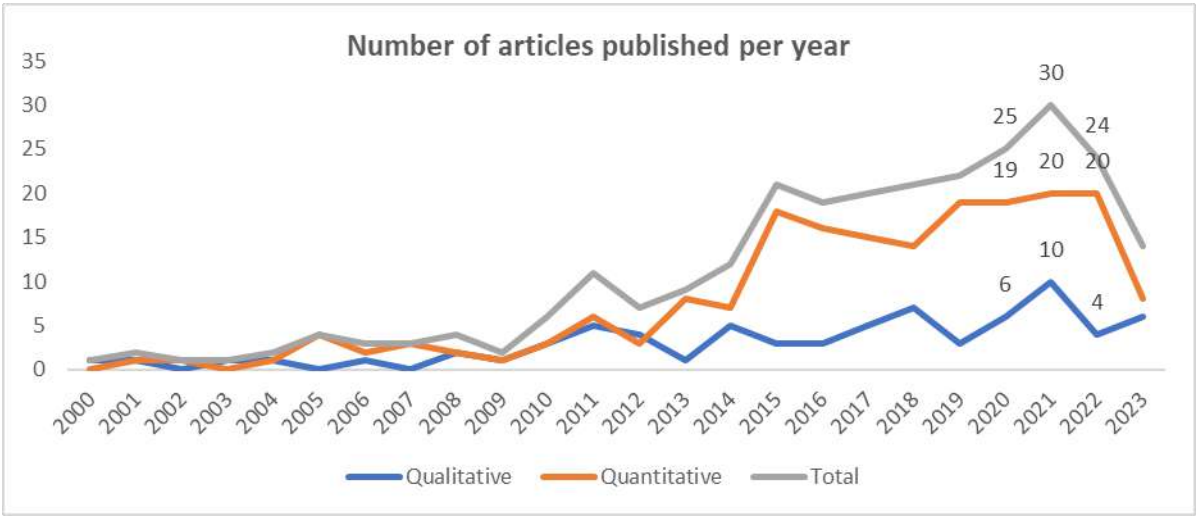


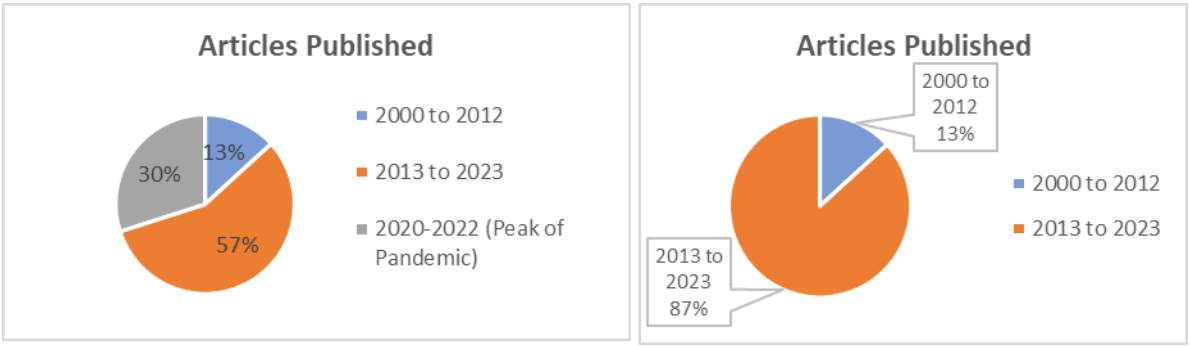

*Fig. 2a:* Distribution of Publication of Articles by Year, at the Global Level.

The publications included between 2000 and 2012, the first half of the period under review, account for 13% of the total, while those published between 2013 and 2023 account for 87% of the total (Figure 2b). In other words, the arithmetic mean of the second half of the period reviewed (2013 to 2023) was 2.16 articles a year, the highlight being articles produced during the pandemic (2020 to 2022), with an arithmetic mean of



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26.3 articles a year. In other words, concerning the arithmetic mean of the second decade, publications in the period of the pandemic represented an increase of 121.7% in scientific production on the theme in question. Additionally, Figure 2c exhibits the distribution of publications by approach over the first half of the period in question (2000-2012), with 8% of publications being quantitative in nature, versus 5% qualitative, while in the second half (2013-2023) there was a significant increase in both quantitative publications, at 67%, and qualitative publications, at 20%.




*Figs.2b and 2c:* Percentage of Publication of Articles in each Half of the Period Studied and during the period of pandemic.

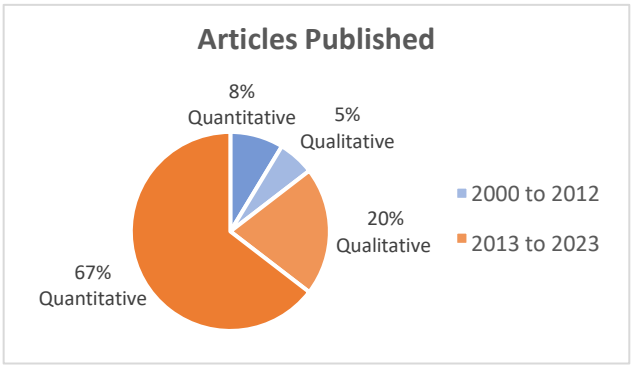



*Fig. 2d:* Percentage of Publication of Articles in each Half of the Period Studied, including quantitative and qualitative approaches.

To compare Brazilian publications with those from other countries, figures 3a and 3b illustrate the evolution of publications throughout the same period. The highest concentration of publications was found in 2021, with 24 results for international publications (Figure 3a), and six articles published in Brazilian journals (Figure 3b).

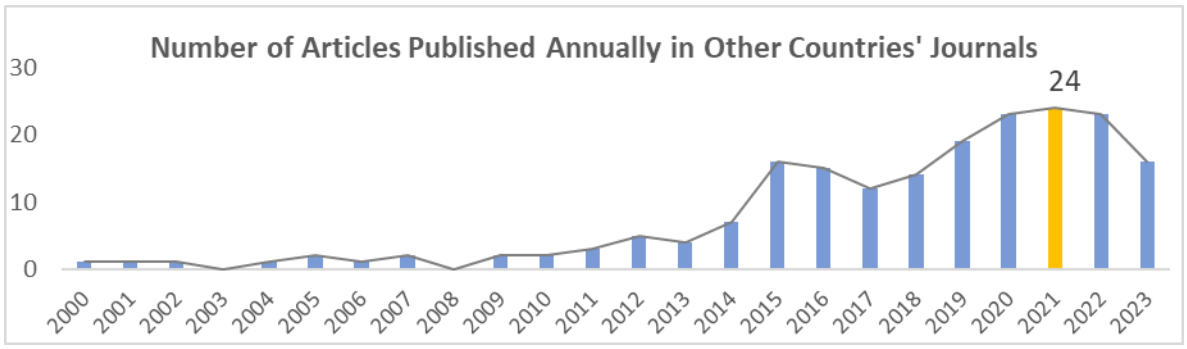



*Fig. 3a:* Distribution of Annual Publication of Articles in Other Countries' Journals.



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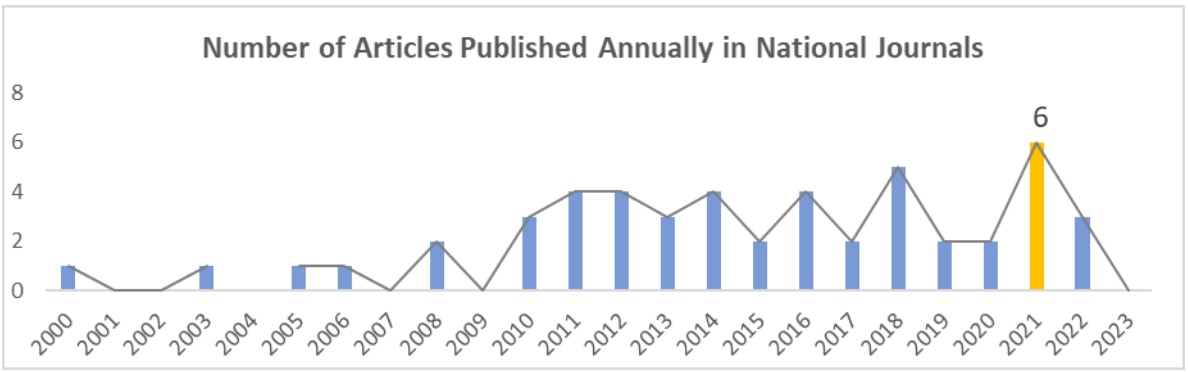



*Fig. 3b:* Distribution of Annual Publication of Articles in National Journals.

*b) Periodicals*

In the periodicals category, concerning 264 articles selected, 153 types of journal that include publications on the theme were catalogued, of which 117 were international, accounting for 76% of the total, and 36 were national, corresponding to 24% (Figure 4a).

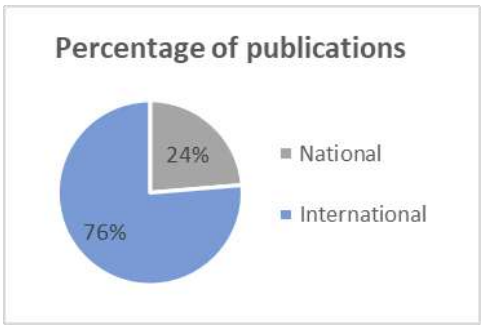



*Fig. 4a:* Percentage of Publication of Articles in International and National Periodicals.

The following international journals enjoyed the lion's share of publications: Journal of Religion and Health (16), USA; Frontiers in Psychology (14), Switzerland; Journal of Clinical Psychology (7), USA; Journal of Happiness Studies (5), UK; and Nursing Ethics (4), England (Figure 4b). The following journals gained prominence at the national level: *Revista da Abordagem Gestáltica* (7), Goiânia; *Psychology: Ciência e Profissão* (6), Brasília; *Temas em Psychology* (5), Ribeirão Preto; *Paideia* (4), Ribeirão Preto; and *Psicologia: Reflexão e Crítica* (2), Rio Grande do Sul (Figure 4c). In addition, a graph is available comparing the number of publications by international and national periodicals, demonstrating greater publication at the international level (Figure 4d).




*Fig. 4b:* Distribution of Publication in International Periodicals over 20 years.



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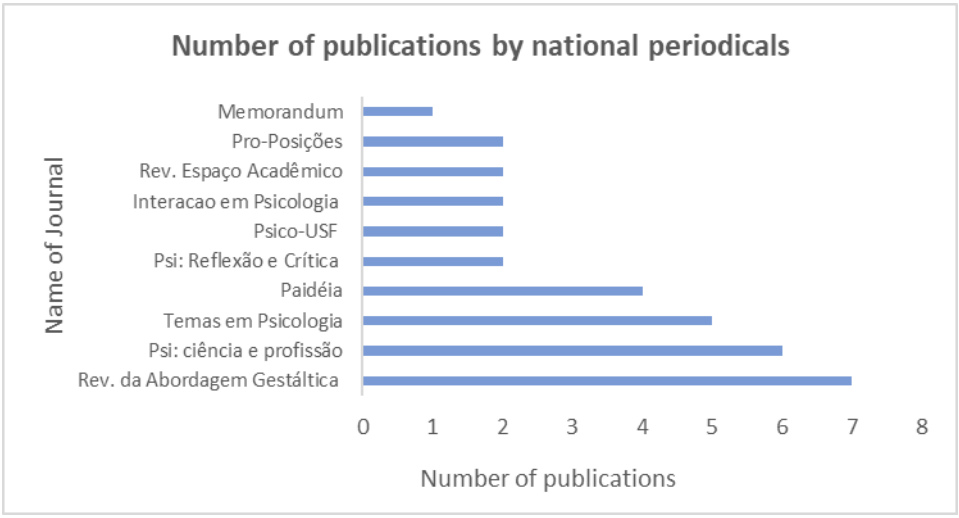



*Fig. 4c:* Distribution of Publications in National Periodicals over 20 years.




*Fig. 4d:* Comparison of Distribution of Publication of International and National Articles over 20 years.

*Qualis:* Of the 153 periodicals analyzed that contained in their publications studies on the theme in question, it was found that in reference to Qualis CAPES[6], the distribution occurred in the following manner: 30 publications in journals with level A1, 29 x A2, 16 x A3, 8 x A4, 12 x B1, 3 x B2, 5 x B3, 1x C, and 49 did not mention Qualis, being the highest index found in the study, predominantly relating to journals originating overseas (Figure 5). Specifically in terms of publications containing quantitative articles, the distribution was as follows: 26 publications at grade 'A1'; 16 grade 'A2'; 11 grade 'A3'; 3 grade 'A4'; 6 grade 'B1'; 2 grade 'B2'; 3 grade 'B3'; 1 grade 'C' and 40 which did not mention Qualis, as exhibited in Figure 5, in the columns with orange highlight. CAPES Qualis represents the classification of scientific production in respect of the quality of the articles published in periodicals, namely categories A, B and C, in which the first category is indicative of global excellence, the second of national excellence and average relevance, and the third category indicates low relevance.

[6] With CAPES Qualis, the publication outlets receive classifications in different strata, indicating the quality of the published material, which is structured in descending order as follows: A1, A2, A3, A4, B1, B2, B3, B4, and C; in which the first two classifications denote articles with the highest impact, encompassing international periodicals of excellence; A3 and A4 denote an intermediate impact and international excellence; B1 and B2 denote national excellence; B3 and B4, average relevance, and C, low relevance.



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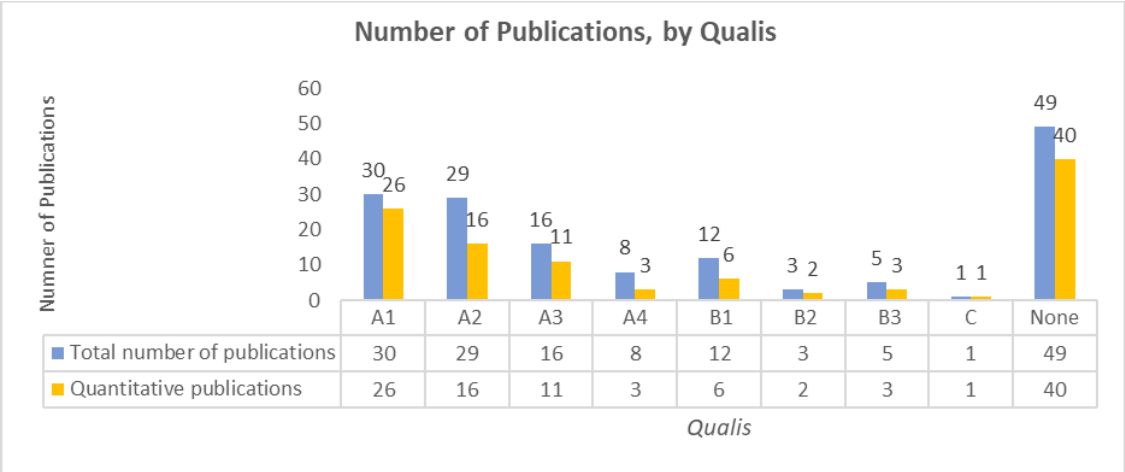



*Fig. 5:* Distribution of Publication of Journals by Qualis classification

*Thematic Area of Journals:* Concerning the areas of the journals in which the articles were published, 11 distinct types of thematic areas were found: Psychology (187), Medicine (23), Sciences of Religion (22), Social Sciences (11), Nursing (9), Education (4), Multi-disciplinary (3), Philosophy (2), History (1), Criminology (1) and Physical Education (1) (Figure 6a), indicating that there is a strong tendency for these publications to be included in psychology periodicals. Subsequently, there was almost parity in terms of publication between journals in Medicine (23) and Religion (22). The areas of health and social sciences, such as nursing (10) and social sciences (12), also possessed a similar weighting. One thing needs to be clarified here. Although the article may be classified in psychology, it may be published in journals in related areas, insofar as there are multi- and inter-disciplinary repercussions.

As far as quantitative publications are concerned, it can be seen that there is a predominance in the area of Psychology (121), followed by Medicine and the Sciences of Religion, each with 16, and Social Sciences with seven publications. The other areas, including nursing, education, multidisciplinary studies, philosophy, history, criminology and physical education, produced negligible results.

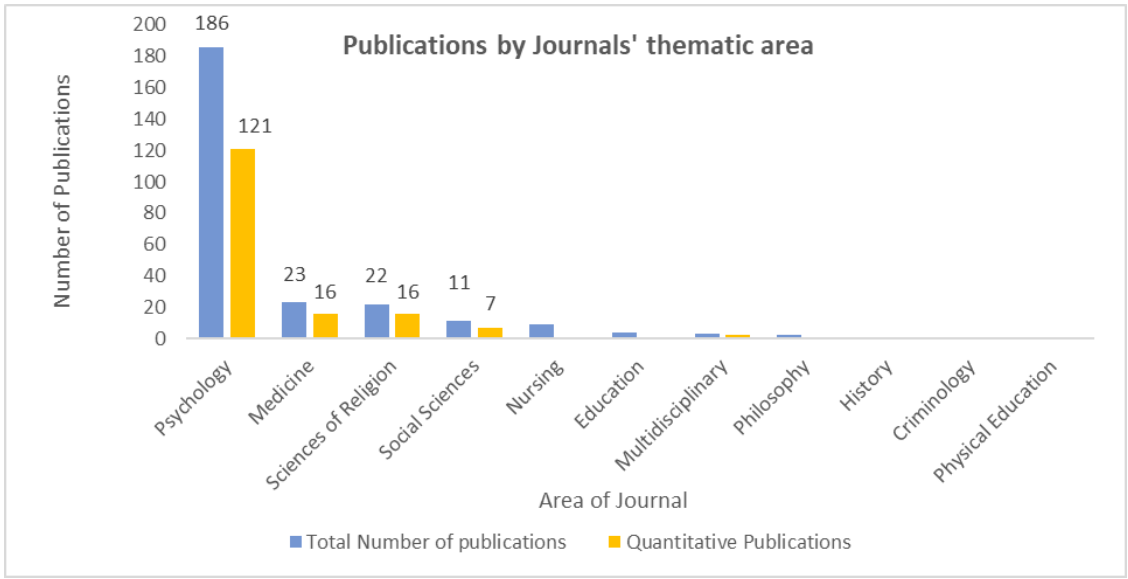


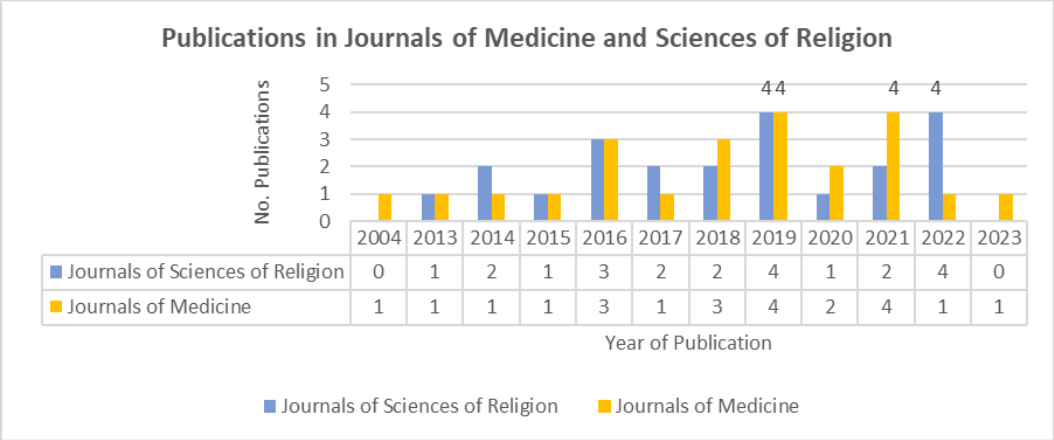

*Fig. 6a:* Graph of the Distribution of Publications by Journals' Thematic Areas.

The data relating to publications in journals of medicine (23) and sciences of religion (22) regarding the theme of existential vacuum and meaning of life are particularly conspicuous, as they show how much medicine has drawn closer to the topic of spirituality, demonstrating that this theme has gained prominence in publications during the period. Note that the journals of sciences of religion published 11 articles prior to the pandemic (2013 to 2018) and 11 in the pandemic and post-pandemic period (2019 to 2023), highlighting a subtle emphasis on the pandemic period. Meanwhile, in the journals of medicine, there is a patent increase in the



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number of publications about the topic of meaning of life, linked to the period of the Covid-19 pandemic, with eight articles in the pre-pandemic period (2004 to 2018) and 14 articles between 2019 and 2023. In both cases, there was an emphasis on publications in 2019 and 2021 (Medicine) and 2019 and 2022 (Sciences of religion) (See Figure 6b).




| | 2004 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Journals of Sciences of Religion | 0 | 1 | 2 | 1 | 3 | 2 | 2 | 4 | 1 | 2 | 4 | 0 |
| Journals of Medicine | 1 | 1 | 1 | 1 | 3 | 1 | 3 | 4 | 2 | 4 | 1 | 1 |

*Fig. 6b:* Distribution of Publications by the Areas of Medicine and Sciences of Religion.

*Journal Region:* In terms of the mapping of production by continent (Figure 7a), the European (36%) and North American (35%) centers recorded the highest number of publications. In comparison, South America demonstrated a significant level of production (26%) (Figure 7b). In the category "others" are included Oceania, Asia, Africa and Central America. About to the home country of the journal (Figure 7b), it can be seen that the USA is responsible for the highest number of periodicals, totaling 92 publications (38%). Brazil is in second place with 49 publications (21%), followed by the UK with 40 results (16%), Switzerland with 22 publications (9%), Holland with eight results (3%), and the remaining countries such as Spain, Colombia, New Zealand, with a relative frequency of less than 3%.

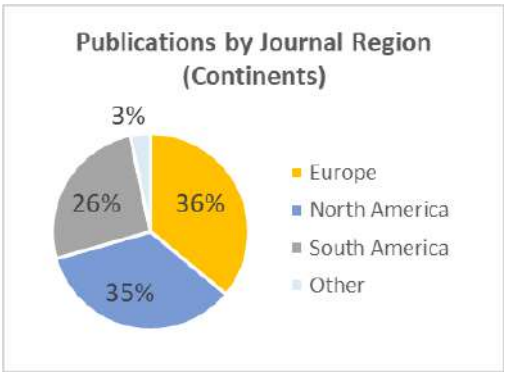



*Fig. 7a:* Distribution of Publications by Continent

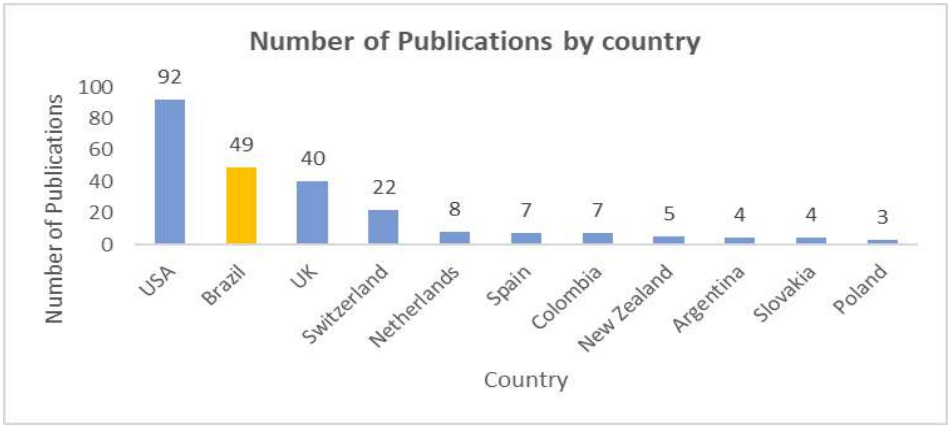



*Figure 7b*: Distribution of Publications by Journal Region (Countries).



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Regarding the number of quantitative publications by region, as shown in Figure 7c, the USA is seen to be the most productive, with 71 results, followed by the UK with 20, Brazil with 17, Switzerland with 16. The remaining regions being significantly less productive: Colombia with five results, Argentina and Slovakia, each with four, and lastly Poland, Spain and New Zealand, each with three publications.

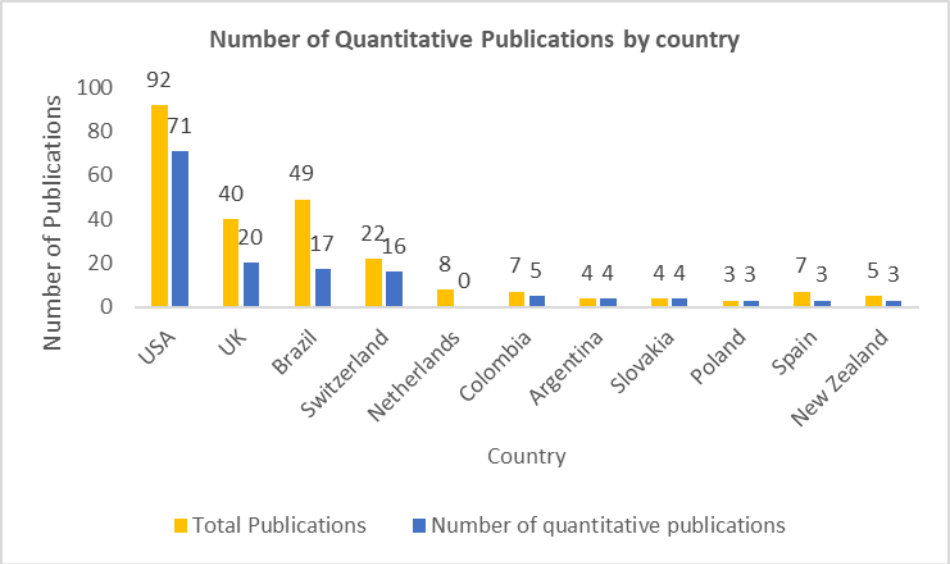



*Fig. 7c:* Distribution of quantitative publications by region (Countries).

As for the distribution of publications in Brazil (Figure 7d), the Southeast region is the most prominent, particularly the state of São Paulo, with 15 results (30%). The region with the second largest number of publications is the Central-West (30%), with similar percentages for the cities of Goiânia (8) and Brasília (7), the capital cities of Goiás and the Federal District, respectively. The Southern region comes in third place (20%), with nine publications, of which five were from Paraná and four from Rio Grande do Sul. The Northern region has a modest representation with just one publication in the state of Pará (2%) and no publications were here recorded in the Northeastern region.

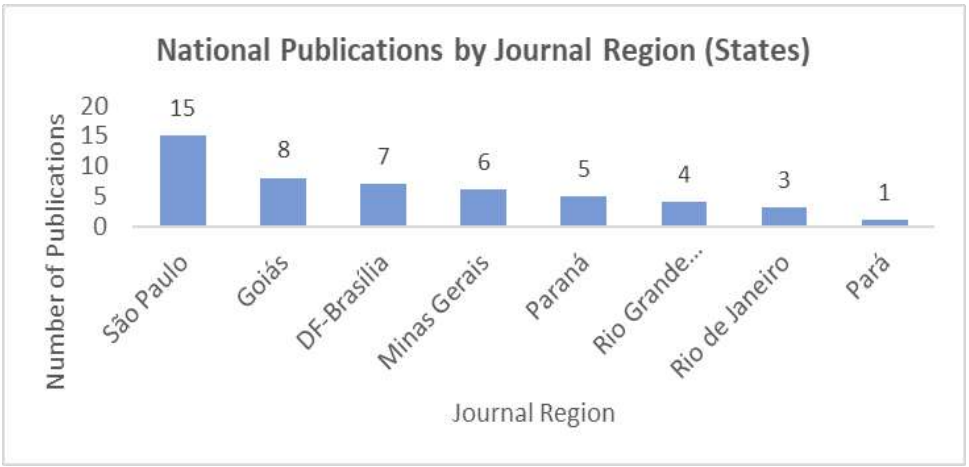



*Fig. 7d:* Distribution of Publication of Periodicals by Brazilian State.

In respect of the distribution of publications in Brazil, with quantitative and qualitative approaches, as exhibited in Figure 7e, there is a clear predominance of qualitative publications, distributed across the federal states, pride of place going to the state of Goiás, with eight studies, followed by Minas Gerais with six, Paraná with five, the federal district of Brasília with four, Rio de Janeiro with three, and Pará with just one result. As for the publication of articles that are quantitative in nature, production is less significant, the state of São Paulo leading the way with 10 articles, followed by Rio Grande do Sul and Brasília, each with three results.



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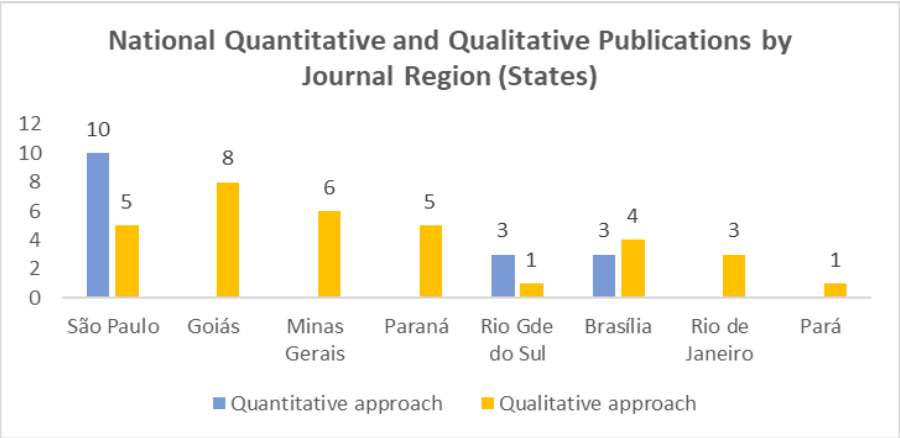



*Fig. 7e:* Distribution of Quantitative and Qualitative Publication of Periodicals per Brazilian State.

*c) Authors and Country of Origin*

With regard to the authors with the highest number of publications in national territory (Figure 8a), the following researchers were found, in descending order: Aquino et al., Federal University of Paraíba, located in João Pessoa, Paraíba, with ten articles. Aquino is a Doctor of Social Psychology and produces studies on the themes of logotherapy and existential analysis of Viktor Frankl (Aquino, 2023). In second place, with 5 articles, comes Damásio et al. from the Federal University of Rio Grande do Sul (UFRGS), situated in Porto Alegre, Rio Grande do Sul. Damásio is a Doctor in Psychology from UFRGS, focusing on Psychometry and Positive Psychology covering the topics of meaning of life, wellness and mental health (Damásio, 2023). Third place goes to De Melo, Rômulo Lustosa Pimenteira, from the Federal University of Paraíba (UFPB), with three articles. De Melo is a Doctor in Social Psychology from UFPB, specializing in psychology of human development (Melo, 2023).

Concerning foreign authors (Figure 8a), the researchers with the most significant number of publications were Rämgård, Margareta et al., researchers in the areas of Nursing, Health Promotion and Health Sciences from the University of Malmö, Sweden, with six articles (Rämgård, 2023). In second place, Michael F. Steger et al., with five articles. Steger, from Colorado State University, USA, is founder and director of the Center for Meaning and Purpose at this university and creator of the psychological measurement instrument called the Meaning in Life Questionnaire (MLQ). His studies center on the Positive Psychology approach (Steger, 2019). Next comes Larsson, Helena et al. Larsson is a researcher in nursing and health sciences at the University of Malmö and the University of Kristianstad, Sweden, with four articles. Her research focuses on existential aspects and existential health, particularly relating to the concept of existential loneliness, with studies based on the person-centered approach (Larsson, 2023). Equally prominent are the Americans Abeyta, Andrew, and Routledge, Clay, from New Jersey State University (Rutgers) and Archbridge Institute in Washington, respectively, each with four published articles. The study by Andrew Abyeta focuses on how people satisfy the need for meaning in life through religion, supernatural beliefs, culture and achievements, based on classic existential perspectives and the theory of motivation (Abeyta, 2022). Clay Routledge, meanwhile, is a specialist in existential psychology, and his research focuses on analyzing the need for meaning and its influence on lived experience (Routledge, 2023). (Figure 8a).

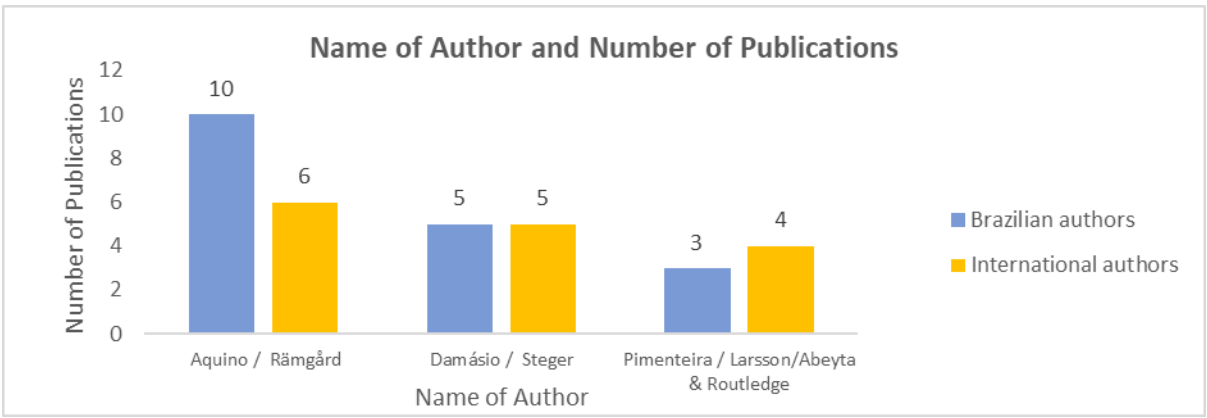



*Fig. 8a:* Distribution of Publication of Articles by Author and Region.



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About the countries of the authors of the publications, it is observed that Brazil is the country with the highest index, with 51 publications. The USA comes next with 50 publications, and in third place appears China, with 24. A subtle trend can be noted in the six results at the foot of the graph for publications with authors from different countries (3 or more) (Figure 8b). Additionally, it was observed that Brazilian authors also published articles in both English (*e.g.*, Cunha et al., 2022), and Spanish (*e.g.,* Medeiros et al., 2020).

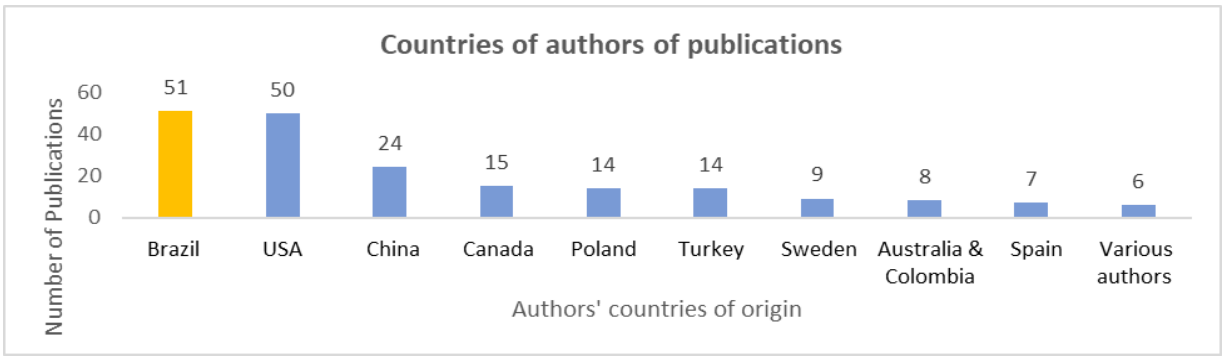



*Fig. 8b:* Distribution of Countries of Origin of Authors of the Articles.

*d) Languages of Publication of Articles*

In respect of the language in which the articles are published (Figure 9), it was noted that the majority were published in English, with 77% of the results (201 articles), followed by publications in Portuguese, with 18% (49 articles) and Spanish, with 5% (14 articles).

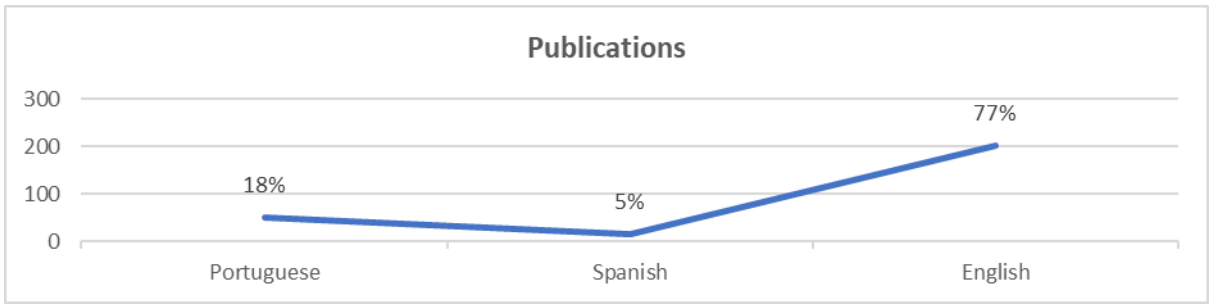



*Fig. 9:* Distribution of Language of Publication of Articles.

*e) Approach and nature of articles*

Considering the approach employed in the works located, there was a predominance of articles whose approach is quantitative, accounting for 72% of the total number of articles included. The studies with a qualitative approach, which are theoretical, account for 17% of the results, qualitative empirical studies 7%, mixed empirical 3%, and, with the smallest percentage, interventions, with 1% of the total (Figure 10).

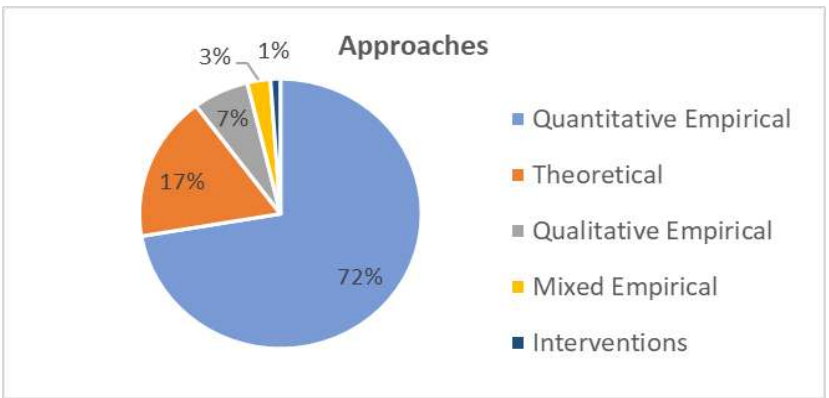



*Fig. 10:* Percentages of Methodological Approaches.

*f) Population Studied*

Considering the populations studied, in the applicable articles, it is observed that the prime target of studies was adults, in general, from diverse nationalities (Brazilian, Chinese, Polish, Australian, African, etc.), representing 36% of the total. In second place, the target audience was university students, with 26%, followed by the elderly (18%), adolescents (15%), and cancer patients (8%) (Figure 11).



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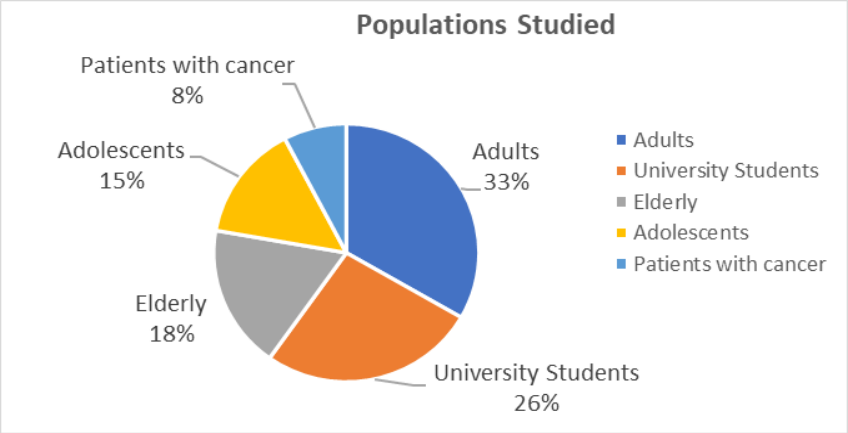



*Fig. 11:* Percentages of Populations Studied.

*g) Instruments Employed*

As can be seen in Figure 12a, in the studies that used a quantitative approach, it was noted that the instrument most used for the data collection was the MLQ (Meaning of Life Questionnaire), of Steger et al. (2006), with 46% of results. In second place was the PIL (Purpose in Life test), of Crumbaugh & Maholick (1969), with 23% of the total. In third place came the SWLS (Satisfaction With Life Scale), of Diener et al. (1985), with 13%. The remaining instruments, with lower impact on the results, were, in decreasing order: PWB (Psychological Wellbeing Scale) of Ryff & Keyes (1995), with 5% of the total; PSS (Perceived Stress Scale) of Cohen et al. (1983), with 4%; PANAS (Positive and Negative Affects Scale), of Giacomoni & Hutz (1997) and the EDSV (dimensional meaning in life scale), of Martínez et al., (2011), both at 3%.

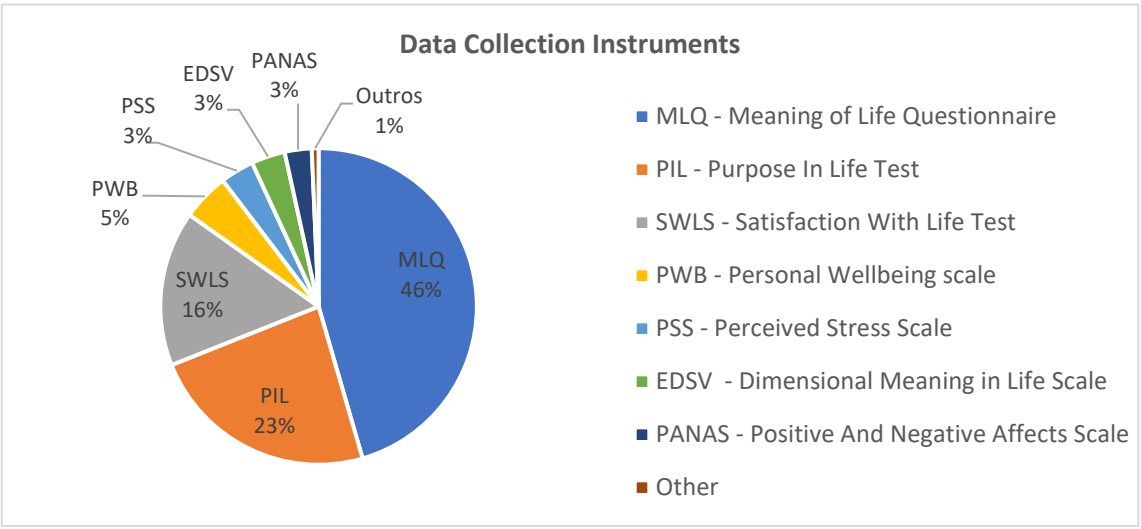



*Fig. 12a:* Data Collection Instruments in Quantitative Studies.

As far as theoretical studies are concerned (Figure 12b), more than half are literature reviews (57%), followed by systematic reviews and meta-analysis (22%) and integrative reviews (13%).



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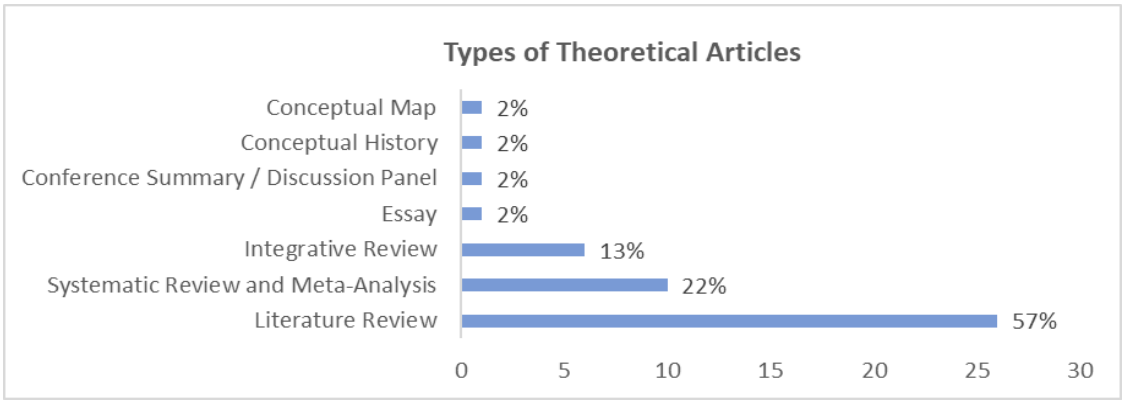



*Fig 12b:* Percentages of Methodology used in Theoretical Articles.

As for the articles resulting from qualitative studies, the method most employed for data collection was the semi-structured interview, as noted in Figure 12c. For the analysis of the data (Figure 12d), content analysis was the method most commonly employed, representing 64% of all articles included. Next comes interpretative phenomenological analysis (IPA) and discourse analysis, each representing 8% of the total.

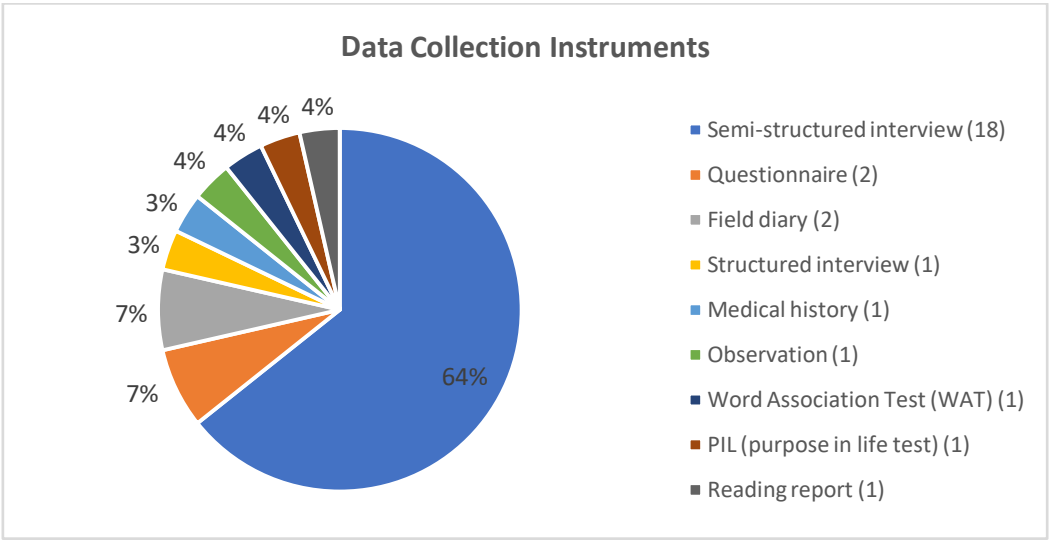



*Fig. 12c:* Percentages of Data Collection Instruments in Qualitative Studies.

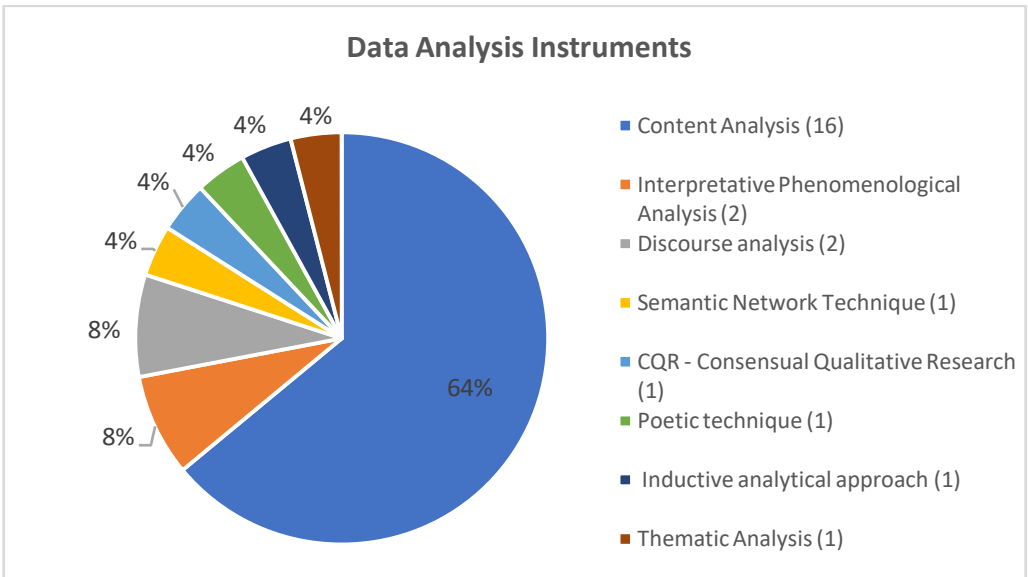



*Fig. 12d:* Percentages of Data Analysis Instruments in Qualitative Studies



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## IV. Discussion

The present review aimed to map the literature published within the last 23 years in the area of Psychology, regarding the topics of existential vacuum and meaning of life. In this phase, the focus was on the meta-analysis of articles with quantitative and qualitative approaches. Based on an analysis of 264 articles selected in the first phase, the current nature of the topic of existential vacuum and meaning of life was identified, primarily down to a more significant number of articles published in the second decade, between 2013 and 2023 (87%), when compared to the first (13%). This reinforces the relevance of conducting this systematic review to understand how the theme has been approached in Psychology. In addition, maximum production on the theme was recorded in 2021, at the peak of the global pandemic, with six articles published at the national level and 24 internationally, totaling 30 publications. This goes to show how much interest the topic roused during the period of the Covid-19 pandemic, when a series of restrictions were imposed on the way of life, such as social isolation and the use of masks, as well as the high mortality rates, adding up to a search for an explanation and meaning for the emergence of such a deadly and destructive virus.

Given this period in history, characterized by a health crisis that has assumed humanitarian dimensions, a change was noted in the pattern in the *modus vivendi.* In this new life style, looking to protect themselves from the virus and to stay safe, people locked themselves away inside their homes, barely venturing out, with a drastic reduction in interpersonal contact, in addition to being obliged to incorporate in their daily routines artifacts such as masks and alcohol gel. Accordingly, as a result of this *démarche,* immutably instigated by the pandemic, new strategies for living together were adopted. Rather than extinguishing the habitual contact in working environments, places of congregation, social gatherings, among others, these strategies permitted them to continue to take place, albeit through the medium of technology. This situation, allied with confinement and associated with a large number of deaths, resulted in a significant increase in psychic suffering at the global level. Thus, faced with isolation, home office, mass human losses, what used to be familiar ceased to be so. There was a rupture in what was known and experienced as normality, evoking profound existential questions surrounding contemporary man. Ultimately, man lost control over what was predictable, the certainty of continuity, the rupture in the expected flow, and man found himself at the brink of the abyss. Not only did the *project-of-being*[7] cease to be viable but there was also a disruption to the continuity of a future in common, initiating a form of existing very anomalous to that which would be expected, of a life going on as normal. Consequently, man found himself prostrate before his very existence, in the face of his hypostatized existential suffering, which sparked a race in scientific circles, not only to seek biochemical solutions to the virus, but also to explore the dimension of existence, which was so lackluster. In view of this, existential questions gained prominence and relevance. In fact, at times of crisis, when man sees himself faced with the imponderable, existential issues tend to override technical, pragmatic issues, and topics like existential vacuum and meaning of life take on new dimensions, revealing the humanity which had apparently been in hiding in times of dataism, liquidity, consumerism and pragmatism.

The mapping above also showed that Brazil has gained prominence in developing studies on the topic since the works published in national journals account for 24% of all those found. This item of information demonstrates that there are factors that are not just geographical but also cultural, that contribute to Brazil becoming a focal point. With its vast expanse of territory, and being such a populous country, particularly when compared to countries on the continent of Europe, its expanse and its populousness have contributed to the existence of a larger number of researchers, which could promote a significant quantity of scientific output. Moreover, the large number of universities and psychology courses in the country should be mentioned which, just a few years ago, already numbered seven hundred (Oliveira et al, 2017; Piasson & Freitas, 2020). In addition, and mainly in cultural terms, Brazil is a country of great religious diversity in which religiosity and spirituality are marked characteristics of Brazilian culture (Brasil, 2012; WIN / Gallup International, 2015), considered variables associated with existential questions. These factors may be driving the keenness of researchers with regard to this theme.

On the other hand, the standout journals in the publication of articles into the topic are North American, particularly the "Journal of Religion and Health", or European, notably "Frontiers in Psychology", from Switzerland. While these journals have a more generic focus, in terms of theoretical and thematic approaches, in Brazil, one of the most prominent journals takes a humanistic, phenomenological approach as in the case of the *Revista da Abordagem Gestáltica* (Journal of the Gestalt Approach). However, another with a more generic approach should be mentioned, namely *Psychology: Ciência e Profissão* (Psychology: Science

[7] *Project-of-being* is the core concept presented in the works of philosopher Jean-Paul Sartre and in existentialist psychology. The word 'project' refers to something unfinished, which finds itself in a continuous 'becoming' (Schneider et al., 2021).



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and Profession) from the city of Brasília. Curiously, however, neither of these are located in the Brazilian state of São Paulo, which produced most articles on the topic. In truth, the higher number of publications in this region may be down to the fact that it is the most populous state in Brazil, boasting a large number of well-respected universities such as the University of São Paulo (USP), University of Campinas (UNICAMP), São Paulo State University (UNESP), among others. Moreover, four of the journals with the largest volume of production (*Paideia, Temas em Psychology, Psico-USF, Pró-posições*) come from the state of São Paulo. On the other hand, the fact that none of these journals from São Paulo figured in the production of articles in this study, is due to the occurrence of a more diluted publication among journals in the state, while the journal in Goiânia, which is phenomenological in nature, may include more intensive production on the topic.

The mapping also showed that the index of publication on the topic is quite close to that of the continents of Europe, with 36% of publications and North America, with 35%. The primacy of publications on the American and European continents is a reflection of what is known as "universal concrete", that is to say, a concept that expresses referential and normative values. In the Western world, in particular, the USA has become a global reference, recognized as a country that invests in scientific research, and Europe is also a continent of reference by dint of its colonization of large areas of the world, and represents the cradle of custom and tradition. Thus, these regions, being paradigmatical and referential, were seen to dominate in terms of publication, possibly influencing different types of approach, whether analytical or continental and phenomenological in nature. Moreover, South America was also responsible for a large number of publications, at 26%. Note also the high index of publication in journals from the USA (92 articles) and Brazil (49), demonstrating the extent to which these countries have embraced the theme.

By comparing publications between countries like the USA and Brazil, a difference can be observed in the type of approach most employed in each region: on the American continent, there is a predominance of publications of a quantitative nature, significantly greater than publications of a qualitative nature, in a proportion of 71:21. In Brazil, meanwhile, this ratio is inverted, indicating the greater emphasis placed on qualitative studies, in a proportion of 17:32. Note that, in terms of content, in the USA, there is significant investment in studies that focus on the measurement of existential states, correlating the *meaning of life* variable with others such as ethnic identity (*e.g.*, Kiang & Fuligni, 2010), positive and negative emotions (*e.g.*, Abeyta et al., 2015), personality and temperament (*e.g.*, Conner et al., 2022), posttraumatic stress (*e.g.*, Aiena et al., 2016), among others. There is also an emphasis on studies using psychometric instruments (*e.g.*, Abeyta & Routledge, 2018; Sørensen at al., 2019), with a good many references to the MLQ (Meaning in life questionnaire) devised by Michael Stager, an authority in positive psychology (*e.g.*, Blackburn & Owens, 2015; Li & Wong, 2020). In Brazil, on the other hand, there is a distribution between qualitative empirical studies about meaning of life experiences in diverse populations (*e.g.*, Molina, 2003; Silva, 2021), and theoretical studies of the literature review type (*e.g.*, Carneiro & Abritta, 2008; Mendes, 2018), with a particular interest in the logotherapy approach of Viktor Frankl (*e.g.*, Silveira et al., 2015). Cultural differences may explain these differences insofar as North American society has always been regarded as more pragmatic than Latin cultures, which has a significant influence on the history of research methodology in the USA, traditionally more focused on nomothetic studies.

Another aspect to be discussed concerns the interdisciplinary nature of the topic which, although touching more specifically on the sphere of Psychology, has attracted the attention of various other disciplines, for example the science of religion and medicine, whose journals have been prominent in terms of publication, closely approximating each other in terms of output throughout the period under review. The topic has also sparked interest in a several different areas, such as the social sciences, education, philosophy, history, physical education, and even criminology. This demonstrates the connection between meaning of life and existential vacuum with other thematic areas, especially the topic of health in general, as well as religion and spirituality and its interaction with Psychology and associated areas. The latter has been achieving increasingly greater importance as it is directly related to the purpose and meaning of life.

On the other hand, determining a similarity of results between publications of journals of medicine and social sciences on the topic of existential vacuum and meaning of life, it is noticeable how Medicine has taken this theme on board and, consequently, questions of spirituality and religiosity, the drivers of meaning. In addition, the peak of publication during the period of the pandemic reveals how this period established the need to search for meaning, faced with the unknown, the uncertainties of the period and the so critical and threatening scenario that was found in the field of health in Brazil and the world.

There has been a predominance of Brazilian authors publishing articles on the topic (51), followed by the Americans (50). This underlines the extent of national production on this theme. However, by employing descriptors in the Portuguese language in the search process, in addition to descriptors in the English language, this created a bias in the result since, of the 264 articles selected, 49 were published in Portuguese. Moreover, although the number of articles

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published in English is more significant, with 201 results, it should be noted that many authors of diverse nationalities, for example, Turks, Polish, Chinese, Israeli, African and Iranian, to name but a few. Still, an ended up mainly publishing in American journals, thus helping to make this result so significant, in addition to publications by authors of American origin (92 articles) and other authors who use the English language (UK and Australia).

Of the more prolific authors on the topic, at the national level, it was observed that the predominant reference for the theoretical approach was Viktor Frankl's logotherapy and existential analysis, from Aquino et al., followed by Positive Psychology and Psychometry, from Damásio et al. At the international level, the emphasis was on existentialist approaches, as indicated by the study by Rämgård**,** Larsson, Abeyta & Routledge. Positive Psychology also posted significant results, as was noted in the study conducted by Steger et al. (2006), responsible for the creation of the MLQ (Meaning of Life Questionnaire), as well as being heavily cited in various selected articles.

Significant data emerged from the analysis of the methodological approach as articles that were quantitative empirical in nature dominated (72%) compared to other approaches (qualitative empirical, mixed method, theoretical, and interventions). The Journal of Religion and Health, a Qualis A3 American journal, which published the most articles, exhibited an absolute frequency of 15 articles with a quantitative approach and one with a qualitative/quantitative approach. Similarly, the Swiss Journal Frontiers in Psychology, Qualis A1, presented an absolute frequency of eight articles that were quantitative, three theoretical, and one mixed method. These data demonstrate that journals in the area of Psychology are more highly qualified (Qualis) and more prominent in the publication of quantitative articles on the topic, the highlight being the periodical related to religion and health, the Journal of Religion and Health. This is most likely a reflection of the effort made by the researchers in this area to afford greater visibility and credibility to the topic, since the scientific tendency in the area of health has been to prize and qualify studies that are more quantitative. These data also reflect the effort of psychology researchers who are focusing on this topic to achieve greater acceptability in scientific journals which have given preference to the quantitative criterion, taken as evidence of greater rigor and the potential for the generalization of the results obtained.

Another tendency demonstrated in the study above is the predominance of empirical articles on this theme within psychology, equating to 83% of the results, in contrast with theoretical articles, at 17%. While this indicates how much the topic is linked to concrete questions about the lifeworld, in contemporary reality all over the world, a certain lack of a robust academic appeal is evident, in terms of theoretical and epistemological constructions in the field of psychology, which may also be a result of the heavy emphasis on the production of studies that are quantitative empirical.

About the quality of the published articles evaluated here, based on the Qualis classification of journals, the mapping reveals a significant percentage of publications in journals that have not yet been catalogued, on this Brazilian system, at 29% of the total. On the one hand, this may be a reflection of the bias in the appreciation of more quantitative studies, as commented upon in the preceding paragraph, but also, on the other hand, the broad scope of the topic such that many journals that accept it are not yet included in the abovementioned system of evaluation. Moreover, there is a significant number of high-level journals publishing articles on the topic that carry a Qualis A1 (28 articles) or A2 (29 articles) rating, demonstrating the high quality of scientific studies and articles on the topic. However, this piece of data concerning the predominance of publications in Qualis A1 and A2 periodicals, in dialogue with the category of the approach, and predominantly quantitative, as was evidenced in the results of the quantitative publications through *Qualis*, also raises the following question: what are the indexing criteria for these journals which are reflected in the Qualis system for rating the articles? To what extent have these periodicals invested predominantly in works of a quantitative nature, to receive qualification? In other words, one has to take into consideration the bias that favors articles with quantitative approaches to be scientifically qualified within Psychology and associated areas.

It was also noted that, in terms of the target audience for the studies conducted, the majority of studies generally focus on adults, and young university students in particular, and this is reflected in the publication of both quantitative and qualitative articles. Moreover, a heightened concern with contemporary man's mental health can be observed, frequently mentioned in articles as being conditional upon an age in which there is a predominance of technique, fragility of relationships, technology, virtuality and crisis of values.

Regarding the data collection instruments employed in the articles with the quantitative approach, the mapping permits an identification, albeit indirectly, of the theoretical approaches that predominate in the constructs used in these studies. There was a vast predominance of the MLQ (Meaning of Life Questionnaire), responsible for almost half of all results. This measurement instrument evaluates the meaning of life and includes two subscales: one which assesses the presence and existence of meaning in life, and the other the process of the search for meaning. As previously mentioned, this instrument was devised by Steger et al. (2006), a team of researchers, including Michael Steger,



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recognized as an authority in the area of Positive Psychology, an area which has been gaining increasing prominence in the field of psychology, and scientific production on the topic is also very significant. In second place the PIL (Purpose in Life test), which aims to measure the level of meaning of life acquired by the individual, having been developed by Crumbaugh and Maholick (1969), both of whom are very influential in the promotion of logotherapy. Indeed Maholick, a psychiatrist, studied under the direction of Viktor Frankl, at the University of Vienna. The third instrument indicated in the results was the Satisfaction with Life Scale (SWLS) devised by Diener et al. (1985), to evaluate individuals' satisfaction levels with their lives. One of its architects, Ed Diener, is a professor at the University of Illinois, USA, and is known as "Dr. Happiness", with references in Positive Psychology. The fourth instrument identified, with the same theoretical reference, the Psychological Wellbeing Scale (PWB) was developed by the psychologists Ryff & Keyes (1995) and measures aspects of wellbeing and happiness. The other instruments which appeared less frequently embody a theoretical approach based on behavioral and physiological theory (PSS – Perceived Stress Scale developed by Cohen, 1983), positive psychology (PANAS – Positive and negative Affects Scale developed by Giacomoni & Hutz, 1997), and logotherapy (EDSV - Dimensional meaning of life scale, Martínez, 2011).

Meanwhile the analysis of theoretical articles shows the predominance of literature surveys, once again reinforcing the more empirical nature of contemporary studies concerning the themes of existential vacuum and meaning of life. The fact that only 2% of articles found were indeed conceptually theoretical is a reflection of the large gap, to be filled in future studies. On the other hand, in studies that are qualitative, the predominance of semi-structured interviews to collect the data (64%), and the analysis of content, as the procedures employed for analysis (64%), seems to indicate there is unlimited potential for achieving a possible theoretical maturation involving the themes in question.

In the present review, studies emerged that offered notable contributions for a better understanding of the complex nature of the theme of existential vacuum and meaning of life. Of these, the contributions of Vieira & Dias (2021) stand out, with their article entitled "Meaning of life: understanding this challenging field of study", which was theoretical and conceptual in nature. The study explored the evolution of the concept over time, highlighting its inter-disciplinary aspects and, at the same time, its philosophical base, and its subsequent appropriation by psychology. Thus, it demonstrated its complexity, its character which goes from one-dimensional to multidimensional and, in particular, emphasizing its importance and the challenges for studies in the field of Psychology, as well as for clinical practice. This article exposes the need for a better understanding of the phenomenon, given its complex, multiple nature, reinforcing the relevance of the present review and underlining the importance of naturistic studies in the field of Psychology.

Similarly, the article published by Aquino (2021), entitled "Religion, spirituality and health: from a perspective of logotherapy", a literature review, also offered contributions to the study, bringing with it, in addition to conceptual clarification concerning the meaning of life, from the perspective of the logotherapy approach, the relationship between this and the topics of mental health, falling sick and salvation, with a complete, anthropological vision of the human being. This article brought to the debate the variables of religiosity and spirituality as concepts associated with the meaning of life and existential vacuum and also discussed the emergence of the theme in the area of therapy. This topic, introduced in the study of Aquino, was evident in the present study, which confirmed the rise of such concepts in the scientific context, particularly accentuated by the cultural determinants, as is the case in Brazil, of the tradition of religious syncretism. Moreover, the study by Wong (2017), entitled "Meaning-centered approach to research and therapy, second wave positive psychology, and the future of humanistic psychology", also had an impact on the present study. By addressing the topic of the paradigm of traditional psychology, harking back to the bases of humanistic psychology and the importance thereof, it reveals its impact on the treatment of existential and humanistic questions that pervade psychology, incentivizing and shaping future research. To this end, it overwhelmingly inspired the style of the present systematic review.

These discoveries have important implications for the field of psychology, offering a kind of diagnosis of the global scenario regarding existential issues and scientific studies. The underlying paradigm of contemporary Psychology as heir to the positivist tradition is striking, and is still rooted in the way to make Psychology a science, which also values, qualifies and is inspired by the criteria used in the exact sciences, in order to acquire the status of scientific rigor. This goes back to the birth of Psychology as a science, when Wilhelm Wundt (1916/2013), known as the founding father of psychology, inaugurated his experimental psychology laboratory, importing the methodology from the natural sciences. This tradition still reverberates in Psychology, even if it has been betraying a tenuous movement towards a reformulation of its epistemological bases, also focusing on the psychological dimension of meaning and the existential signification of man in the world.

The present scenario may incentivize and inspire fresh studies in psychology that focus on the

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study of the nature of the phenomenon as experienced and expressed in the concrete lifeworld. This approach provides a better understanding and appreciation of mental health and existential wellbeing such as, for example, by asking the question what is "suffering from remoteness[8]" or even seeking to understand what a "hysterical attack" is. How should "suffering from remoteness" be interpreted, embraced and treated using strictly psychometric methods? Existential state can be measured with some suitable instrument but, before applying said measure, it is of paramount importance to have an understanding not only of the metaphorical nomenclature but also to discover what it reveals as a symptom of psychic suffering. Therefore, it may be concluded that the adoption of quantitative criteria as a hypostatized way to treat psychic suffering, finds its limits of application, signaling that it is necessary to look for a method that complements psychometry to treat the problem in all its complexity, profundity and fullness. In addition, in the area of clinical psychology, a qualitative approach values the peculiarities of each individual, as every human being, even though he may possess universal characteristics, also has his own peculiarities, culturalism and regionality. A scientific method that focuses on the peculiarities of the lifeworld could be extremely rewarding to psychotherapeutic relations, expanding the possibility of making science that focuses on the peculiarities of human existence and which may result not only in the accommodation of its respective frailties but also in the development of its capabilities.

## V. Final Considerations

The panorama presented by the mapping of studies involving the constructs of the meaning of life and existential vacuum provided important information, including: the pandemic scenario was a landmark moment that prompted the growing number of publications on the theme; the studies with quantitative approaches have increasingly been gaining force in the study of these constructs; the emergence of the topic of religiosity and spirituality has been presented as a variable associated with the construct of the meaning of life; the theoretical benchmarks of logotherapy, existentialism, and positive psychology have stood out as approaches employed by authors investigating both topics, as well as the most frequently used data collection instruments.

In order to corroborate the statements made above, some of the data identified in the results section are reprised here, for instance: in the analysis of the distribution of publications between 2000 and 2023, it was found that the peak of production occurred in 2021, precisely during the pandemic, with 10 publications that were qualitative and 20 quantitative in nature, making a total of 30 publications, followed by 2020 with a total of 25 and 2022 with 24. In the thematic area of psychology, 121 quantitative articles were registered out of a total of 186 publications, underlining the emphasis placed on this approach. In addition, in the pizza graph representing the proportions of the approaches, it was observed that, at the global level, 72% of publications comprised articles of a quantitative empirical nature, indicating the dominance of this approach. Moreover, it was also observed that the production of journals of the sciences of religion embracing this topic grew, with 22 publications throughout the period, matching the journals of Medicine, with peak production of four articles in 2019 and 2022, also encompassing the pandemic period. It is also shown that these journals were predominantly quantitative, with 16 results out of a total of 22. Moreover, in terms of the most frequently published authors, the data indicated that Thiago Aquino, Doctor in Social Psychology, employing a logotherapy-based approach, came top with 10 publications while Michael Steger, a psychologist who espouses the positive psychology approach, had six articles published.

The recent Covid-19 pandemic evidenced the importance of existential questions, amplifying the degree of concern in the scientific world over the question of the meaning of life, since the adversities suffered in this period left deep scars on contemporary man's mental health, with records of diverse symptoms such as consumerism, depression, suicide, borderline personality disorders, among others. Accordingly, a significant effort was observed with articles on the theme of a quantitative nature, seeking to measure the extent to which the existential vacuum, the search for and presence of meaning were permeating contemporary society. This evidence unveils a certain ambiguity as it seems contradictory that a topic which hinges on subjectivity and intersubjectivity, with teleology and the production of meaning, arising from the existence of man on earth, should be emphatically more quantified than understood. This fact reveals a contemporary Psychology still primarily concerned with questions that are objective, explanatory, that have a causal relationship and the search for universal laws, wearing the "*hard sciences*" hat, and displaying the remnants of a grounding in positivist tradition and, consequently, emphatically valuing the dimension of *logos,* giving preference to the scientist model.

There is significant preoccupation with quantifying the meaning of life and existential vacuum which, on the one hand, has some relevance by introducing a concrete piece of data about the existential state and mental health of contemporary man. On the other hand, however, simply quantifying and measuring, mapping the extent of both phenomena,

[8] 'Suffering from remoteness' is an unusual, colloquial metaphor used to refer to the sensation of estrangement, distancing and separation from a place of welcome.



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are not strategies sufficiently capable of addressing mental health. After all, the present philosophy of dataism, as observed by Han (2018), does not fill vacuums. Thus, it is necessary to adopt a different course of action, one which describes intuitive pathways, which revolve around subjectivity, the intention being to understand the meaning of existence, and which do not simply involve objective aspects, with causal relationships and the discovery of laws.

The panorama evidenced in this systematic review signals a gap in Psychology which still needs to be filled, bringing to light epistemologies that also involve the lifeworld, replete with shades and possibilities, characterizing not only the *logos,* but also providing perspective on the *mythos,* in an attempt to value the expressiveness, narrative and intuitive pathways. Even though one may note an emphasis on approaches of an existentialist nature and positive psychology in the more prominent authors and the most commonly used data collection instruments, they are still serving as inspiration for psychometric data.

It should be noted that the current of existentialism was a philosophical movement that had profound implications for psychology, fundamentally in the post-war period when man turned his attention to existentialist issues. The philosophical movement explores the problem of existence, focusing on man's way of being in the world, the lived experience, the crisis of meaning, considering man as a being in search of the meaning of life through his freedom, responsibilities and independence to make his own choices. This movement reverberated in the field of psychology, for example the existential humanistic psychology of Rollo May (1953/1994), who criticized the scientistic, psychological approach of his era, with its positivist influences, using psycho-pathologization as a model, and he focused on a more profound understanding of the human being and his existential nuances. Thus, it involved a psychology preoccupied with the crisis of meaning, which was so representative of the prevailing malaise of the period: the existential vacuum. As can be seen, existentialism has an intimate relationship with the question of meaning of life and existential vacuum and is fertile ground for the foundation and development of epistemologies of psychology based on continental phenomenology, in other words, that focus on the signification of existence.

The Positive Psychology movement, on the other hand, is a type of perspective that is evident in the current post-pandemic context, bringing a more positive vision concerning human nature. The philosophical basis for this approach goes back to the humanism movement within 1970s psychology, seen as an uprising against the prevailing models of Behaviorism and Psychoanalysis (Ponte & Souza, 2011), considering them mechanistic and determinist, opposed to the human values of freedom and choice. Humanist ideas conceived man as a more complete figure, as a being capable of self-realization and, as a result, they began to move the focus towards how to achieve this state, to how and what might contribute to the attainment of a fuller, happier life, instead of dwelling on suffering and illness (Boehs & Silva, 2020).

In solidarity with these humanist ideas, Positive Psychology emerged on to the contemporary scene, signaling the hegemony in a way to do psychology modeled on pathologization. In this way, it contributed toward an expansion of psychology's field of vision, by contemplating human virtues. The aim of the approach is to reinforce the positive aspects of the human being, in order to secure wellbeing, a better quality of life and happiness, either at the individual, relational or institutional level. Accordingly, starting from the premise that human nature is essentially good (Boehs & Silva, 2020), and that human development and realization of potential is necessary for this nature to reveal itself, man is seen as a being in search of meaning. In this process, this approach has involved understanding the concepts of happiness and wellbeing, either from a hedonistic perspective, associated with pleasure, or a eudaimonistic perspective, associated with psychological wellbeing, strictly related to the dimension of the meaning and the realization of life's goals, showing it to be an approach that entails the existential question of the meaning of life.

There follows a list of the main conclusions to be drawn from this study: a) greater global interest in existential issues over the last 23 years, especially leveraged by contexts of global crisis, such as the Covid-19 pandemic, when the values of the era are thrown into question and undergo shifts, resulting in the primacy of existential issues over practical issues; b) predominance of publications at the international level on the USA – Europe axis, the former being more focused on quantitative and extension studies, with an emphasis on psychometrics; c) emergence of Latin America in the field of study of existential questions, with Brazilian authors being particularly to the fore in this area; d) level of the quality of scientific output - according to the official *Qualis* parameters, they appear to be associated more with quantitative criteria in their stratification and classification, given the predominance of quantitative articles published in 'A1' journals; e) the number of journals that have still not been catalogued by Qualis is also noteworthy, which is testament to the increased interest in publications on this theme; f) predominance of the thematic area of psychology as a unifier of the studied themes, with an emphasis on articles espousing the quantitative approach; f) emergence of the thematic areas of Medicine and Sciences of Religion, with greater interest in the subject, also with an emphasis on publications detailing quantitative approaches; g) at the regional level, the southeast region of Brazil stands out, the highlight being

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the scientific output of the state of São Paulo, with publications that are predominantly quantitative; h) at the global level, the standout authors are Thiago Aquino, Doctor in Social Psychology in the Brazilian state of Paraíba, followed by Michael Stager from the USA, an authority in Positive Psychology; h) Brazil and the USA are the countries of origin of the authors with the largest representation; i) adults are the main target audience in the studies; f) the MLQ (Meaning of Life Questionnaire) devised by Steger et al. (2006) is the principal data collection tool in quantitative studies; g) semi-structured interviews and content analysis are the principal data collection and data analysis instruments in qualitative studies, and h) literature reviews are the procedure most commonly used in theoretical studies.

In fact, the present systematic review reported on the scientific paradigm present in contemporary psychology, based on the *logos* dimension, in other words, centered on rationalist, objectivist criteria, with an interpretation of the lifeworld that is even mathematizable. This scenario had already been described as *démarche* by Edmund Husserl (1936/ 2002) when criticizing the course modern science was taking, with absolutization of the scientific paradigm, disqualification of human values and the impoverishment in the understanding of the human being. The recent pandemic crisis echoed Husserl's declarations by promoting a scientific race to address existential issues, though also with logical, instrumentalist trappings. This leaves a gap which draws attention to the need for a more compatible, scientific discourse centered on the pre-scientific world, valuing the pre-reflective stage of consciousness and, principally, its axiological foundations, or *lebenswelt*, the bedrock on which the scientific world is built.

Accordingly, this contemporary scenario points to the need for a scientific discourse that evaluates subjectivity, the intuitive-rational pathways and the resumption of the discourse on *mythos*, understood to be a synthetic, parasympathetic and emotive discourse compatible with pre-scientific language. Moreover, the detected scenario is also directed toward the need for qualitative, naturistic studies for a better understanding of existential phenomena. This does not mean that the extension of the phenomena should be disqualified but rather complements it and affords greater completeness to their dimension, to deal with what is happening, to get to the essence of the phenomenon and, in this way, build an understanding of the phenomenon as presented, and consequently propose creative alternatives for clinical psychology that are effective in the struggle with existential questions, as well as to value epistemologies with phenomenological, existential and humanist foundations.

It should be stressed that this study, even with the methodological rigor adopted, is subject to limitations. Firstly, on account of the study's restrictions, which limited the search to 5 databases. Even though they represent coverage at the national, Latin American and international levels, it still cannot incorporate a range of bibliographic production flourishing on the broader world. Moreover, for a more comprehensive analysis of the contemporary panorama of Psychology, it is necessary to track down qualitative data, which will now be consigned to a second, complementary article. Thus, in a more in-depth analysis, the focus will move to one that is conceptual and thematic, exploring the content of theoretical and qualitative articles in greater detail. So, the reader is invited to accompany the second phase of the present systematic review, focusing on the analysis of articles that are theoretical in nature and qualitative and, or mixed method approaches aiming to include, panoramically and vertically, how Psychology has appropriated a theme that is as matrix-oriented as this study of existential vacuum and meaning of life.

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# Impact of Prolonged use of Video Gaming on Grip and Pinch Strength in Young Adult

By Dr. Ashraf Darwesh, Mr. Saleh Bin Amer Almalhan, Mr. Salem Bin Mohammed Bahmeshan, Mr. Abdulaziz Bin Ahmed Alghamdi, Mr. Mohammed Bin Hamed Alamari & Mr. Wesam Qurban

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*Abstract-* *Background:* Video gaming has become an increasingly popular and globally recognized phenomenon in recent years. While playing, there are multi repetitive movements of the fingers, which may lead to significant hand grip or pinch grip problems. Purposes: The purpose of this study was to investigate the effect of prolonged use of video games on the grip and pinch strength.

*Materials and Methods:* Forty male students from King Abdulaziz University participated in this study, their age ranged from 18-24 years. They were divided into two groups, prolonged user, and non- user group. The hand grip and pinch strength for all participants were measured by a handheld dynamometer and the level of video game addiction was assessed by Game Addiction Test.

*Results:* There was a significant decrease in hand grip strength of the prolonged user group compared with non-user group, while there was a non-significant difference between both groups in the pinch strength.

*Keywords:* *video game, hand grip strength, pinch strength.*

*GJHSS-H Classification:* *LCC: GV1469.35-GV1469.62*




*Strictly as per the compliance and regulations of:*

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*Results:* There was a significant decrease in hand grip strength of the prolonged user group compared with non-user group, while there was a non-significant difference between both groups in the pinch strength. The result showed a non-significant correlation between hours of playing and Video game addiction Teat (VAT) with hand grip strength and pinch strength.

*Conclusion:* There was a significant decrease in hand grip strength of the prolonged users of video games, while there was a non-significant decrease in the pinch strength in the prolonged user group compared with non- user group.

*Keywords: video game, hand grip strength, pinch strength.*

## Chapter I

## I. Introduction

Video gaming has become an increasingly popular and globally recognized phenomenon in recent years. Video game industry is more significant than music and movie in worth and growth together, and its revenue is $152.1 billion in 2019 and is expected to reach $257 billion by 2025. There are almost 2.5 billion active gamers globally, and 38% of gamers are young people from 18 to 34 years old [(1)].

A video game is considered as the central concept of leisure to the young population in their free time, and part of them consider it as a hobby, and others could take it professionally and make money through playing these games by content creation as Livestream or uploading videos on YouTube. Moreover, making money by tournament's prize pool, singing with teams, and getting salaries from 3000$ to 5000$ [(2)].

Furthermore, in 2017, the Saudi Arabian Federation for Electronic Sport was established. That presents the growth in the gaming community and industry in the country. There are multiple devices to play video games, such as PC, PlayStation, Xbox, etc. According to an online gaming survey, playing time is about 8 hours and 27 minutes per week. [(3)]. Therefore, body structure and posture are essential for playing, especially handgrip, pinch grip, and wrist position, all of the presser and primary tools. Furthermore, while playing, there are multi repetitive movements such as flexion and extension of the fingers and opposition of the thump. The wrist should be in a midline position to gain the appropriate shape of the hand in playing.

However, repetitive motion of all elements may lead to significant hand grip or pinch grip problems. Furthermore, there are two types of risks of injury related to playing that are acute injuries such as falling could happen as some cases show Achilles tendon tears, dislocated patella, and fractures, and overuse Injuries such as tennis elbow, runner's knee, jumper's knee, little leaguer's shoulder, shin splints, and wrist tendonitis secondary could show [(4)], which decreases the quality of life among young adults. In the past, gaming research has explored several domains, such as gaming effect behavior or psychological state among young adults and the influence of spending more time on video games [(5)].

Furthermore, other studies show the effect of prolonged use of smartphones on hands among medical students, and they found out that there is no impact on hands strength. However, excessive smartphone usage may lead to weakness on the dominant hand among medical students [(6)]. Moreover, the number of studies and research that show the relationship between video games overuse and hand-grip strength is limited [(7)]. However, the duration of playing and the strength of the hand is the primary goal of this study and aims to investigate the impact of video games on hand-grip strength. Moreover, it shows a gap that needs to be covered, and the point of this research is to reduce the gap and increase knowledge in this area.

On one hand, a new systematic review published in 2021 showed that video games are an

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effective tool for improving health-related physical fitness and motor competence in healthy-weight children and adolescents. Otherwise, active video games may be counted as a strategy to improve health[8]. Another systematic review published in 2019 shows that playing video games positively affects older adults' motor skills, cognitive skills, and perceptual skills [9]. Moreover, another Systematic Review and Meta-Analysis talk about the effects of an active video game on health-related physical fitness with obesity shows a good influence on BMI, and body fat percentage, so AVG might be an acceptable approach to fight childhood obesity [10].

On the other hand, scientific research shows a precise correlation between video games and anxiety in males and straightforward relation between females playing video games and depression [11]. Furthermore, another study shows that boys who play video games have lower level of anxiety than girls who play video games [12]. However, an updated Cross-sectional study published in 2022 investigated video game disorder and mental well-being among university students. It shows that some of them with VGD got more hours of playing video games per week, less sleep time per day, and a higher body mass index [13].

*a) Statement of the problem*

Is there a difference between prolonged user of the video game and non-user of the video game in their grip and pinch strength?

*b) Purpose of the study*

The aim of the present study is to investigate the effect of prolonged use of the video game on the grip and pinch strength in prolonged users compared with the non-user of video game.

*c) Significant of the study*

There are limited studies related to hand grip strength and pinch grip strength with cell phone or video game prolonged use. The importance of this study is increasing the amount of information and studies related to pinch and grip strength. Moreover, studying this would insight into the underlying factors which contribute to hand grip strength and pinch grip strength and any relation with prolonged video game use.

*d) Hypothesis*

i. *Null Hypothesis*

There is no difference between prolonged using and non-using of video games in hand grip strength

ii. *Alternative Hypothesis*

There is difference between prolonged using and non-using of video games in hand grip strength.

# Chapter II

## Subjects, Materals and Methods

### II. Material and Methods

This study was carried out in the King Abdul-Aziz University, Faculty of Medical Rehabilitation Sciences, to investigate the effect of prolonged use of video gaming on grip and pinch strength in young adults.

*a) Subjects*

Forty male students were selected from King Abdulaziz University. All participants signed a written informed consent before participation. The participants were divided into two groups.

*Group 1:* It consists of 20 students with a score of 29 or more on the gaming addiction Test.

Group 2: It consists of 20 students who do not play video games at all

*b) The inclusive criteria*

Male students at King Abdulaziz University-1

age from 18 to 24.

Video game users with a score of 29 or more on the Game Addiction Test.

*c) The exclusion criteria*

Wrist pain

Severe neurological disease

Upper limb injury or upper limb pain

Diabetes

Activity that requires repetitive movement of the hand

*d) Design of study*

Forty male students were selected from King Abdulaziz University divided into two groups. Group 1 consists of 20 students with a score of 29 or more on the gaming addiction test. And group 2 consists of 20 students who do not play video games at all. The subject in both groups was assessed for the handgrip strength by using dynamometer and pinch strength by using pinch meter.



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*e) Instrumentation*



*Figure 1:* Handheld dynamometer·




*Figure 2:* Pinch Meter

The handheld dynamometer (Fig. 1) was used in this study is Jama handheld dynamometer manufactured in U.S. A. It has a meter with a scale ranged from 0-90 kilogram or from 0 to 200 pounds. Also, it has baseline hydraulic pinch gauge was used to measure pinch power.

*f) Procedures*

i. *Video Game Addiction Test (VAT)-1*

VAT is designed to detect video game addiction and consists of 14 items which are scored on a 5-point Likert scale (0=never, 1=seldom, 2=sometimes, 3=often, and 4=very often). Score 0-14 indicates gaming behavior doesn't seem problematic score 15-28: indicates gaming habit could be unproductive 29-42: indicating some level of video game addiction 43-56: indicating addiction to playing video games.

ii. *Grip strength*

The strength of the grip was measured by using dynamometer. the subject was instructed to sit at standard chair with back supported, feet rested on ground with 90° flexion hip and knee. The subject was asked to hold arm vertically to the side of trunk; with elbow 90° flexion. After the dynamometer is positioned in the subject's hand, then he is asked to grasp the dynamometer as much force as he can. The dominant hand was evaluated first then the non-dominant hand.



*Figure 3:* Measurement of grip strength by using (handheld dynamometer). Frontal view



*Figure 4:* Measurement of strength by using (handheld dynamometer).Sagittal view



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iii. *Pinch strength-3*

Each subject was instructed to sit at standard chair with back supported, feet rested on ground with 90° flexion hip and knee. The subject was asked to hold arm vertically to the side of trunk; with elbow 90° flexion. After that, the subject was instructed to pinch between thumb and lateral aspect of index in both dominant and non-dominant hand by using pinch meter.



*Figure 5:* Measurement of pinch strength by using (pinch meter) Sagittal view



*Figure 6:* Measurement of pinch strength by using (pinch meter) Frontal view

*g) Statistical Analysis*

Statistical analysis was done by using the statistical package for social sciences (SPSS) version 20. Mean and standard deviation was calculated for all quantitative data. Unpaired t-test was used to compare between study group and control group. Correlation tests was used to find out the relationship between hand grip and pinch strength and the number of hours of playing video games. The alpha level was set at 0.05 for all analysis.

## Chapter III

## III. Results

The aim of this study was to investigate the investigate the effect of prolonged use of video gaming on grip and pinch strength in young adults. the strength of the hand grip and pinch was measured by Handheld dynamometer Data were collected and then analyzed. Descriptive and analytic statistics were used.

Forty male students participated in this study; they were divided into two groups. Group A consists of 20 students who are prolonged user of video games. And group B consists of 20 students who do not play video games

*Group (A):* Twenty students who are prolonged users of video games were included in this group. The data in table (1) their mean age (21.64±1.26) years, their mean height (174.8±7.45) cm. their mean weight (77±12.88) kg, and their mean BMI (25.1±6.34).

*Group (B):* Twenty students who are not users of video games were included in this group. The data in table (1) represented their mean age (20.95±1.36) years, their mean height (175.40±5.43) cm. their mean weight (74.2±9.02) kg, and their mean BMI (24.1±2.345).

Unpaired t test between the two groups showed no significant differences for age (P value was 0.09), height (P value was 0.78), weight (P value was 0.59) and BMI (P value was 0.51).

*a) General Characteristics of the subjects*

*Table 1:* General characteristics of subjects in each group.

| Items | Group(A) Video game users | Group(B) Non-users | Comparison | |
|---|---|---|---|---|
| | Mean±SD | Mean±SD | t-value | P-value |
| Age (years) | 21.64±1.26 | 20.95±1.36 | 1.7 | 0.09 |
| Height (cm) | 174.8±7.45 | 175.40±5.43 | 0.28 | 0.78 |
| Weight (Kg) | 77±12.88 | 74.2±9.02 | 0.53 | 0.59 |
| BMI | 25.1±6.34 | 24.1±2.345 | 0.67 | 0.51 |

*Significant at ≤ 0.05, SD: standard deviation.*



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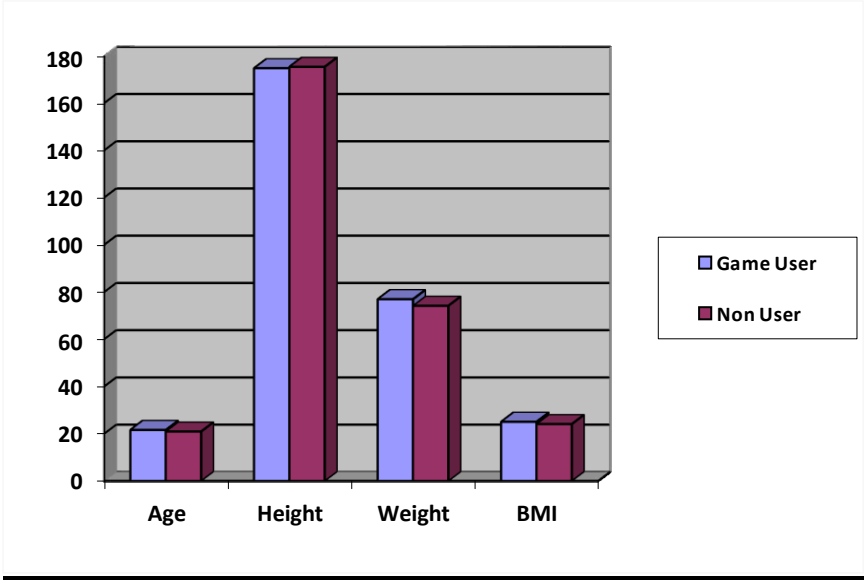



*Fig. 7:* Mean values of age, height, and weight in both groups.

*b) Comparison of the mean values of the hand grip and pinch strength between both groups*

There was a significant decrease in mean values of hand grip strength of the prolonged user group compared with mean values of the non-user group as the mean value of grip strength for prolonged user group (A) was (37.41±9.18) and for the non-user group (B) was (43.6±8.43), P-value was (0.03), While there was non-significant difference between both groups in the mean values of pinch strength, P-value was (0.06) as demonstrated in table (2) and illustrated in fig (7).

*Table 2:* Comparison of the mean values of the hand grip and pinch strength between both groups.

| Items | Group(A) Video game users | Group(B) Non-user | Comparison | |
|---|---|---|---|---|
| | Mean±SD | Mean±SD | t-value | P-value |
| Hand Grip Strength | 37.41±9.18 | 43.6±8.43 | 2.27 | 0.03* |
| Pinch strength | 7.27±1.41 | 9.35±4.92 | 1.99 | 0.06 |

** Significant at ≤ 0.05, SD: standard deviation.*

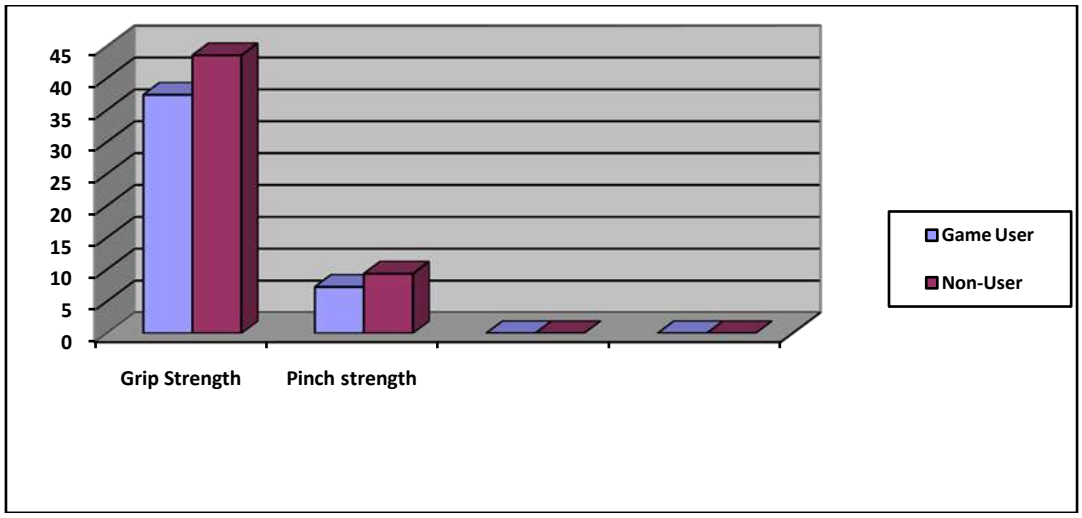



*Fig. 8:* Comparison of the mean values of the hand grip and pinch strength between both groups



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*c) Correlation analysis*

1. The correlation between Video game addiction Test (VAT) and hand grip and pinch strength

The results showed a non-significant correlation between Video game addiction Test (VAT) and hand grip strength and pinch strength (r = -0.28, p=0.21 and r = -0.077, p=0.73 respectively). Data were listed in table (3) and fig. (8,9).

*Table 3:* Correlation between Video game addiction Test (VAT) and hand grip and pinch strength.

| | Video game addiction Test (VAT) Mean±SD (35.05±7.29.) | |
|---|---|---|
| | r | p-value |
| Grip Strength (prolonged user group)Mean±SD (37.41±9.18) | -0.28 | 0.21 |
| Pinch Strength (prolonged user group)Mean±SD (7.27±1.41) | -0.077 | 0.73 |

** Significant at p < 0.05*

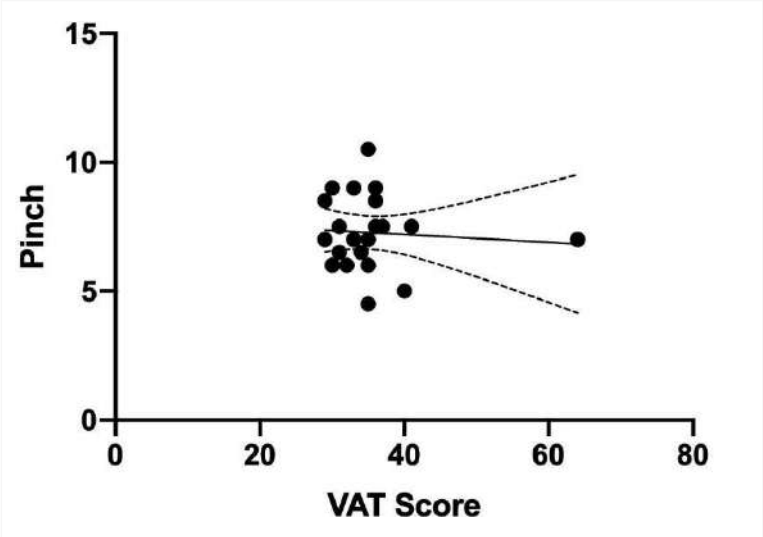



*Figure 9:* Correlation between pinch strength and video game addiction test (VAT)

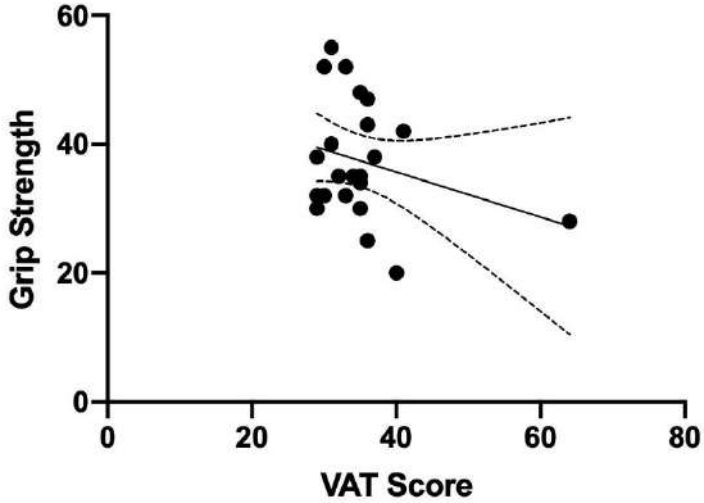



*Figure 10:* Correlation between grip strength and video game addiction test (VAT)



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2. The correlation between hours of playing and hand grip and pinch strength

The results showed a non-significant correlation between hours of playing and hand grip and pinch strength (r=-0.09, p=0.68 and r=-0.08, p=0.72 respectively). Data were listed in table (3) and fig. (10, 11).

*Table 4:* Correlation between hours of playing and hand grip and pinch strength.

| | Hours of Playing Mean±SD (26.55±13.67.) | |
|---|---|---|
| | r | p-value |
| Grip Strength (prolonged user group)Mean±SD (37.41±9.18) | -0.09 | 0.68 |
| Pinch Strength (prolonged user group)Mean±SD (7.27±1.41) | -0.08 | 0.72 |

* *Significant at p < 0.05*

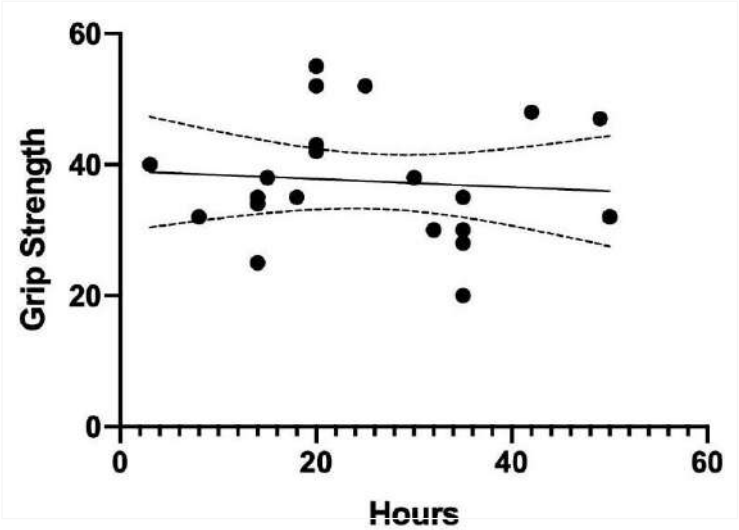



*Figure 11:* Correlation between grip strength and Hours of Playing

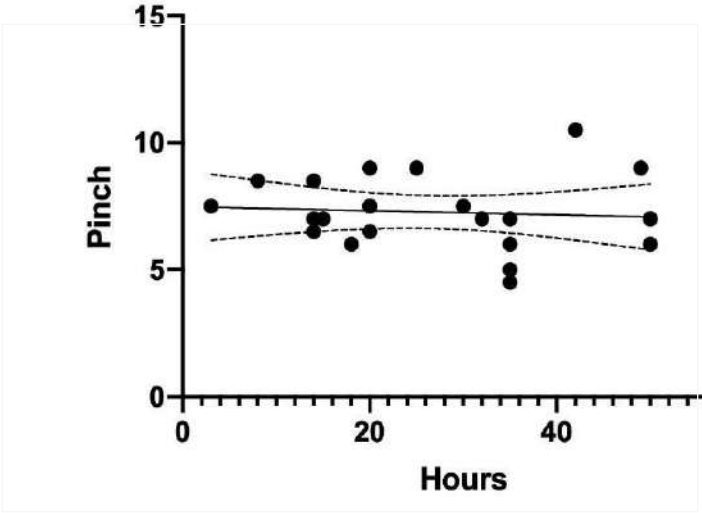



*Figure 12:* Correlation between pinch strength and Hours of Playing



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# Chapter IV

## IV. Discussion

Young people around the world wonder if there are any side effects of prolonged use of video games, like weakness in grip and pinch strength, that may affect their activity of daily living in the future.

This study was conducted to investigate the difference in grip and pinch strength between people with prolonged use of video games and those who do not use video games. In this study, 40 persons participated in this study and their hand grip strength was evaluated by handheld dynamometer, and their pinch strength was assessed by using a pinch meter.

The study showed a significant decrease in grip strength with participants in prolonged users group of video games, while there was no significant difference in pinch strength between both groups. This comes in agreement with *Din and Hafeez 2021,* who stated that increasing smartphone addiction will decrease the strength of the handgrip and increase upper limb disability after they tested 112 participants aged between 18 and 24 years old. The tests were smartphone addiction scale short version (SAS-SA) for addiction level, a dynamometer for measuring handgrip strength, and a quick DASH questionnaire for the upper extremity function. [14]

Our results are also supported by *Sharan et al. (2014),* who investigated that mobile device are risk factors and may lead to injuries to the thumb and forearm muscles. Movements involving the frequent and increasing use of the thumb and fingers have been identified as potentially injuring the muscular system. Other factors include keyboard spacing, control devices, and end-of-range movement for the thumb while sending messages on social media platforms. They assessed 70 people aged between 5 and 56 who reported muscle and bone pain in their upper limbs were analyzed after extensive use of HHD, for example, Mobile phones, game controllers, and tablets. They found a correlation between HHD hours and pain and upper limb injuries. [15]

Furthermore, our results are supported by the result of *Osailan 2021,* who investigated the relationship between smartphone prolonged use and the strength of hand grip in young population. They examined 100 persons aged 18 to 34 years old for the weight and height and they evaluated the strength of hand grip strength by a handheld dynamometer. The study found that the smartphones prolonged use of has a significant effect on grip strength and hand function. [16]

Our results are also supported by the result of *Radwan et al.,* 2019 who investigated the effect of extensive use of smartphones on the strength of hand grip and pinch strength in children. They assessed 60 children whose ages were from 9 to 15. They use the short version of smartphone addiction scale, they divided 60 children into a low-frequency smartphone user group, and smartphones prolonged user group. They used a hand-held dynamometer to assess handgrip strength and a pinch meter to assess pinch strength. The study found that prolonged use of smartphones was related to the decrease of strength in hand grip and pinch strength in children. [17].

Unlike our result, *Shousha et al. (2021)* the Cross-sectional Study of the impact of smartphone use on neck muscles and handgrip Strength was conducted on 90 students aged 13 to 17. Any participant with neuromuscular diseases or previous surgeries was excluded. They were asked to use iPhone 8 Plus or Samsung Note 7 and divided into two groups based on the use of their phones for more than or less than 4 hours per day for eight weeks. Handgrip strength of dominant and non-dominant was measured three times using a dynamometer. The results showed no statistical difference in the strength of the hand on both sides. On the other hand, there was a marked difference in the forward head translation. [18]

Unlike our results, the results of Alshahrani et al., 2021 examined the impact of smartphone use on pinch strength, hand grip strength, and the endurance of the flexors and extensors of the neck in college students. The result was established after assisting 40 male students whose ages were from 18 to 27; then, according to the score of the smartphone addiction scale short version, they divided 40 male students into two groups; smart-phone addicted and non-addicted groups. The strength hand grip and pinch grip was assessed by the dynamometer and the endurance of neck muscles was evaluated by endurance test. The study found that prolonged use of smartphones significantly affects neck muscles endurance but did not affect the strength of the hand grip nor pinch grip strength. [19]

The results of the current study contradict the results of *Marina et al, (2018)* who reported that overuse of smartphones in young people showed a significant lowering of ulnar nerve velocity, which leads to an increased the angle of head position forward and causes neck pain, on the other hand, there is no effect on handgrip strength and conduction of median nerve velocity. The result was established after assisting 60 normal subjects whose ages were from 14 to 18 years, then divided into two groups; group A represents those who use smartphones less than four hours per day, and group B represents those who use a smartphone for more than four hours per day. The instrumentation that was used was a Dynamometer for the handgrip (Computerized Electromyography) (EMG) was used to record median and ulnar nerve conduction velocity and a (Universal goniometer) to measure the angle of the joint. [20]

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The limitations of our study were that it was only applied to male and that the sample size was small.

## V. Conclusion and Recommendations

*a) Conclusion*

There was a significant decrease in the strength of hand grip in the prolonged user group, while there was a non-significant decrease in the pinch strength in the prolonged user group compared with non- user of the video games.

*b) Recommendations*

1. Further research is needed to investigate greater sample number.
2. More studies are needed to investigate the influence of combined posture and hand function in video game users.
3. Video game users should reduce the number of hours to maintain hand muscle and strength.
4. Maintain and increase hand muscle by using hand grip activity like SPACARE finger and hand tool.

## List of Abbreviations

| *Abbreviation* | *Name* |
|---|---|
| VGT | Video game Test |
| VGD | Video game disease |
| AVG | Active Video game |
| BMI | Body Mass Index |

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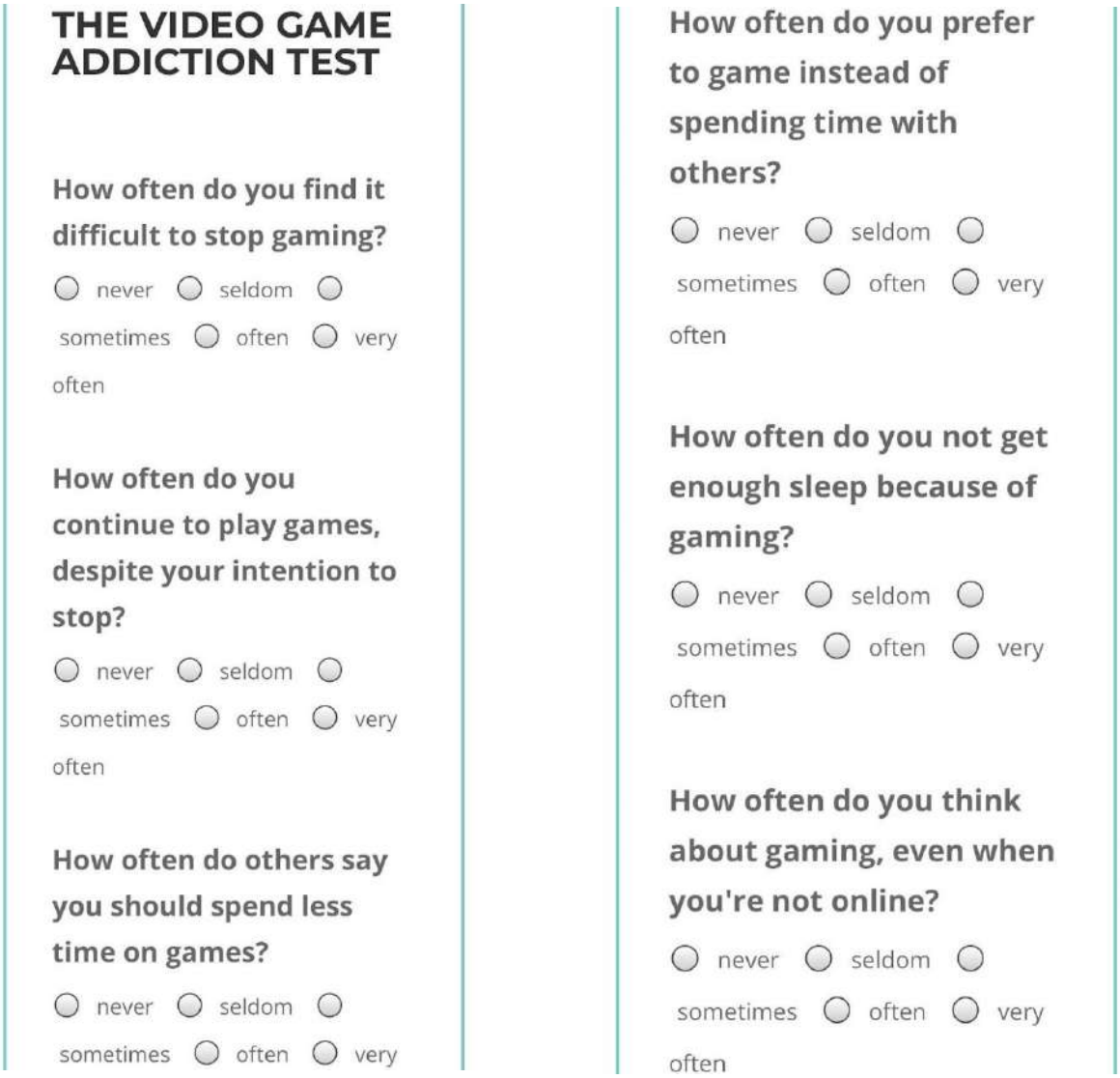



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## Appendix

*Appendix 1*






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**How often do you look forward to the next time you can game?**

○ never ○ seldom ○ sometimes ○ often ○ very often

**How often do you think you should be gaming less often?**

○ never ○ seldom ○ sometimes ○ often ○ very often

**How often have you unsuccessfully tried to spend less time on gaming?**

○ never ○ seldom ○ sometimes ○ often ○ very often

**How often do you feel restless, frustrated, or irritated when you cannot game?**

○ never ○ seldom ○ sometimes ○ often ○ very often

**How often do you rush through your daily responsibilities to play games?**

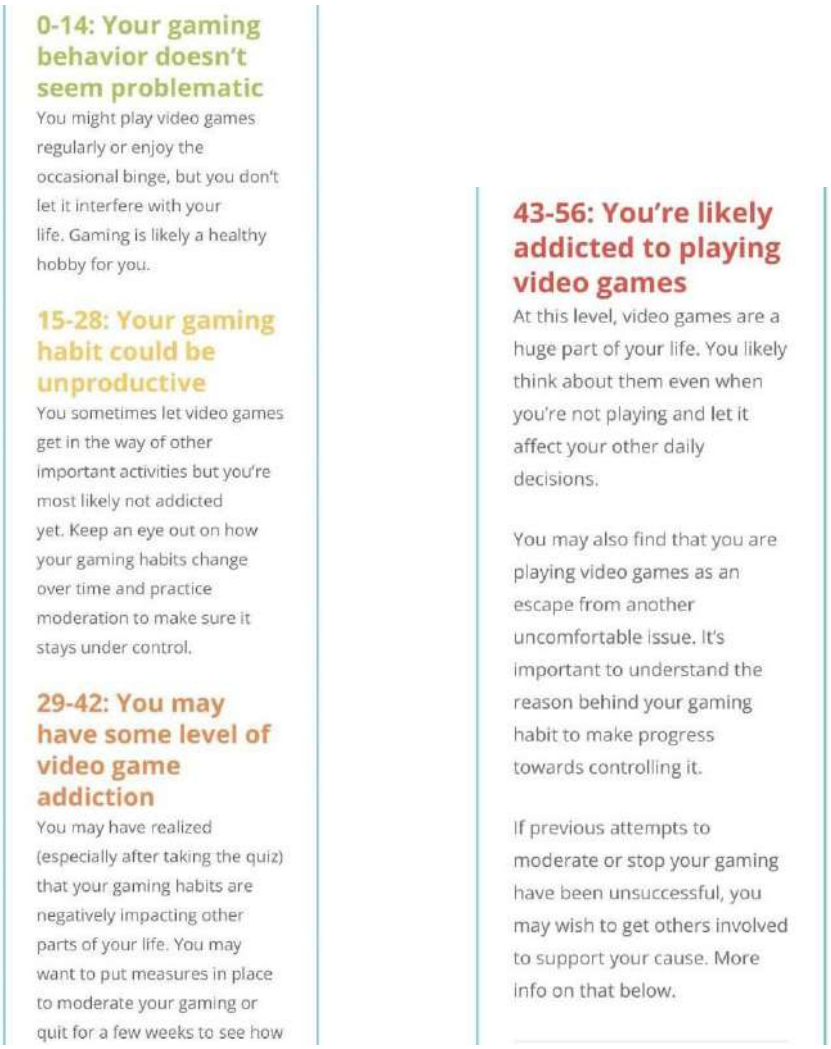
○ never ○ seldom ○ sometimes ○ often ○ very often

**How often do you neglect to do your work because you prefer to game?**

○ never ○ seldom ○ sometimes ○ often ○ very often



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**0-14: Your gaming behavior doesn't seem problematic**

You might play video games regularly or enjoy the occasional binge, but you don't let it interfere with your life. Gaming is likely a healthy hobby for you.

**15-28: Your gaming habit could be unproductive**

You sometimes let video games get in the way of other important activities but you're most likely not addicted yet. Keep an eye out on how your gaming habits change over time and practice moderation to make sure it stays under control.

**29-42: You may have some level of video game addiction**

You may have realized (especially after taking the quiz) that your gaming habits are negatively impacting other parts of your life. You may want to put measures in place to moderate your gaming or quit for a few weeks to see how

**43-56: You're likely addicted to playing video games**

At this level, video games are a huge part of your life. You likely think about them even when you're not playing and let it affect your other daily decisions.

You may also find that you are playing video games as an escape from another uncomfortable issue. It's important to understand the reason behind your gaming habit to make progress towards controlling it.

If previous attempts to moderate or stop your gaming have been unsuccessful, you may wish to get others involved to support your cause. More info on that below.

*https://voltcave.com/video-game-addiction-test/*



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# Impact of prolonged use of video gaming on grip and pinch strength in young adult

# تأثير الاستخدام المطول لألعاب الفيديو على قوة قبضة اليد لدى الشباب البالغين

السلام عليكم ورحمة الله وبركاته..
يسعدنا نحن طلاب العلاج الوظيفي السنة الرابعة في كلية علوم التأهيل الطبي في جامعة الملك عبد العزيز ,تقديم هذا الاستطلاع لمشروع بحث التخرج حول تأثير الاستخدام المطول لألعاب الفيديو على قوة قبضة اليد لدى الشباب.

إذا كنت طالبًا يتراوح عمرك بين 18 و 24 عامًا في جامعة الملك عبد العزيز ، ولاعب ألعاب الفيديو او لا تلعب ألعاب الفيديو وترغب في التقدم إلى مختبر العلاج الوظيفي في كلية علوم التأهيل الطبي للمشاركة في البحث ، فيرجى المتابعة

لتكون على علم:
- المشاركة طوعية
- ستكون المعلومات سرية
إذا كنت توافق على المشاركة يرجى متابعة الأسئلة.

We are Occupational Therapy students at King Abdulaziz University
This is a survey for our undergraduate research about the Impact of prolonged use of video gaming on grip and pinch strength in young adults.

If you are a student male 18-24 at king Abdulaziz University, playing video games, non-playing video games, and willing to come for OT lab to participate , please continue.

To be aware :
-Participation is voluntary
- Information will be confidential
If you agree to participate please continue with the questions.



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# Unveiling the Depths of Existential Inquiry: A Qualitative Examination of Psychological Literature (2000-2023)

By Kenia Cristiana de Lima Alencar & Marta Helena de Freitas

*Abstract-* *Introduction:* This is a continuation of the previous article, "Exploring Existential Questions: A Comprehensive Review of Psychological Literature (2000-2023) – Part 1", the aim of which, following on from an analysis that was more quantitative in nature, is to present the results of a more in-depth analysis of the articles by means of a qualitative and/or mixed approach, published between 2000 and 2023, with the aim of understanding how Psychology has appropriated the themes of existential vacuum and meaning of life over this period.

*Method:* Of the group of articles studied in Part I, only articles with qualitative or mixed approaches were analyzed in this second phase, in accordance with the following aspects: year of publication, theoretical references used in the articles, concepts employed in the studies, context and studied populations, emerging themes and relationship between the topic and psychotherapy, religiosity and spirituality.

*Results:* Of the 264 articles selected in Part 1, 191 quantitative articles were excluded, leaving 73 articles with a qualitative or mixed approach, initially classified as follows: 46 theoretical/ qualitative, 17 empirical/qualitative, 7 mixed and 3 interventions.

*Keywords:* *existential vacuum, meaning of life, mental health, psychology, qualitative approach, logotherapy, psychotherapy, spirituality, religiosity, healthcare.*

*GJHSS-H Classification:* *LCC: BF698*

UNVEILINGTHEDEPTHSOFEXISTENTIALINQUIRYAQUALITATIVEEXAMINATIONOFPSYCHOLOGICALLITERATURE20002023

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# Unveiling the Depths of Existential Inquiry: A Qualitative Examination of Psychological Literature (2000-2023)

Kenia Cristiana de Lima Alencar [α] & Marta Helena de Freitas [σ]

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***Results:*** Of the 264 articles selected in Part 1, 191 quantitative articles were excluded, leaving 73 articles with a qualitative or mixed approach, initially classified as follows: 46 theoretical/qualitative, 17 empirical/qualitative, 7 mixed and 3 interventions. The most prominent aspects covered were: logotherapy, as the theoretical framework adopted in the articles; the context of healthcare, as the study target; the study of contemporary man as the audience, the concept of meaning of life was more cited and explored in the articles than the concept of existential vacuum, involving thematic categories more focused on this construct. Notwithstanding, this concept exhibited less variation in denominations (8 resulting and 5 subcategories), while existential vacuum showed greater heterogeneity (19 different expressions). The importance is highlighted of the concept of meaning of life to psychotherapy and its mediating role between religiosity/spirituality and positive aspects of life.

*Keywords: existential vacuum, meaning of life, mental health, psychology, qualitative approach, logotherapy, psychotherapy, spirituality, religiosity, healthcare.*

## I. Introduction

The topic of existential vacuum and meaning of life, the target of preoccupation about human existence, and which was once the subject of the study of philosophy, has gained prominence in scientific discussions over the last two decades, as was evidenced in the earlier study "Exploring Existential Questions: A Comprehensive Review of Psychological Literature (2000-2023) – Part1" (Alencar & Freitas, 2023).

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The milestone of the Covid-19 pandemic was a catalyst and driver of the investigations into these themes, when man got scared, faced with the breadth and magnitude of human finitude, revealing sentiments of anxiety and despair given such an uncertain and menacing context. This prompted a large-scale search about the dimension of meaning and existence, resulting in a large number of scientific productions on the theme, with an emphasis on the quantitative approach as it was necessary to measure the existential state of contemporary man faced with a global crisis of such enormity (Alencar & Freitas, 2023).

This was redolent of the manifesto delivered by Edmund Husserl (2002) in his "Crisis of European Humanity and Philosophy", foreseeing the present-day issues with the crisis of meaning. Similar questions prevailed in his time, when Husserl stated that the modern sciences had distanced themselves from the lifeworld (*Lebenswelt*) and the problems of humanity, losing humanity's sense of meaning. In the quest for absolute truth, this science reduced the world to plain facts, only concerned with quantifying and measuring it, becoming strictly objectivist, obliterating subjectivity and the notion of meaning. Thus, the job of Husserl's phenomenology was to study the significance of experiences, in other words, the meaning of human life. This philosophy inspires and directly supports the proposal of the present study, which is to investigate how contemporary psychology dealt with the study of existential questions, unveiling its implications for the significance of life experiences. The philosopher questioned the sovereignty of the natural sciences (explanatory in nature and a description of laws) over the sciences of the spirit (sympathetic, historical, individual and social in nature), as if they were distinct, disjointed objects, as the scientific world only edifies itself based on its surroundings (*Lebensumwelt)*. His short essay, produced in 1935, and entitled the Crisis of Humanity, is reverberating 88 years later with the advent of new crises: the Covid-19 pandemic, which extrapolated the level of the *physis* and became humanitarian, and the level of wars, which returned to the theater of Europe and the Middle East, snuffing out so many lives. In other words, in his time, Husserl was already warning of the importance that the theme of the meaning of life was rekindling for an understanding of



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the essence of the spirit and reflections on the soul and, consequently, put in check the need for the completeness of psychology. In this way, it has become necessary to consider not only the rationality of the *logos,* understood as reason and analytical discourse, but also the creative activity of the spirit, understood to be esthetic and emotional expression, the subjectivism, and the *mythos*, conceived as sensitivity, a synthetic, emotive and narrative discourse.

The present study focuses on the existential questions addressed in qualitative studies arising from a prior meta-analysis of the scientific output in psychology (Alencar & Freitas, 2023) on the topic in question, between 2000 and 2023. As such, the main aim is to understand how contemporary Psychology has addressed the topics of *existential vacuum* and *meaning of life* over the last two decades, observing two fundamental axes. The first being horizontal in nature, which follows on from the extension study and whose principal results have already been described in the previous article, including a quantitative analysis of the following variables: a) year of publication; b) theoretical approach; c) context; d) target audience. The second is vertical in nature, proposing to delve deeper into the issues, including a qualitative analysis of the following variables: e) conceptual categories, and f) thematic categories, highlighting the relationships or implications of existential questions in psychotherapy and/or the topics of religiosity and spirituality.–This last aspect is justified by the observance, in the present day, of a strong tendency to associate the concept of spirituality with the movement that is searching for existential meaning (Freitas, 2024; Koenig et al., 2024; Freitas, Leal & Nwora, 2022), at the same time that the role of religion is being increasingly questioned as to whether or not it is a driver of meaning (Krok, 2015; Villani et al, 2019; Jung, 2015; Zarzycka, Tychmanowicz & Krok, 2020). On the other hand, the integration of study and practice has, as recently indicated by Pargament (2023), characterized a kind of third wave in the evolution of the psychology of religion and spirituality, and in this is included, of course, psychotherapeutic practice.

As demonstrated in the first phase of this same study, reported in the previous article "Exploring Existential Questions: A Comprehensive Review of Psychological Literature (2000-2023) – Part 1" – a higher frequency of publications was found resulting from quantitative studies in Psychology in the contemporary world, unmasking the concern about quantifying and assessing the existential state of contemporary man. This in itself, in some way, already indicates what was, in a way, "prophesied" by Husserl in respect of what was once modern science, and its repercussions for the future. The motive force for the development of the present investigation is a study conducted by Alencar & Freitas which showed that the prevailing scientific paradigm in contemporary psychology favors the language of *logos,* understood to be objectivist, rationalist and mathematizable, focusing on a nomothetic investigation. Similarly, it indicated the need for qualitative investigations, affording direction to the present review for a better understanding of the existentialist issues, complementing rational discourse with idiographic investigations focusing on the specifics and the variety of the subjective world. On the other hand, Husserl's proposition dates back to the origins of this same scientific claim – the dichotomy between naturalistic objectivism and transcendental subjectivism, where the philosopher pointed to the need for science to broaden its field of vision to go beyond the role of the distant observer, but also to focus on things as they are and, consequently, for a better understanding of human problems. Thus, Husserl's phenomenology drives the current study, which not only seeks to extensively map existentialist questions but also aims to contribute to a better understanding of the phenomenon, attempting to delve into its very nature. Hence the focus of the analysis presented here, to concentrate exclusively on theoretical and qualitative works found in the preliminary data survey.

As far as the importance of extension studies goes, in order to determine the scope and frequency of the phenomenon being studied, it has to be recognized, however, that strategies focusing on psychological naturalism and on objectivation of human experience are also not sufficient to handle the complexity of the topic in question. In other words, it is also necessary to characterize the study of intentional experiences in a quest to understand the nature of the phenomenon of the meaning of life and existential vacuum, so as to result in concrete measures for the mental healthcare of contemporary man. More than ever, this has become a necessity at times of acute crises, such as those that unfolded in the context of the Covid-19 pandemic, or even the wars and terrorist actions we have witnessed over recent years. These crises assume particular characteristics within the context of the pragmatism and technicism of the philosophy of digital *dataism* (Han, 2018) and/or the superficial nature of liquid modernity (Baumann, 2004). Therefore, it has become essential to delve deeper into qualitative or mixed-method studies, not only for the purpose of mapping but also to understand how contemporary psychology has appropriated this primordial question of existence, the purpose of which is elaborated upon in this article.

Seeing as the meaning of life and/or existential vacuum are primordial to the care of mental health, through their relationship with the impulsion for human life and/or psychic suffering (and its respective elaboration), a brief historical and conceptual description of both constructs is initially presented here.

Up until the postwar periods (first and second world wars), when discussions about the constitution of man began anew, the ideas of vacuum and meaning



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were restricted to the domain of philosophy. (Vieira & Dias, 2021, p.2). Accordingly, it also starts to be incorporated by psychology, in particular through the humanist movement that rose up against the prevailing models, namely behaviorism and psychoanalysis (Ponte & Souza, 2011), respectively indicated as mechanistic, deterministic and detractors of the human values of freedom and choice. The conceptions of this movement can, for example, be seen in the existentialist humanism of Rollo May who, in his work entitled 'Psychology and the Human Dilemma", originally published in 1967, declared that man's fundamental problem in the mid 20th century was precisely existential vacuum, described as a sensation of the incapacity to do anything meaningful for oneself or for the world. Given this perspective, he sought to characterize the human being as a free being, responsible for his own actions, involved in a psychology that would help to understand and elaborate the crisis of meaning and the respective dilemma between subject and object, a paradox inherent to the human condition (May, 1953/1994).

Also from a humanist, existential and phenomenological perspective, on the other side of the coin, on the continent of Europe, the postwar period also witnessed the emergence of the conception of Viktor Frankl (1946/2019), one of the most researched agents in the present day, who places emphasis on the side of presence, directing his theory towards the study of the meaning of life, through which he develops the psychotherapeutic approach of logotherapy.

In historical and philosophical terms, the "meaning of life" construct was originally addressed in philosophy, presented in the perspective of Friedrich Nietzsche (1872/2019), as the desire for power, in other words, the desire to live life. Meanwhile, psychology couched it as a desire for pleasure, from the Freudian point of view (Freud, 1929/ 1996), signifying the search for pleasure and satisfaction of our needs. Alfred Adler, an Austrian psychologist, coined the term *desire for power* (1932/2010), as a search for superiority and the realization of all human potential. From the point of view of Viktor Frankl (1946/2019), however, it was denominated *desire for meaning* (Frankl, 1969/1988), which accompanies man through the different stages of life and includes the ultimate meaning of transcendence. It was through the psychotherapeutic contributions of this Viennese psychologist that his study came to prominence, being widely disseminated and researched. Based on his experience of life in nazi concentration camps, Frankl (1969/1988) developed a method of therapy called *logotherapy,* focusing on that which gives meaning to human existence.

Also in the sphere of cognitive psychology, in the second half of the 20th century, the notion of "meaning-making" started to gain visibility. The expression was initially employed by Postman and Weingartner (1969) – as the title of a chapter in a book where they adopted a critical perspective with regard to the educational process – to refer to knowledge as something actively created by people based on the way they experience new situations and incorporate new information into their previous knowledge, allowing them to construct and attribute meanings to life events, to relationships and to themselves. Some of the psychologists involved in the development, inspired by the Piagetian perspective, like Kegan, Robert (1980) for instance, continued using this expression which ended up becoming a key concept for many subsequent texts in clinical psychology and development. And as demonstrated in a survey conducted by Park, Crystal (2010), the aforementioned term has gained over the years a diverse theoretical focus, especially in the area of the so-called positive psychology.

However, conceptually, it is necessary to clarify the two expressions used to refer to meaning, as follows: *meaning in life* and *meaning of life*. Notwithstanding the similar roots, the two expressions mean something different (Aquino, 2021; Fuhrer et al., 2023). The former refers to the meaning that a person acquires throughout life or to how much meaning he/she may experience in their own lives, while the latter refers to a wider ranging concept, alluding to the significance of life as a whole, as well as the significance of human existence. Despite the different acceptations, both expressions were the subject of study in this work since, whether privately or universally, they signal the concept of meaning.

Consequently, it can be seen that *existential vacuum* and *meaning of life* are phenomena that go hand in glove, given that the former refers to the perspective of absence while the latter to the perspective of presence. Both constructs were and continue to be explored in psychology and, historically, as was mentioned above, emphasis was sometimes placed on the side of absence, as in the humanist psychology of Rollo May (1953/1994), and on other occasions the role of presence was emphasized, as noted in the logotherapy of Viktor Frankl (1946/2019) and, more recently, addressed as an essential cognitive function that accompanies human development, as seen in cognitive and/or positive psychology (Kegan, 1980; Park, 2010).

By way of an historical, conceptual and philosophical contextualization of the briefly presented existential questions, in solidarity with the Husserl's proposition, we shall explore *existential vacuum* and *meaning of life* in the upcoming sections of this article. In the same way that the malaise of our era has recently been in evidence, primarily due to the pandemic crisis and the advent of successive wars, the depth of the existentialist investigation in present-day psychology-related literature is revealed.



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## II. Method

This systematic review is the result of a bibliographic search via the concept of existential vacuum, meaning of life and their correlates, carried out on five databases: CAPES Periodicals Portal, APA PsycArticles, SCOPUS, SCIELO, and PePSIC, as described in detail in the previous article: Existential vacuum and meaning of life – Part 1 (Alencar & Freitas, 2023).

The CAPES portal was chosen as the database for this study on account of its national and international coverage. It is the go-to reference for scientific studies in Brazil as well as being a portal that encompasses a broader range of databases, and is widely used in the academic milieu in the country. APA PsycArticles is a database specific to psychology and with international coverage, offering public articles available in full, and a go-to reference for the area of psychology in Brazil. SCOPUS is a database with international coverage and is regarded as the largest database for abstracts and citations in peer-reviewed literature and also a reference in Brazil and, along with SCIELO, is included in the criterion for *Qualis* rating (quality rating adopted in Brazil for scientific journals), grade A1 (highest quality, international level of excellence); and PePSIC, which covers the whole of Latin America, including Brazil, with content specific to the area of psychology, also widely disseminated throughout the academic milieu. So, the combination of these databases provides a broad scope in scientific research, enabling the identification of scientific publications, both regionally and internationally, particularly in the field of psychology.

In the second phase, the continuity of the meta-analysis was outlined. In terms of eligibility criteria, only studies employing a qualitative or mixed-methods approach were considered, using either theoretical or empirical procedures, as exhibited in Table 1. For the qualitative approach, naturistic studies were considered that seek an understanding of the phenomenon. In the study's Method, the data collection instruments were analyzed, such as interviews (unstructured, structured or semi-structured), observation, ethnography, among others. In addition, analytical methods were employed such as the phenomenology of Amedeu Giogi; content analysis; discourse analysis, and so on (*e.g.*, Olofsson et al., 2021). Meanwhile, the mixed-methods approach considered studies that combine the qualitative and quantitative approaches, seeking not only to understand the phenomenon but also to quantify it in order to understand its extent and its reality. This study method makes use of data collection and analysis tools that may involve both psychometric instruments, such as semi-structured surveys, and also the use of statistical and content analysis (*e.g.,* Manrique, 2011). In addition, in the theoretical study process, studies were considered that were based on a bibliographic and documentary survey, with analysis of theories, thematic and conceptual discussions, literature reviews, systematic and integrative reviews, etc. (*e.g.*, Martinez-Calderon et al., 2023). The procedure for the empirical study involved articles based on facts that were either observable or obtained through experiments or interventions (*e.g.*, Vähäkangas et al., 2021).

In the data extraction process, these criteria were identified through a reading of the abstract, introduction and method of each study, highlighting the aim of the study and the data collection and analysis tools employed. An example of this process is shown below, in Table 1. It should be stressed that, in the article selection process, in order to minimize possible bias in the study, the triage was performed by the first-named author under the supervision of the second-named author. In the event of disagreement, the selected articles were referred to a third arbiter.



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*Table 1:* Data Extraction

| Year | Title of Article | Abstract | Aims | Method / Data collection and analysis tools | Reference |
|---|---|---|---|---|---|
| **Qualitative Approach** | | | | | |
| 2021 | Older migrants' experience of existential loneliness | Background: With rapidly ageing population worldwide, loneliness among older adults is becoming a global issue. Older migrants are considered being a vulnerable population and ethical issues are often raised in care for elderly. A deeper sense of loneliness, existential loneliness is one aspect of loneliness also described as the ultimate loneliness. Making oneself understood or expressing emotions, have shown to be particularly challenging for older migrants which could lead to experience of existential loneliness. Ageing and being a migrant are potential triggers for experiencing existential loneliness. There appears to be, however, little known about being a migrant experiencing existential loneliness in old age. / Research design: Qualitative study. Participants and research context: Data were collected through interviews (n ¼ 15) with older migrants in Swedish nursing homes or senior citizen centres. A thematic analysis was performed to analyse the data..." *Keywords*: Experience; existential loneliness; interviews; migrants; older adults. | Aim: This study explored older migrants' experience of existential loneliness. | A qualitative descriptive study was performed to understand the experience of existential loneliness among older migrants. Data were collected through interviews 30 and analysed thematically using the method of Braun and Clarke. | Olofsson et al. (2021) |
| **Mixed Approach** | | | | | |
| 2011 | Description of the Meaning of Life in Delinquent Adolescents in the City of Medellin | The aim of this research was to compare the meaning of life's intensity in offender teenagers in Medellin city, Colombia. The methodology had a mixed descriptive design. The sample consisted of 44 young offenders who answered the Purpose In Life test (PIL), developed by Crumbaugh and Maholick, consisting of one party to collect quantitative and two other parties to collect qualitative information. The Results show a low rate of existential vacuum in the teens surveyed. The more time spent in a social rehabilitation institution, the greater the intensity of the meaning of life. The family (real and ideal) is important as a core value around which to build their sense of life. This suggests some grounds for thinking a model to explain the conclusions reached. It argues that the construct "meaning of life" has different levels of complexity that reflect various aspects mentioned below: the desire to live, aim or purpose of life that gives the proper orientation of each existence, the meaning that each one attributes to his life and his different values that govern it, and finally, the analysis of meaning in general. *Keywords:* Meaning of life, existential vacuum, Delinquent Adolescents. | The aim of this research was to compare the meaning of life's intensity in offender teenagers in Medellin city, Colombia. | The methodology had a mixed descriptive design. The sample consisted of 44 young offenders who answered the Purpose In Life Test (PIL), developed by Crumbaugh and Maholick, consisting of one party to collect quantitative and two other parties to collect qualitative information. In the quantitative part, (part A), the PIL test determines the degree of intensity of the meaning of life. Parts B and C are qualitative | Manrique (2011) |
| **Theoretical Procedure** | | | | | |
| 2023 | Meaning and purpose in life, happiness, and life satisfaction in cancer: Systematic review with meta-analysis | *Objective:* To summarize current evidence on the potential cross-sectional and longitudinal association between meaning or purpose in life and subjective happiness or life satisfaction among cancer patients. *Methods:* A systematic review with meta-analysis and meta-regression was conducted. CINAHL (via EBSCOhost), Embase, PubMed, and PsycINFO (via ProQuest) were searched from inception to 31 December 2022. In addition, manual searches were performed. The risk of bias in cross-sectional and longitudinal studies was assessed using the Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies and the Quality in Prognosis Studies tool, respectively. Certainty in the evidence was judged using the Grading of Recommendations, Assessment, Development, and Evaluations approach. Meta-regressions and sensitivity analyses were performed to explore potential sources of heterogeneity. *Keywords*: cancer; happiness; life satisfaction; meaning in life; meta-analysis; purpose in life; spirituality; systematic review. | *Objective:* To summarize current evidence on the potential cross-sectional and longitudinal association between meaning or purpose in life and subjective happiness or life satisfaction among cancer patients. | A systematic review with meta-analysis and meta-regression | Martinez-Calderon et al. (2023) |



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| Empirical Procedure | | | | | |
|---|---|---|---|---|---|
| 2021 | The search for meaning in life through continuing and/or transforming the bond to a deceased spouse in late life. | Bereavement is an ongoing process of negotiation and meaning-making in which widows and widowers make sense of the changed nature of their relationship with their deceased spouse. We analyzed the experiences of meaning in life among older widows and widowers (aged 65+) using interpretative phenomenological analysis (IPA; see Smith et al. in Interpretative phenomenological analysis: Theory, method and research, Sage, 2009), with the following question: How do widows and widowers search for meaning through continuing and/or transforming their bond to their deceased spouse? The results demonstrate that some of the widowed persons sought meaning through rituals or various means of after-death communication with their deceased spouses. Other participants transformed the bond, for example, through clearing out their deceased spouse's belongings or a process of reconciliation…" *Keywords:* Bereavement · Meaning in life · Continuing bond · Transforming bond ·Widowhood · Late life | The aim of the paper is to answer the following question: How do widows and widowers search for meaning through continuing and/or transforming their bond to their deceased spouse? | "Conducting the semi-structured interviews in pairs also enabled researchers to scope interdisciplinary aspects within one interview meeting. A guide was prepared to serve the needs of the multidisciplinary research team (theology, nursing, social sciences, and law)... To grasp the experiences linked to bereavement and meaning seeking in the midst of the grieving process, we chose a method designed for this purpose, interpretative phenomenological analysis (IPA)." | Vähäkangas et al. (2021) |

Table 2 outlines the study plan containing the variables investigated, both quantitatively and qualitatively. As far as the quantitative analysis is concerned, a descriptive appraisal of the data was performed, indicating extent, distribution and emerging trends of the variables under consideration, namely: year of publication, theoretical approach, context and target audience. For this phase, visual resources were used such as: flow diagram, column graph, bar chart and pizza graph, using Microsoft Excel.

*Table 2: Variables Searched*

| Variables Searched | | |
|---|---|---|
| *Quantitative Analysis* | | |
| 1 | Year of publication | |
| 2 | Theoretical approach | |
| 3 | Context studies | |
| 4 | Target Audience | |
| *Qualitative Analysis* | | |
| 5 | Concepts | |
| 6 | Topics | 6.1 Theme of existential vacuum and meaning of life with religiosity and spirituality |
| | | 6.2 Themes of existential vacuum, meaning of life and their implications for Psychotherapy |

In the qualitative analysis phase, conceptual categories were employed through a cataloguing of the concepts emanating from the articles, and thematic categories containing thematic nuclei. For the conceptual category, tables were created containing the conceptual definitions extracted from the articles in the form of direct citations. In the thematic categories, meanwhile, tables were employed with a set of initials identifying the topics, and extracts from the articles were presented in the form of direct citations in order to illustrate the themes addressed. Complementarily, as a thematic subitem, the topics of religiosity and spirituality were presented as well as psychotherapy, related to *existential vacuum* and *meaning of life*. Both tables contain a description of the absolute and relative frequencies of each item, using Excel tools, with the aim of ascertaining contemporary trends. In addition, for the conceptual and thematic categories, the word cloud resource was employed, provided by the Prezi software application.

The variables displayed in Table 2 were considered relevant to this review as they are in line with the study proposal, namely to obtain an understanding of how contemporary psychology has handled existential questions. It is sought, therefore, to determine which approach has stood out over time, how it dealt with the issues and its efficiency and pertinence. Moreover, seeking to understand the extent of the phenomenon, considering the context in which it was investigated and the population that took part in the study, potentially unveiling a more unilateral or heterogeneous character in the studies conducted. In addition, how the concepts possess dynamic attributes, changing over time and with the setting, it has become essential to analyze the definitions and the enhancements effectuated in this period. Special



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attention is drawn to the constructs of *meaning of life* and *existential vacuum*, considering their lexical ambiguity and diversity of labels. The identification of categories enables a verification of the content emerging from these studies, potential patterns of meaning and trends present in terms of the treatment and destiny of these constructs.

## III. Results

Of the total of 264 articles selected and analyzed in the first phase of the study (Part 1, Alencar & Freitas, 2023), 191 were excluded in this second phase, all of which had a quantitative approach. This left a total of 73 articles, distributed as follows: 46 theoretical/ qualitative articles, 17 empirical/qualitative, 7 mixed-method and 3 interventions, as can be seen in Figure 1, with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram, adapted for this study.

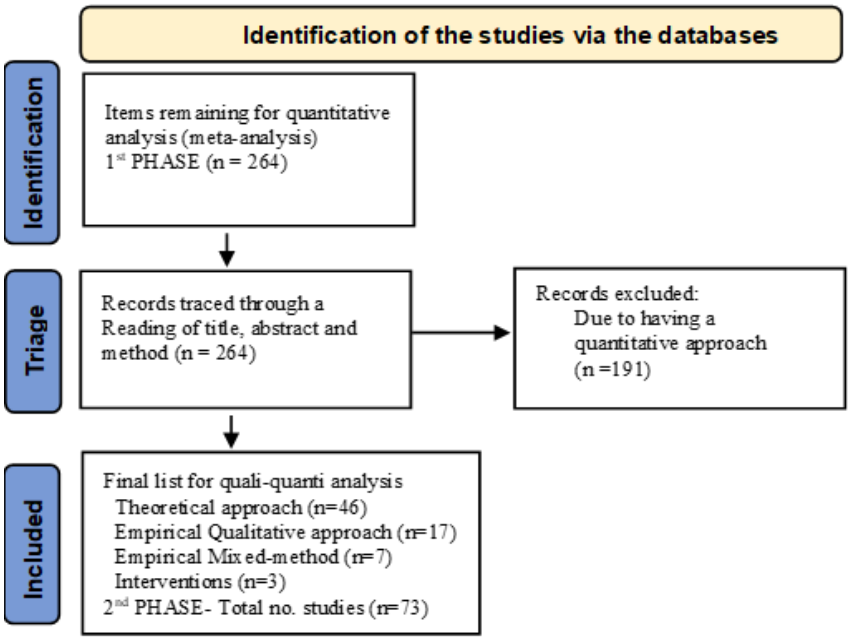



*Figure 1:* Flow Diagram – Procedures for Identification and Selection of Articles

*NB*. Model adapted from the PRISMA flow diagram. (Page et al., 2020).

*a) Year of Publication*

Figure 2 shows the evolution of the qualitative and mixed-method studies on this theme over the course of the period in question (2000-2023). 2021 was the highlight with 10 published articles, followed by 2018 with seven, and 2023 with six. It should be noted that the peak of publication occurred precisely during the Covid-19 pandemic.

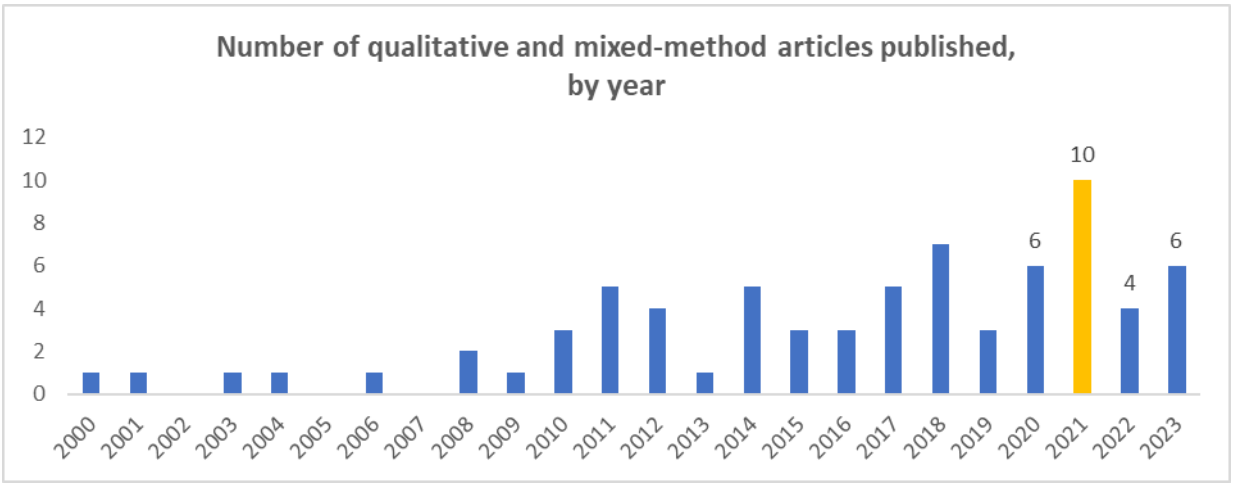



*Figure 2:* Distribution of global Publication of qualitative and mixed-method Articles, by year



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Figure 2a shows the distribution of the methodologies employed over the course of the 23 years (2000 to 2023), signaling a peak of production in 2021, with four theoretical articles, four empirical qualitative articles and one intervention. A greater constancy of theoretical publications can also be observed during this period as well as a concentration of empirical qualitative articles between 2019 and 2023, with an average of two articles a year.

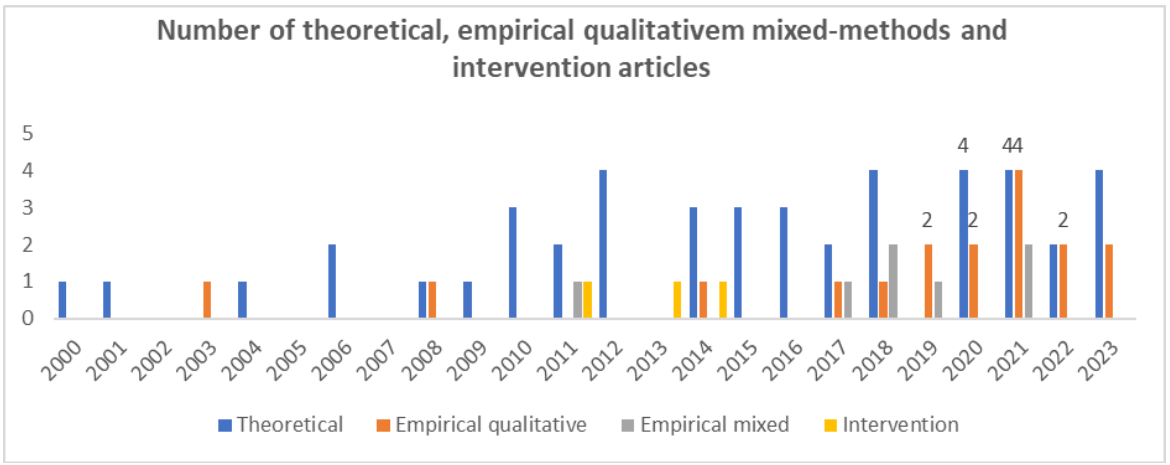



*Figure 2a:* Distribution of methodologies employed throughout the period of 23 years

*b) Theoretical Framework*

Regarding the theoretical framework adopted in studies about meaning of life and existential vacuum, logotherapy was predominant, accounting for 35% of the total number of articles. Existentialist approach and Phenomenology approach came next, representing 12% and 9% of studies, respectively. Then come Psychoanalysis and positive Psychology, each with 6% of the total, and humanistic approach and sociology come next, each with 4%. Then, Behavioral and Hermeneutic approaches come each with 3%. The remaining frameworks, such as the person-centered approach, interactional and genetic, ontology, systemic perspective, Jungian analytical, among others, are less frequent, with 1% of the total number of articles analyzed, as depicted in Figure 3.

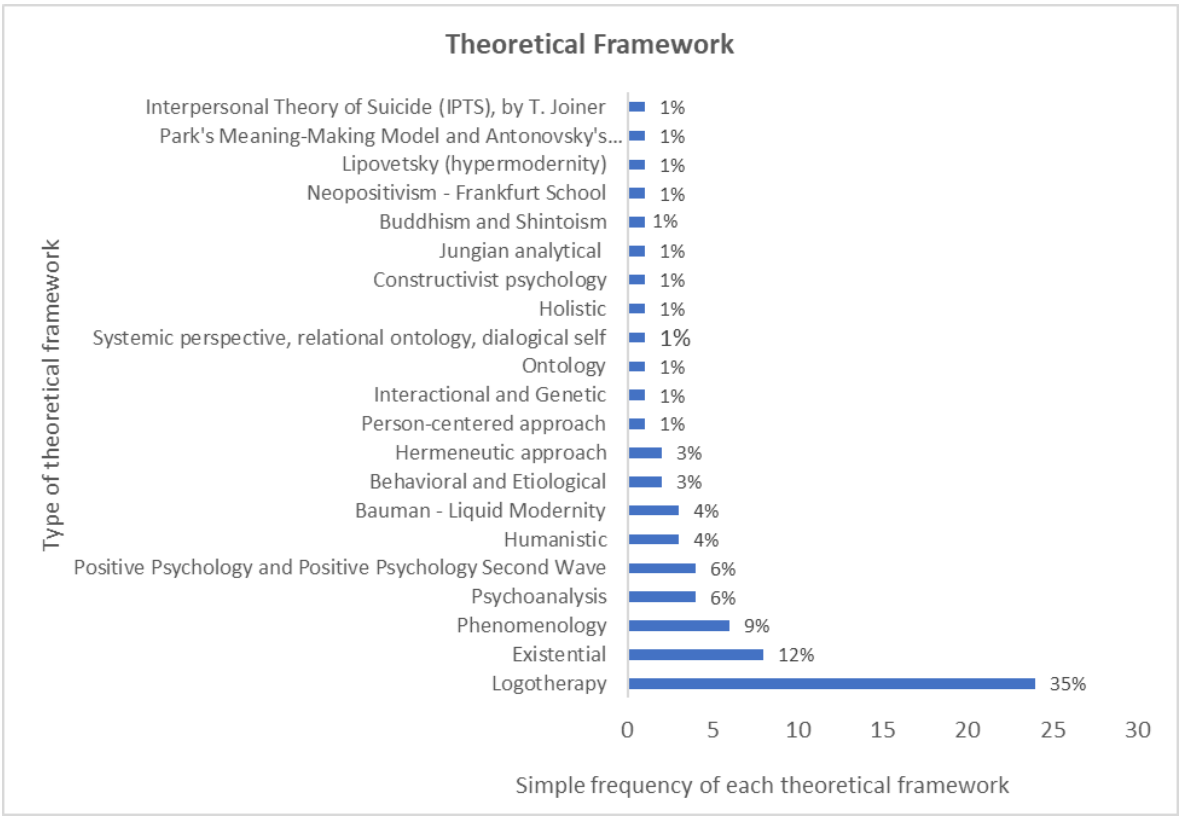



*Figure 3:* Graph of Frequency of Theoretical Framework Concepts Employed in the Articles



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*c) Concepts Employed in the Articles*

Tables 3 and 4 exhibit the principal conceptual categories that emerged from the selected articles. Table 3 is about the concept of meaning of life. Table 4 designates the concept of existential crisis. Each category is explained by one citation (column two), followed by the respective reference (column three). In addition, the absolute and relative frequencies (in relation to the total number of articles) are indicated in the columns Absolute Freq. and Relative Freq.

In view of the conceptual complexity and atomization surrounding the topic in question, for the designation of Table 3, the expression "meaning of life" was adopted rather than "meaning in life" considering that the former expression has a greater breadth of scope, encompassing existential meaning in a broader perspective.

*Table 3:* Conceptual Categories – Meaning of life

| Meaning of Life | | | | | | |
|---|---|---|---|---|---|---|
| | Categories | | Example | Reference | Absolute Freq. | Relative Freq. |
| 1 | Meaning of life | | " (...) the meaning of life, is something broader and, for this reason, it can only be understood when life fully unfolds, from conception to death." (p.1044) | Aquino, T. A. A. de. (2021). | 36 | 52% |
| | Subcategories of Meaning of Life | 1.1 Search for meaning | "(...) is about the motivation or direction that individuals develop to obtain Meaning of life." (p.3) | Vieira, G. P., & Dias, A. C. G. (2021). | 4 | 6% |
| | | 1.2 Presence of meaning | "(...) is about understanding and identifying if individuals have a clear, defined meaning of life" (Steger et al., 2006). (p.3) | Vieira, G. P., & Dias, A. C. G. (2021). | 4 | 6% |
| | | 1.3 Desire for meaning | "(...)refers to human beings' genuine and prime motivation which, if frustrated, can lead to illness, which underpins a science of curing." (p.1043) | Aquino, T. A. A. de. (2021). | 10 | 14% |
| | | 1.4 Super-meaning | "(...) ultimate meaning, which encompasses the totality of existence. God as "the interlocutor of our most intimate soliloquies." (p.81) | Carrara, P. S. (2016). | 2 | 3% |
| | | 1.5 Need for meaning | "Human need to search for harmony seemingly lost." (p.186) | Amatuzzi, Mauro Martins. (1999). | 1 | 1.5% |
| 2 | Meaning in Life | | "(...) relates to the meaning of the moment, as, latent in each situation, the human being may reveal a value (demands of the moment) through consciousness (*Gewissen*)." (p.1044) | Aquino, T. A. A. de. (2021). | 3 | 4% |
| 3 | Meaning of the world | | "(...) the meaning of the world (cosmos) would be beyond rational comprehension, penetrating the perspective of faith or intuition in the unconditional meaning of life." (p.1044) | Aquino, T. A. A. de. (2021). | 1 | 1.5% |
| 4 | Desire for Pleasure | | " (...) deals with the hedonist conception that preaches the principal that all living beings move towards pleasurable experiences and distances themselves from painful ones." (p.306) | Aquino et al. (2014). | 3 | 4% |



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| | | | | | |
|---|---|---|---|---|---|
| 5 | Desire for Power | "conceives the desire for power (Nietzsche, 1996) as a guiding principle of existence. For this author, the nature of the being comes from the effort to exercise larger amounts of power. Adler (1931/1998) via the human being in relation to the social milieu and derived form this his desire for superiority." (p. 306) | Aquino et al. (2014). | 3 | 4% |
| 6 | Construction of meaning of life (meaning-making model) | " the meaning of life construction model (Park & Folkman, 1997; Park, 2010, 2013) deals with the tools that people use to construct/ structure MoL when faced with stressful situations capable of causing a breach in the cohesion and meaning of their lives, not proposing a new definition for the concept." | Vieira & Dias, (2021). | 1 | 1.5% |
| 7 | Maintenance of meaning of life (meaning-maintaining model) | "The meaning of life maintenance model proposed by Heine et al. (2006) assumes that people construct the meaning of their existence based on their expectations and learning about relations established with the environment, in other words, the world has meaning as long as it meets the expectations/beliefs that the individual nurtures about it (Heine et al., 2006; Proulx, 2013; Proulx & Inzlicht, 2012; Proulx, T., & Inzlicht, M. (2012). | Vieira & Dias, (2021). | 1 | 1.5% |
| 8 | Terror management theory | "is not a theory about MoL as such, however it deals with the way in which people cope with the constant and imminent awareness of their own mortality, contributing to an understanding of MoL (Greenberg et al., 1986; Greenberg, J., Pyszczynski, T., & Solomon, S. (1986)." | Vieira & Dias, (2021). | 1 | 1.5% |
| | | | Total | 69 | 100% |

The table above sets out eight variations in denomination found in the articles with regard to the concept of meaning of life: meaning of life, meaning in life, meaning of world, desire for pleasure, desire for power, meaning-making, meaning-maintenance and terror management theory. The first two vary in terms of semantics, the former being more extensive, related to existence and totality, while the latter is more uncertain, related to moments in life. On the other hand, the last two terminologies possess a more immanent acceptation than the first two, with desire for pleasure being an expression coined by psychoanalyst Sigmund Freud (1929/1996), and desire for power coming from the lexicon of Alfred Adler (1932/2010), or desire for power, as coined by philosopher Nietzsche (1872/2019). In addition, four subcategories of the main construct emerged that designate different stages of meaning of life, namely: desire for meaning, necessity, search, presence and super-meaning, the ultimate *telos* of the construct in question. An analysis of the citations extracted from the articles, and reproduced in column two to illustrate the definition relating to each expression, helps to underline one of the findings of this meta-analysis: the most frequently used expression by the authors was "meaning of life", with 52% of the results, followed by "desire for meaning", with 14%. The frequency of the other expressions was broadly similar, ranging from 1.5% to 6%.

Table 4 exhibits the conceptual categorization of the expression "crisis of meaning". As with Table 3, presented above, this term was employed to designate the aforementioned table as it was more comprehensive than those that focus on "absence" of meaning, which varies in degree and frequency throughout the texts read. Thus, the term "crisis" appeared to be more dynamic doing greater justice to the content of the group of texts analyzed.



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*Table 4:* Conceptual Categories – Crisis of Meaning

| Crisis of Meaning | | | | | |
|---|---|---|---|---|---|
| Categories | | Example | Reference | Absolute Freq. | Relative Freq. |
| 1 | Existential void | "(...) Thus, the existential vacuum, the sensation or anxiety that there is still something to be done and that nothing, that no action fully realizes man, is something intrinsic to his being. It is part of his *actus essendi*, his act of being and his act of existing." (p.392) | Pichler (2016). | 14 | 25% |
| 2 | Anxiety | " (...) we may understand anxiety to be a symptom of the very human condition of the creature, reflecting on the condition of the frailty of his existence, thereby understanding "the self experience of the I as the infinite spirit even though, simultaneously connected to finitude, temporality, corporeality" (Garaventa, 2011, p.11)" (p.15) | Rosa & Pulino, (2020). | 5 | 9% |
| 3 | Despair | (…) despair is a phenomenon of the spirit, something related to the eternal, and which, consequently, contains something eternal in its dialectics" (p.45)." "(...)Despair, contrary to what may be imagined, is not rare but rather "a completely universal phenomenon" (Kierkegaard, 2008, p.47). Despair does not live in those who recognize they are desperate, therefore. Even in those who do not recognize their despair, they are still desperate as it is inherent to the human condition." (p.11) | Rosa & Pulino, (2020). | 1 | 2% |
| 4 | Existential loneliness | "(...) Existential loneliness may be understood as the immediate awareness of being fundamentally separated from other people and from the universe, principally through the experience of himself as mortal, or particularly when in crisis, experiencing not being treated (communicated with) at a profound human level (in other words, authentic), and usually experiencing, therefore, negative feelings, i.e. emotions, moods, such as sadness, hopelessness, regret, lack of meaning or anxiety." (p.5) | Bolmsjö et al. (2018). | 13 | 23% |
| 5 | Demoralization | "Introduced for the first time in psychiatric literature by J. Frank, demoralization was defined as a specific set of symptoms arising from a persistent failure to deal with internal or external stress that a person and those close to that person expect he/she is capable of coping with. Its distinctive characteristics, not all of which need to be present in a single individual, include feelings of impotence, isolation and despair." (p.2 of 12) | Costanza et al. (2020). | 2 | 4% |
| 6 | Existential crisis | "Existential crisis is a phenomenon characterized by the intensification of ruminant thoughts related to existence and inexistence (LEE 2008)." (p.231) | Elekes (2017). | 1 | 2% |
| 7 | Profound boredom | "(...) profound boredom occupies the philosophical reflections of Heidegger as an affective hue characteristic of the culture in the world of technique." (p.931) | Dutra (2012). | 2 | 4% |



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| | | | | | |
|---|---|---|---|---|---|
| 8 | Pathologies of emptiness | Pathologies of emptiness, unlike the qualifying categories of nosology, consist of ways of living typical of contemporary culture, heavily demarcated by a loss of imaginative capacity (pre-symbolic), which casts the individual into a kind of emptying of meaning and sensitivity, in which what prevails is only the void which cannot even finds words or images capable of expressing it. "(...) contemporary forms of falling sick, understood as different manifestations of the lack of existential meaning." (p.170) | Ratto (2015). | 1 | 2% |
| 9 | Existential frustration | "Victor Frankl diagnosed post-modern man's psychological malaise as existential frustration." (p.66) | Carrara (2016). | 4 | 7% |
| 10 | Absence of meaning | "Absence of Meaning in Life - Yalom (1980) states that there is no meaning inherent to life, beyond the meaning, objectives and values that a person creates for himself. Thus, the experience of living a full life with purpose assumes a strong narrative vision of himself and a sense of direction (Frankl, 1959)." (p.5) | Liu et al. (2023) | 1 | 2% |
| 11 | Existential boredom | "Moreover, the difference should be stressed between the boredom of common sense – the situational – and existential boredom. The former is the state of being bored and blaming another for the difficulty of action. The latter is being bored and is related to existential vacuum." (p.164) | Appel-Silva et al. (2006). | 1 | 2% |
| 12 | Existential vacuum | "The sensation of absence of meaning and emptiness, denominated "existential vacuum" by Frankl, appears frequently in consulting rooms. For Frankl (1989, p. 26) "there are patients who go to see the psychiatrist because they have doubts about the meaning of life or because they already despaired of finding, in general, a meaning for life". (p.156) | Silveira et al. (2015). | 2 | 4% |
| 13 | Noogenic neurosis | "The existential vacuum does not fit the concept of psychogenic neurosis. It does not have its origins in intrapsychic problems. Nor does it present as an effect of neurosis. Victor Frankl characterizes it as noogenic neurosis, different from what classic psychoanalysis defines as neurosis. It arises out of moral or ethical problems about existential issues." (p.70) | Carrara, P. S. (2016). | 4 | 7% |
| 14 | Fertile void | "Van Dusen (1977) presents comparisons between Western and Oriental cultures, stating that, in the Orient, the void is comfortable and familiar, capable of having a maximum value in itself and making productivity possible, in contrast with the Western world in which the empty space means wastefulness – unless it is filled with actions, since it is very common in Western society to also fill these spaces with objects or even allow the actions of the objects fill the spaces of individuals. The author goes on to say: "The void is the center and the heart of therapeutic change" (p. 165) | Appel-Silva et al. (2006). | 1 | 2% |
| 15 | Void | "The poet, in his eternal quest for the ideal object, suggests an encounter with the void. We are talking about an emptiness that can be creative, expansive and transforming." (p.192) | Carneiro & Abritta (2008). | 1 | 2% |
| 16 | Unsupported loneliness | "(...) Vieira defines unprotected loneliness as "that which makes me feel I'm not alone, though abandoned, scared, phobic, empty and ready to collapse into the dimension of human, psychic survival (...)" (p.193) | Carneiro & Abritta (2008). | 1 | 2% |



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| | | | | | |
|---|---|---|---|---|---|
| 17 | Situational boredom | "is the state of being bored and blaming another for the difficulty of action." | Fukumitsu et al. (2012). | 1 | 2% |
| 18 | Anthropological vacuum | "(...) it becomes necessary to ascertain two components: the anthropological and the social. The anthropological component is the loss of meaning, in other words, the things that filled the day-to-day of individuals start crumbling and life begins to dismantle." | Fukumitsu et al. (2012). | 1 | 2% |
| 19 | Social vacuum | "Meanwhile, the sociological component of the problem of the emptiness of human life is expressed through the stripping away of interpersonal relationships, which causes personal ties between men to disappear. This emptying provokes the exclusion of the other and further exacerbates the individualism preached by contemporary society (Giovanetti, 2002)." | Fukumitsu et al. (2012). | 1 | 2% |
| | | | Total | 57 | 100% |

The above table presents the variations in terminology used by authors to refer to the concept of crisis of meaning. A total of 19 variations were noted that refer to how the different degrees or situations where symptoms of vacuum or of a threat to the meaning of life are experienced, e.g. feelings of anxiety, despair, loneliness, frustration, boredom and demoralization (as a group of negative feelings); existential vacuum or void, and absence; pathological conditions such as crisis, neurosis and pathologies in general. In addition, two expressions were noted that were different from the rest when referring to vacuum, with a positive meaning, such as fertile vacuum and void, per se. These acceptations of vacuum/void have a positive, driving significance, unlike the other semantics, which demonstrate negative tendencies and possess a more demotivating significance. As with the previous table, a citation was presented for each expression extracted directly from the articles with the aim of illustration, followed by the respective references.

It was observed that the most frequently employed terms were "existential void", with a relative frequency of 25% and "existential loneliness", with 23%. In second place come the terms "anxiety", and "existential frustration" / "noogenic neurosis", with a frequency of 9% and 7%, respectively. The remaining terms ranged from 2% to 4%. In addition, in a comparison of both the above tables it was found that the concept of meaning of life, with 69 references, was more frequently cited in the articles than the concept of existential vacuum, with 57 mentions.

Figure 4, a word cloud (as devised by Prezi), represents a visual resource to provide a better perception of the impact of the concept of meaning of life than the other concepts employed in the articles. The predominance of this concept can be clearly seen as the most targeted construct throughout the 23 years of studies in Psychology, that were traced in the present review. The morphological configuration of this visual resource is the product of statistical data obtained for each expression appearing in the image, showing that the highest absolute frequency belonged to the concept of meaning of life. In second place, just below the central point, can be found the expressions *existential vacuum* and *existential loneliness*, indicating two distinct designations for the idea of crisis of meaning, which are employed in equal measure in the articles. This shows that, while there is just one example of the use of the expression *meaning of life*, the term *existential vacuum* is revealed in different forms, showing that the definition and comprehension is more complex, The composition of this visual resource – the word cloud – follows the rule of thirds, heavily used by painters and photographers when conceiving their images, where the object in focus, in the case of the expression *meaning of life*, is located at the intersection of imaginary lines. This rule derives from the areal ratio, a mathematical pattern found in nature that was incorporated into the graphic arts, among others.



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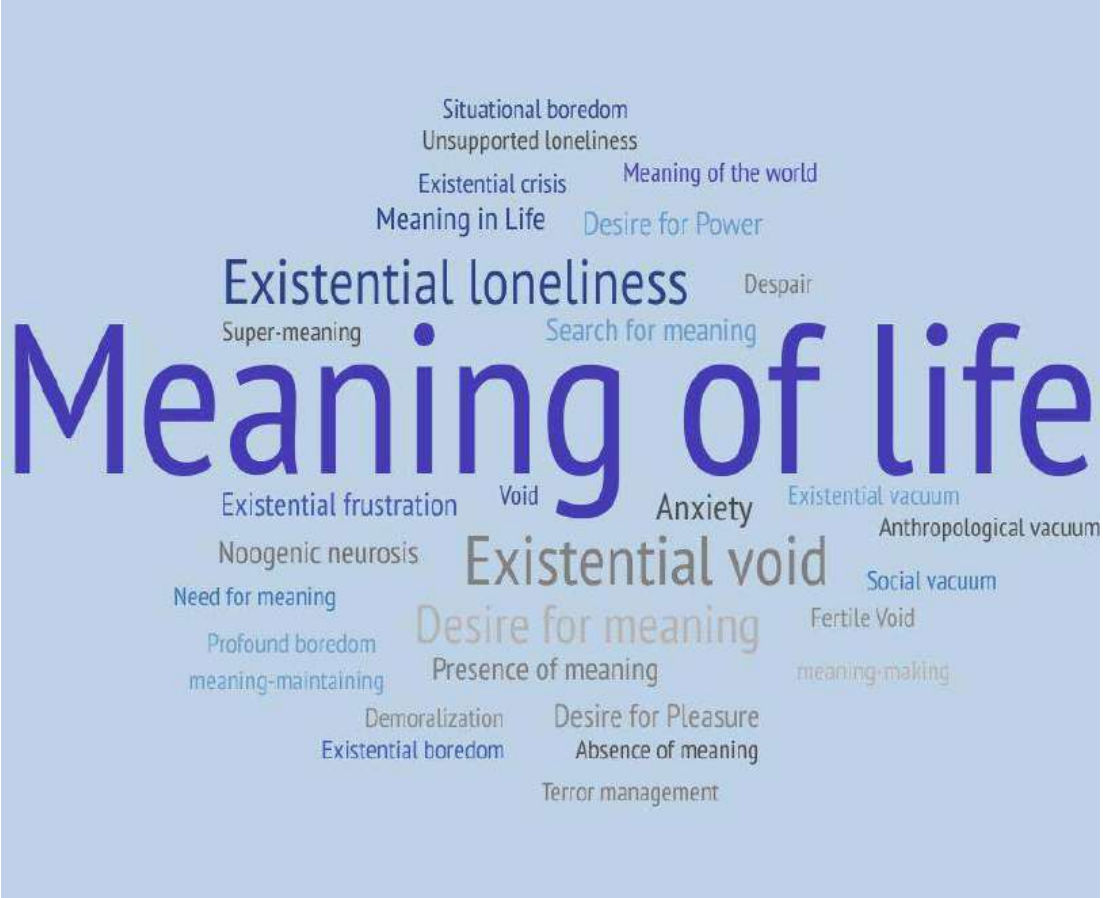



*Figure 4:* Word cloud – meaning of life

*d) Context in which the Study was Conducted*

In relation to the contexts addressed, in 28% of the articles this category does not apply as they are articles of a theoretical nature, in which no specific population is studied, for instance: theoretical/ conceptual studies that analyze the concept of meaning of life, its evolution and contributions from philosophy and a variety of approaches in psychology (*e.g.*, Vieira & Dias, 2021); an article which presents a conceptual map in order to understand logotherapy and the concept of meaning of life (Santos, 2016); meta-analysis analyzing the relationship between constructs like *presence of meaning* and *search for meaning* (*e.g.*, Li et al., 2021); literature reviews that analyze the principal works of Viktor Frankl (*e.g.*, Roehe, 2006), and reviews that analyze the concept of *existential loneliness* (*e.g.*, Bolmsjö, 2018). Studies involving healthcare in general represent 22% of all included articles. The generic category *contemporaneity* accounts for 12% of results. Then come the following domains: Psychotherapy with 11% of articles; education 8%; domiciliary 7%; legal, nursing homes and Brazil correspond to 3% each. Other contexts such as Africa, streets and wars are the least frequent at around 1%. (Figure 5a).

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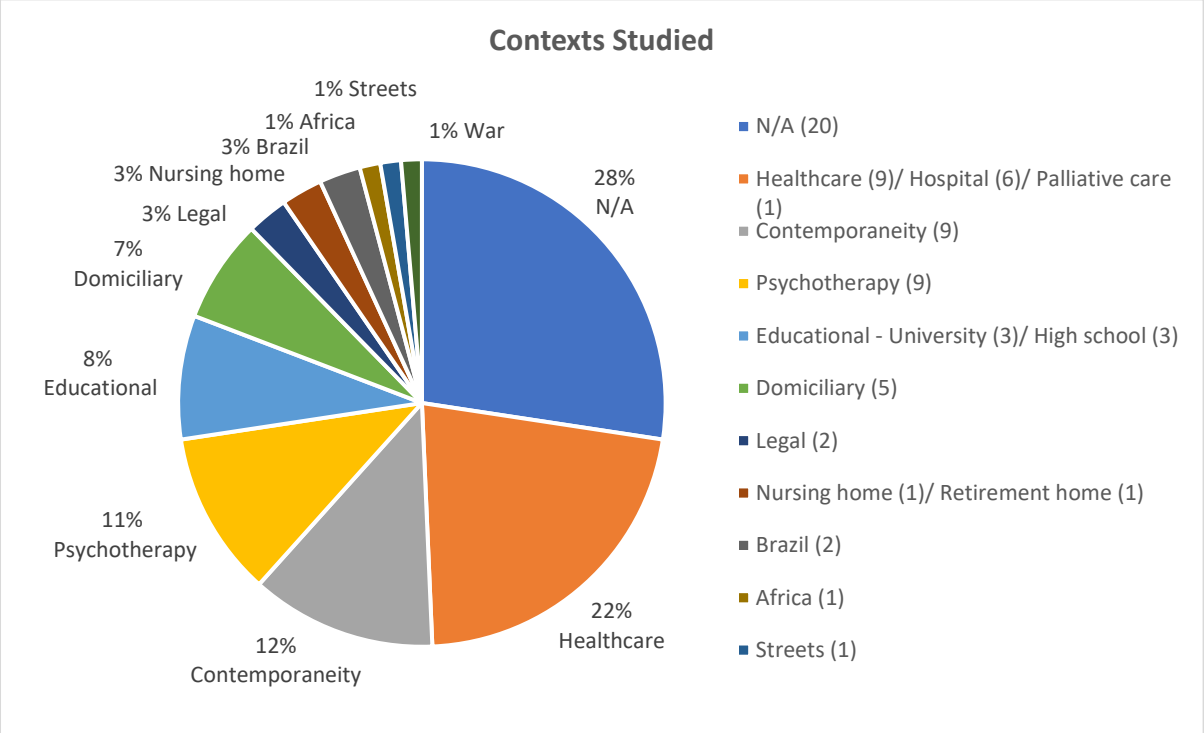



*Figure 5a:* Graph of Contexts Studied

The above graph is a representation of the contexts studied, demonstrating a large diversity in studies (11 variations) involving the theme of *existential vacuum* and *meaning of life*. It is clear that the context of Healthcare, including both hospital and palliative care, was the most explored, with 22% of the results (16 articles in total). The generic category entitled Contemporaneity was also well represented with 12% (10 articles), as was the context of Psychotherapy, with 11% (9 articles), indicating a preoccupation in present-day studies with man's state of mental health in this era.

*e) Population Studied*

As far as the target audience of the studies is concerned, the Not Applicable category applied to 29% of articles selected. The generic category we have called *contemporary man* has the highest target audience level, at 12%. Next come patients with cancer and the elderly, each with 7%; Psychotherapists, with 5%, and widows/widowers and students, each with 4%. The other categories, such as: people in palliative care, teachers, adult offenders, health professionals, prostitutes, Brazilians and adults command a smaller representation, with 33% in total. The Others category includes immigrants, refugees, spouses, people with intellectual disability, patients with HIV, people with borderline personality disorder, Africans and people with Hikikomori, severe social withdrawal. (Figure 5b).



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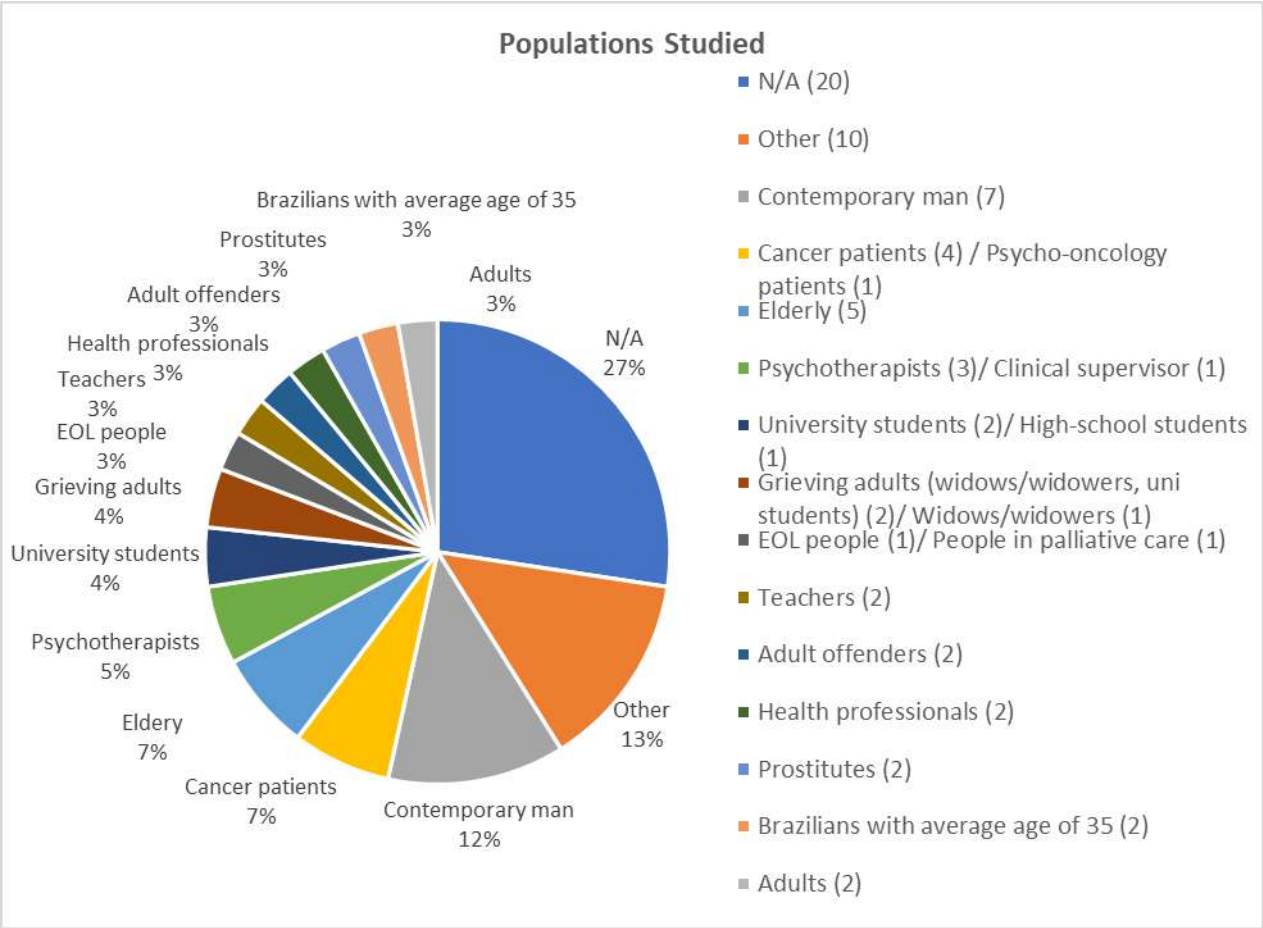



*Figure 5b:* Graph of Populations Studied

The above graph represents the number of populations studied, as found in the selected articles. It can be seen that the theme of *existential vacuum* and *meaning of life* involve a diversity of populations, comprising 19 different types of target audience. The most prominent category was Contemporary Man (12%, and 7 articles), indicating concern about the profile of present-day man. This category was followed by cancer patients and the elderly, with identical results (7%, each with 5 studies). Both these populations bring to the fore the relationship between finitude and meaning of life, as those people in a critical state of health may present with greater end-of-life perception, similarly for the elderly, as they are passing through one of the last stages of the life cycle, and may perceive with a greater degree of finitude.

*f) Topics Covered in the Articles*

Another categorization resulting from the qualitative analysis was the grouping of the themes appearing in the articles. After recording and analyzing these themes, a coding was devised in order to group articles with similar subject matter. These codings and categories are displayed in Table 5, in respect of the construct of *meaning of life*, and Table 6, regarding the construct of *crisis of meaning*. These tables also exhibit examples extracted in the form of direct citations[1] from the selected articles, and the relative and absolute frequencies are determined.

Accordingly, seven categories were classified as follows: "1-Psyc" (psychotherapy), comprising articles that report on studies into psychotherapy and meaning of life, encompassing psychotherapeutic approaches focusing on the meaning of life, such as logotherapy, positive psychology and existential therapies. This classification also includes articles relating to clinical practice centered around the construct of *meaning of life* and articles that include psychotherapeutic strategies for the treatment of psychic suffering, with *absence of meaning*.

[1] Note that the citations in the present article are unofficial translations to English of the original texts, and the articles not produced initially in the Portuguese language were translated first into Portuguese before being translated into English.



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A second category was coded and denominated "2-Sour" (sources), showing articles exploring sources of *meaning of life*, such as: human relations, intersubjective relations, spirituality, religious experience, awareness of finitude, literary expressions and art. This category also includes an article that analyzes the reasons for existential vacuum.

The third category was designated "3-Efft" (effects), which encompasses articles that study the effects and outcomes of the meaning of life, such as satisfaction with life, subjective wellbeing and improvement in mental health. The same classification also comprised articles that mention the effects resulting from *crisis of meaning*, like consumerism, suicide, borderline personality disorder, etc.

The fourth category was labeled "4-Lexp" (lived experience) which includes articles that describe lived experiences of meaning of life in diverse populations, such as family members of critically ill patients, offenders, mothers with children in the ICU, etc. This category also includes articles that described lived experiences of existential loneliness in the elderly, immigrants and people with partners in end-of-life situations.

The fifth category was entitled "5-Inst" (instruments) and includes articles that study theoretical bases for the development of measurement instruments or literary reviews of psychometric instruments used to measure *meaning of life*.

The sixth category was given the name "6-Conc" (concept), including articles focusing on analysis, definition and conceptual evolution, focusing on both the side of presence, with meaning of life, and also the side of absence, in other words, existential vacuum.

The seventh category was denominated "7-Copi" (coping), designating coping with existential vacuum. It comprises articles that explore strategies such as educational resources, support from family pets, literature and poetry, to deal with the crisis of existence. This differs from the category of Psychotherapy inasmuch as it explores existential vacuum coping strategies deriving from other non-psychotherapeutic sources.

*Table 5:* Thematic Categories Employing the Notion of Meaning of Life

| Thematic Categories – Meaning of Life | | | | | | |
|---|---|---|---|---|---|---|
| No. | Code | Category | Example | Reference | Absolute freq. | Relative freq. |
| 1 | PSYC | Psycho-therapy and meaning of life | *Example 1:* "(...)Frankl proposed as his central theme for an understanding of the human being and the consequent therapeutic intervention, the question of the meaning of life. In his way of thinking, the desire for meaning (logos) is man's main motivation. Hence the name of his theory: Logotherapy." (p.311) | Roehe (2006) | 16 | 35% |
| | | | *Example 2:* "This article describes six principles of research to revitalize human psychology and make an impact on conventional psychology based on Gergen (2016) and DeRobertis (2016). He shows how Wong's study and therapy centered around meaning are an extension of humanistic/ existential psychology and indirectly impacted conventional psychology by following six principles. Moreover, it also shows how the in Wong's second-wave, positive psychology (2011) is capable of furnishing a new humanistic vision to directly impact conventional psychology." (p.2) | Santos (2016) | | |
| 2 | SOUR | Source of meaning of life | *Example 1:* "(...) therefore, the aim of this study was to explore empirically the relative importance of various types of relationships as the sources of meaning and, in particular, why relationships are important to common people in relatively collectivist African contexts." (p.1) | Wissing et al. (2020) | 9 | 20% |
| | | | *Example 2:* "(...) child prostitution can be understood as a mechanism capable of producing meaning to their life stories, representations of resistance and survival of a condition of loneliness and disgust." (p.22) | Molina (2003) | | |



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| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | EFTT | Effects (outcome) of meaning of life | *Example 1:* "An approach directed towards resources that aim to identify positive psychological constructs has attracted recent interest in psycho-oncological studies. For example, having meaning and a purpose in life has been positively correlated with feelings of subjective happiness and satisfaction with life (in other words, the cognitive evaluation of life itself based on self-selected patterns) among people with cancer." | Martinez et al. (2011) | 12 | 26% |
| | | | *Example 2:* "This study identifies a strong link between the presence of meaning in life and greater subjective wellbeing in which, although the search for meaning in life may be adverse to subjective wellbeing, the outcome is small and conditional." (p.1) | Li et al. (2021) | | |
| 4 | LEXP | Experience of meaning of life | *Example 1:* "The proposed aim is to describe the meaning of life of a group of adolescents who recently entered an institution for resocialization or social reintegration, compared with a group of adolescents ready to leave the institution after undergoing a process of psychosocial intervention." (p.115) | Manrique Tisnés (2011) | 5 | 11% |
| | | | *Example 2:* "This study emerged out of a reflection about life experiences as a nursing professional. The aims were to understand the meaning of life for a family member of the critically ill patient, faced with the Tragic Triad: guilt, suffering and death; and to identify the content of their meaning of life, grounded on Existential Analysis." (p.547) | Braitt Lima & Oliveira (2008) | | |
| 5 | INST | Instruments for measuring Meaning of life | *Example 1:* "The "meaning of life" (MoL) construct has aroused the interest of clinicians who work in the area of psycho-oncology and end-of-life care. It has become a topic of scientific investigation in which diverse approaches of evaluation were applied. Aims: We are presenting a comprehensive, systematic review of the evaluation instruments that exist for Meaning of Life (MoL)." (p.2) | Brandstätte et al., (2012) | 2 | 4% |
| | | | *Example 2:* "To summarize, we are presenting an initial report on the development and validation of the GMRI, as a psychometrically promising tool for evaluating meaning created in the context of loss. We are hoping that other researchers will collaborate with us to improve and apply the measure, contributing to the growing bank of evidence on the role of reconstruction of meaning as a prominent topic in adaptation to grief." (p.71) | Gillies et al., (2015). | | |
| 6 | CONC | Analysis, definition and conceptual evolution | *Example 1:* "This article explores the paths to meaning of life as a construct over time, discussing the contributions that the concept received from diverse psychological theories, including the recent tripartite meaning of life model." (p.1) | Vieira & Dias (2021) | 2 | 4% |
| | | | *Example 2:* "This article aims to show the evolution of the concept and how studies have been dealing with the subject in the area of the development of aging adults." (p. 270) | Sommer-halder (2010) | | |
| | | | | Total | 46 | 100% |

The above table shows the different thematic categories found in articles addressing the concept of *meaning of life*. It was observed that the most studied topic was "Psychotherapy and meaning of life", with a relative frequency of 35%. In second place, with 26%, was the category "Effects/outcomes of meaning of life", followed by the topic "Sources of meaning of life", with 20%. Of less significance were the categories "Measurement instruments" and "Conceptual analyses", each with 4%.



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*Table 6:* Thematic Categories about Crisis of Meaning

| Thematic Categories - Crisis of Meaning | | | | | | |
|---|---|---|---|---|---|---|
| No. | Abbrev | Category | Example | Reference | Absolute Freq. | Relative Freq. |
| 1 | PSYC | Psycho-therapy and existential vacuum | *Example 1:* "The purpose of this communication is to reflect upon the psychic suffering that arises from working in the contemporary psychoanalytical clinic, and its implications, through the symptom whereby the symbolic is captured by the existential vacuum." (p.157) | Maggi (2018) | 2 | 7% |
| | | | *Example 2:* "The present study aimed to validate a proposal for the prevention of existential vacuum in a group of adolescent students. In this regard, the purpose was to promote a sense of awareness in terms of the search for meaning and, consequently, to prevent the sensation of a lack of meaning in life, based on the theory of logotherapy." (p.147) | Aquino et al. (2011) | | |
| 2 | SOUR | Reasons for existential vacuum | *Example 1:* "The aim of this text is to analyze some of the reasons for the human existential vacuum, as a bottomless pit, that is to say, no matter how much man looks to realize himself in all his dimensions, he will never achieve a full life, the total happiness he so craves, because there is always a need to look for new projects and fulfilment." (p.388) | Pichler (2016) | 1 | 4% |
| 3 | EFTT | Effects (outcome) of existential vacuum | *Example 1:* "Boredom may be understood as a discomfort that is conveying that the need for meaning is not being satisfied. To eliminate this discomfort, the symptoms must be attacked instead of attacking the disease itself, and we look for all kinds of substitute meanings." (p. 164) | Fukumitsu et al. (2012) | 8 | 30% |
| | | | *Example 2:* "The philosophical/psychological analysis of the consumerist disposition comes from the assumption that the unrestrained search for the acquisition of material things, regardless of qualitative hierarchization, springs from a subjective attempt to symbolically fill a level of existence deprived of internally vacuous substantiality." (p.27) | Bittencourt (2011) | | |
| 4 | LEXP | Experience of existential loneliness | *Example 1:* "However, as far as we know, there seems to be little understanding about being a migrant who experiences existential loneliness in old age, which contributes to an understanding of existential loneliness among older migrants. Therefore, the present study aims to explore the experience of existential loneliness in older migrants." (p.1184) | Olofsson et al., (2021) | 9 | 33% |
| | | | *Example 2:* "Therefore, empirical studies in general are needed and, in particular, studies that explore the experiences of older people who are closer to death. Moreover, the exploration of other types of perspectives, such as those of loved ones, may also generate a more profound understanding of the phenomenon. So, the aim of this study was to explore existential loneliness in the frail and elderly (>75 years old), as interpreted by their loved ones." (p.2 of 9) | Bolmsjö et al. (2018) | | |



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|---|---|---|---|---|---|---|
| 5 | CONC | Analysis, definition and conceptual evolution | *Example 1:* "To analyze the concept of existential loneliness (EL), we have created a general outline of the concept based on an in-depth reading of the literature. We then tested this general outline for internal coherence, identifying the key notions that together form a picture of the concept of EL, analyzing the interrelationships." (p.143) | Ettema et al. (2010) | 3 | 11% |
| | | | *Example 2:* "When we talk of the existential vacuum of Frankl (1991), it is appropriate for us to revert to the concept of despair in Kierkegaard (2008). For this Danish author, "(...) despair is a phenomenon of the spirit, something related to the eternal which, as a consequence, contains something eternal in its dialectics" (p.45). Kierkegaard's vision (2008) attracts attention with regard to the desperation to be something which is only possible based on the relationship of man with the eternal. Thus, the despair would be something that enables man to think of his Ego. Despair is the spark of the eternal and can only be thought of if we consider "man within the category of spirit" (Kierkegaard, 2008, p.46)." (p.11) | Rosa & Pulino (2020) | | |
| 6 | COPI | Coping with existential vacuum | *Example 1:* "(...) one aspect in the work and life of the Individual deserves a more analytical look: coping with the existential vacuum - the profound fear of the idea of death and the complete absence of intrinsic meaning that the natural world presents, included therein, for the poet, the human social world where he feels eternally out of place." (p.1) | Souza (2018) | 4 | 115% |
| | | | *Example 2:* "This article proposes to discuss the educational limits and possibilities for coping with the existential vacuum that ravages the contemporary human landscape, in the form of a culture of image." (p.161) | Ratto (2015) | | |
| | | | | Total | 27 | 100% |

The above table describes the results related to the thematic categories used in the articles to speak about the concept of existential vacuum. Note that the themes most explored were "Experiences of existential loneliness", with 33% of the results, followed by "Effects/outcomes of existential vacuum", with 30%. In third place came "Coping with the existential vacuum", with 15% and, in fourth place, "Conceptual analysis", with 11%. The categories "Psychotherapy and Existential vacuum" and "Reasons for the vacuum" were less productive, with 7% and 4% respectively, unlike the results presented in these same categories when focusing on *meaning of life*. Moreover, the topics found in the selected articles focused more on the aspect of the meaning of life, with an absolute frequency of 46 articles, versus 27 with emphasis on the emptiness of existence. Curiously, the topic of measurement tools for existential vacuum did not come up in the articles studied, which may be a subject for potential exploration.

Using an artistic resource and statistical bases, the word cloud displayed in Figure 6 more clearly shows the thematic prominence in the study and its proportionality in relation to the other topics. Accordingly, it is evident that there is a subtle emphasis on the topic of the effects of existential vacuum and meaning of life, followed by the theme of Psychotherapy.



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*Figure 5:* Word Cloud

g) *Articles which addressed the themes of existential vacuum, meaning of life and their implications for Psychotherapy*

Of the 73 articles selected, 18 dealt with the relationship of the constructs of *meaning of life* and *existential vacuum* with psychotherapy. Of these, 10 articles that were theoretical in nature (*e.g*., Medeiros et al., 2020; Nassif et al., 2010) and one practical (e.g. Aquino et al., 2011) entertained the implications of logotherapy for psychotherapy. These articles call into question the role of meaning of life in clinical practice, evidencing the importance of discussing this topic for whoever may be seeking therapy. Not only this, however, but they also argue in favor of incorporating and implementing the principles of logotherapy in the clinical supervision process (Nassif et al., 2010), highlighting the ideas of Viktor Frankl with regard to the therapeutic process. His ideas reflect on the relationship between therapist and patient, in which he signals the importance of the posture of the therapist who must be open to the patient's view of the world, the importance of the values of both the therapist and the individual receiving the therapy, and an understanding of the therapeutic process as a learning of responsibility (Rohe, 2006).

In addition, one of the practical articles sought to evaluate a proposal for intervention to prevent existential vacuum in adolescents (Aquino et al., 2011). Similarly, another article that was practical in nature discussed a model of psychotherapy based on meaning, created by William Breitbart, the North American psychiatrist, who took his inspiration from the theory of Frankl, to treat patients undergoing palliative care (Moncayo & Breitbart, 2014).

Articles using existential/humanistic approaches, two of which were theoretical (*e.g*. Vos et al., 2015; Wong, 2017) and 2 qualitative/empirical (*e.g*., Hill et al., 2017; Constanza et al., 2020) also discuss the importance of working with *meaning of life* in their therapies, a request which may come expressly from the clients themselves or even indirectly, with the topic going beyond the psychic suffering, such as depression, obsession and the like (Hill et al, 2017). In addition, there was also an attempt to study the results of different existential therapies in patient treatment, with the purpose of understanding the efficacy and pertinence of existential therapy (Vos et al, 2015; Constanza et al., 2022). Moreover, there was also discussion about the course of humanistic psychology with the idea of regaining its rightful place inside traditionalist psychology in order to offer significant contributions to both research and therapeutic interventions (Wong, 2017).

Articles using a psychoanalytical approach (Maggi, 2018) and constructivist approach (Vos et al.,2017) discussed, respectively, the challenges of the psychoanalytical clinic in treating the existential vacuum problem by evoking the resource of symbolic function, and discussion about the significance of meaning in clinical practice, unfolding as: roles of meaning in



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psychotherapy, its influence on the evolution and recuperation of the subject being therapized and on the required clinical skills.

*h) Articles that reported the theme of existential vacuum and meaning of life with religiosity and spirituality*

Of the selected articles, six introduced the topic of religiosity and spirituality related to *existential vacuum* and *meaning of life*. Of these, two theoretical articles (*e.g.,* Carrara, 2016; Rohe, 2006) and one mixed-method article (Noronha et al., 2018) discussed logotherapy as a theoretical framework for addressing the question of spirituality and meaning of life. These articles address the pertinence of Victor Frankl's perspective on the topic of mental health, religiosity and spirituality, pointing to this as a positive force in healthcare, surmounting the negative view of religion and psychology. In similar vein, in the mixed-method article (Noronha et al., 2018), it is concluded that *meaning of life* and spirituality contribute and provide support for an existential construction.

As for the articles with humanistic influences, an integrative review (Silva et al., 2020) based on positive psychology indicates the need for further investigation in this area, particularly with the production of psychometric instruments focusing on the peculiarities of Brazilian culture, and which accentuates the correlation of the theme with positive concepts such as quality of life and subjective vitality. Meanwhile, Barros et al. (2021), also using a framework of positive psychology, accentuated the correlation between religiosity and *meaning of life*, insofar as its absence might indicate dissatisfaction with life. In the article that introduces Eric Fromm's psychoanalysis with humanistic influences (Amatuzzi, 1999), the significance of religious experience in the search for meaning and lost harmony is addressed.

## IV. Discussion

The aim of the present review was to evaluate the literature published over the last 23 years in the area of Psychology, on the topic of *existential vacuum* and *meaning of life*, according to the content in articles of a qualitative and mixed-method nature. Based on an analysis of the 73 articles selected in the second phase, the chief discoveries of the study can be summarized as follows: a) there was an increasing trend of distribution of qualitative studies conducted between 2000 and 2023, with a production peak in 2021, a period marked by the Covid-19 pandemic; b) logotherapy stood out as the theoretical framework adopted in the studies, followed by phenomenology, bearing in mind that there is a diversity of frameworks, encompassing 21 types, as well as the fact that it reveals the interdisciplinary nature of the theme, with contributions from the areas of philosophy and sociology; c) in terms of the concepts most frequently employed, there is a greater emphasis on the *meaning of life* construct than on *existential vacuum*; d) in the contexts studied, in addition to the categories that are not applicable, healthcare and contemporaneity stand out; e) as the target audience, a diversity of populations can be observed, the standout being contemporary man and cancer patients; d) in the thematic categories, the study of the effects and consequences of *existential vacuum* and *meaning of life* stand out, as does the association between these constructs and psychotherapy, and, lastly f) the emergence of the variables *religiosity* and *spirituality*, related to the *meaning of life*.

Among these discoveries, the influence of constraints such as crises and wars is conspicuous, characterized as a point of inflection in the course of history, dictating new paths in the scientific milieu, with an accentuated need for existential responses. Consequently, our attention is drawn to the fact that the existential turning point highlights the topic of religiosity and spirituality, notably in a contemporary society that is more secular, unveiling a reappraisal of the topic. Also prominent is the huge interest in logotherapy, in the settings of healthcare (hospital, palliative care), home care, psychotherapy and legal assistance, unveiling an avid desire for meaning. This desire attested to the predominance of studies addressing this construct and not *existential vacuum*. In parallel, the emergence of phenomenology and approaches of an existential, humanist nature are somewhat surprising as they are making their mark in the scientific milieu, signaling a nascent concern of men of science with subjective questions, particularly in the Brazilian context. Lastly, the topic of psychotherapy is also garnering attention, gaining clearer, better defined dimensions, showcasing psychology as a science

Moreover, it can be seen that there is a diversity of approaches in Psychology (logotherapy, phenomenology, psychoanalysis, positive psychology, behavioral, Jungian analytical psychology, to name but a few) that are involved with the topic in question, highlighting the multiple aspects of this theme. These approaches have different conceptions about the understanding of the human being. Psychoanalytical, behavioral approaches stem from the idea that man is a driven being, whether through his unconscious (psychoanalysis), or through experience and conditioning (behavioral). On the other hand, existential humanist and phenomenological approaches stem from the principle that man is a being with freedom and autonomy, the author of his own choices. Despite the differences, they offer unique insights into existential questions.

Psychoanalysis understands the vacuum as a primordial void that will always be present as man is seen as a hiatus (Amaral, 2010). As for meaning, in this theory, it is the result of a search for pleasure (Freud, 1929/ 1996). With a different focus, the central theme of



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logotherapy is the idea that the primary motivation of the human being is desire for meaning. This meaning exists in the life of human beings and needs to be found, regardless of the circumstances (Frankl, 1969/1988). Phenomenology, meanwhile, focuses on the study of phenomena and their signification. Moreover, it is guided by the idea of the teleology of intentional experiences, that is to say, it relates to the aims of human actions and the giving of meaning (Husserl, 1935/2002). From a different perspective, positive psychology emerges as a more pragmatic approach, whose proposition is the quest to reinforce positive aspects and human virtues. Meaning of life, from this perspective, is conceived as a fundamental component in the acquisition of psychological wellbeing and mental health (Almeida et al., 2022).

Moreover, approaches derived from Zigmund Bauman's sociology of liquid modernity, as with others arising out of Gilles Lipovetsky's philosophy of Hypermodernity and the Neopositivism of the Frankfurt School, also staked their presence in the study of *existential vacuum* and *meaning of life*, confirming the topic's multidisciplinary nature. These approaches complement those in the area of psychology as, in addition to providing philosophical foundations and support, they also contribute to the understanding of collective experiences and the cultural values of social organization, after all, psychology also focuses on the social sphere. The Frankfurt School focused on the study of the cultural Industry, with a critique of the capitalist system (Duarte, 2007). By imposing a third power, the media of mass culture, this system contributes to the formation of a man whose senses regress and whose intellectual capacity is reduced, making him passive, permissive, resigned and molded by what the system offers. Lipovestky (2005) also criticizes the hedonistic, capitalist model, hyper-consumption, and adds the question of temporality, pointing out the contemporary obsession with time, evidencing the sense of urgency. Bauman (2004), meanwhile, furnishes the concept of liquid modernity and accentuates the trait of fragility and superficiality of contemporary human relationships. All of these approaches, in conjunction, contribute to a better understanding of the man of our time, and his search for meaning, by supplying contextual data and characterizations, as well as important psychic constraints to be considered in psychological evaluations, in psychodiagnosis, and in clinical treatment. After all, as Ortega y Gasset (1914/1966, p.322) put it, "I am me and my circumstance". In other words, they help to understand the human being, not only as a subject separated from the world, nor as a being composed of only biochemical and physiological attributes, but also a being-of-the-world who possesses a physical, psychic, transcendent, social, historical and cultural dimension.

According to the present systematic review, in conceptual terms, it was ascertained that the side of presence has been the most frequent target of studies, which was accentuated in the initial database search process. For instance, it was noted that, according to the search conducted on the SCOPUS database, 165 records were located relating to the meaning of life, versus 53 concerning existential vacuum. This proportion was also repeated in the other databases studied. By way of a curiosity, it should be mentioned that the records found based on the term "*meaning in life"* were so robust, with over one thousand results, that it was necessary to restrict the search by adding the descriptor "*mental health"*. These disparities in the number of findings for both expressions suggest that there is a contemporary tendency for studies to lean towards the side of presence and, therefore, meaning. As it is a construct that drives and motivates mental health, it emphasizes human potential, as evidenced in the emergence of positive psychology as an approach, which appears in 4th place in the Results section, behind logotherapy, existentialism and phenomenology. Complementarily, cultural reasons may also have an influence on this tendency, seeing that the scientific output in Brazil was very high regarding this theme, coming in second place with 21% of publications, behind the USA with 38% (Alencar & Freitas, 2023). Roberto DaMatta (1986), a Brazilian anthropologist, talks about *Brazilianness* in his work entitled "What to make of Brazil?", describing it as a way of being and perceiving reality. This social identity reveals the logic of sociability and the traits of a happy, affective, creative people, which uses strategies that involve good humor to deal with problems and adapt to adverse situations, accentuating a way of being that focuses on congeniality and the positive side of life, even in dramatic situations.

Thus, of the articles found in this second phase, it was possible to observe that there is greater emphasis on publications containing the terminology "meaning of life" or "meaning of/in life", registering 36 mentions in the articles, while "existential vacuum" amassed an absolute frequency of 14 mentions, as depicted in the Results section, in Tables 1 and 2. Adding together the term *meaning of life* and its derivatives, in total there were 66 mentions, against 54 references to the term *existential vacuum* and derivatives. In other words, it may be concluded that there is greater emphasis on investigations on the side of presence than on the side of absence, which signifies that, in the present day, there is a greater concern about the meaning of life and search for meaning than there is with existential vacuum.

Another aspect which came to the fore in the analysis of concepts was the fact that, in order to make reference to the construct *meaning of life*, there is greater unity and coherence of terminology, the only variation being the semantics of the expressions



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"meaning of life" and "meaning in life". Besides these, other expressions such as "desire for power", coined by philosopher Friedrich Nietzsche (1872/2019), and "desire for pleasure", introduced by Sigmund Freud (1929/1996), were also related to the construct. The expression *meaning of life* also unfolded into subcategories, capable of being understood as different stages of life that comprise: need for meaning, desire for meaning, search, presence and super-meaning.

Despite there being less uniformity in terms of the forms of expression of the construct *meaning of life* as opposed to the construct *existential vacuum*, it is of the utmost importance to mention that that there is a difficulty with regard to its conceptual definition due to an atomization that has taken place in modern times. There is a historical/conceptual evolution that goes from the Aristotelian conception of meaning, passing through the framework introduced by Viktor Frankl (1946/2019), and various outcomes with a multidimensional perspective in order to give full account of the concept, its dynamism and complexity, as well as emphasizing, obviously, its polysemic characteristics. Therefore, as it is a psychological construct of extreme relevance to mental health, it is also seen as a challenge for researchers, it being necessary to obtain further semantic, conceptual and cultural clarification, which will result in the performance of fresh studies, both theoretical and empirical.

On the other hand, the concept of existential vacuum presented a variety of terminology, with the identification of 16 variations, which can be classified as sentiments associated with the emptiness, such as: anxiety, despair, loneliness, frustration, boredom and demoralization; existential states: void, vacuum and absence; and pathologies: crises, neuroses and pathologies in general. Besides these cited frameworks, whose semantics focus on the negative aspect, two positive variations were identified, denominated vacuum, by itself, and fertile vacuum, as contributors to a state that drives human action. This variety of denominations reflects the difficulty in embracing, defining, unifying and universalizing the construct of *existential vacuum*, that is shown to have a polysemic, multidimensional and multi-categorical character that is difficult to understand and to measure. It also seems to be an abstruse concept, ineffable even, in scientific studies, given the diverse nomenclature. It is worth highlighting that the concept of *existential vacuum* was the predominant one in articles in relation to the other expressions found referring to the construct. It should also be pointed out, however, that this predominance evidently also reflected a bias with the descriptors used, as within it was the concept of "existential vacuum" but not that of "meaning-making". The latter, as has been seen, appeared little in the results of this survey. In fact, its study would merit a separate literature review, bringing up-to-date the one previously conducted by Park (2010) a little over a decade ago.

The contexts related to healthcare, contemporaneity, psychotherapy and education were the ones most targeted when studying the theme. Similarly, in terms of target audience, there was an emphasis on the categories of contemporary man, cancer patients and the elderly. When comparing this piece of data with the results obtained in the first part of the study, which registered adults, in general, and university students, in particular, as the target audience, it can be seen that, for the present topic, there is no specific population to be studied, it being such a matrix-based, universal theme that affects diversity and heterogeneity of populations. Highlighted in both phases was the concern with contemporary man as a subject convalescing from psychic suffering with crisis of meaning. This trait was also conspicuous in the theoretical frameworks of philosophy and sociology, pointing to a context that conditions a type of psychism of contemporary man with his consumerist, utilitarian tendencies, drained of meaning.

The classification into themes also reinforces the emphasis on the study of the concept of *meaning of life* in that, of the 73 articles selected in this phase, 46 focused on the study of the *meaning of life*, associated with other variables, while 27 focused on the study of *existential vacuum*. Accordingly, seven category types were classified, with a preponderance of articles emphasizing the topic of psychotherapy and *meaning of life*, followed by articles that explored the topic of the effects and outcomes of the meaning of life, such as satisfaction with life and subjective wellbeing. On the other hand, regarding the concept of *existential vacuum*, the emphasis was on articles that explored the topic of the experience of existential loneliness, understood to be the awareness of being alone and isolated in the world, experiencing the feeling of nothingness and with an intense perception of the inevitability of death. Thereafter frequently emerged the topic of the effects and outcomes of the *existential vacuum*, such as consumerism, boredom, borderline personality disorder and even suicide. Curiously, the thematic nucleus concerning instruments for measuring existential vacuum did not come up in the study, highlighting its complex, apophatic dimension in the sense of absence, of that which does not materialize, difficult to systematize. Thus, it is a topic with the potential for further study.

In the articles that articulated the variables *existential vacuum*, *meaning of life* and psychotherapy, the importance was stressed of including this topic in the therapeutic process, whether it be a direct request from the subject being therapized or as a matrix on which diverse layers of psychic suffering are revealed (Martínez & Flórez, 2015). The logotherapy approach

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also gained prominence by directly addressing the question of meaning, arguing for the incorporation of the principles of logotherapy in the clinical process (Nassif et al., 2010). Also highlighted is the efficacy of therapies with existentialist bases in the treatment of mental health, as well as how the rightful place of such approaches is being reclaimed in the scientific sphere of traditionalist psychology (Wong, 2017). Once again, with the emergence of the relationships between *existential vacuum*, *meaning of life*, spirituality and religiosity, the logotherapy approach is mentioned as an adequate and pertinent response. The Franklian theory soothes the relationship between spirituality and psychology and sees in this relationship a driving force of meaning. (Aquino, 2021).

It should be stressed that the present study is subject to potential limitations. In the first place, regarding the databases, some of them, for example PEPSIC and SCIELO may have contributed to the higher frequency of articles from Latin America, and in particular Brazil, insofar as the APA favored results for the USA and Canada. Similarly, restricting the number of languages to three may have exerted a bias in the results. If languages such as German and French were to be added, perhaps more articles from the European continent would have been forthcoming, reflecting different cultural trends and biases in their studies and the respective results.

However, even with the potential limitations, the information uncovered in this review demonstrates that there is a growing interest in approaches in psychology of an existential humanist nature, for studies of qualitative issues focusing on the lifeworld, for a better understanding of the subjectivity, intersubjectivity and peculiarities of each individual. They provide a fruitful field for inspiring naturistic studies that deal with the understanding of the phenomenon. They also provide a solid foundation for the development of fresh theories and epistemologies that may be efficient in dealing with the human psyche, and its application in clinical practice. This strongly favors the in-clinic therapeutic process, which deals directly with the peculiarities of each individual. Moreover, the *meaning of life* construct, as a motive force in mental health, deserves to be explored in all of its complexity in order to obtain greater clarity, both for the researchers and for clinical psychologists. In addition, they are also important for studies that aim to associate this construct with other variables, such as religiosity and spirituality, which have gained ground in the scientific world, even attracting the attention of other areas such as Medicine. Great concern over contemporary man is also evident given the growing number and complexity of forms of psychic suffering which have materialized in the form of symptoms of anxiety, suicidal ideation and depression, regarded as the malaise of the 21st century by the World Health Organization. In parallel, the construct of *existential vacuum* also revealed its complexity given the diversity of appellation evident in studies of a theoretical, conceptual nature, and its absence in the area of theoretical studies of psychometry which demand clear and precise definition of the phenomenon to be investigated. Moreover, the topic of psychotherapy in its connection with the notion of *meaning of life* has become more prominent, signaling the greater visibility of this field in the academic and social world, contributing to the creation of public policies that consider psychotherapeutic practice for the population and for a greater recognition of Psychology as a science. Also worthy of note is the higher proportion of studies on this topic in the years corresponding to or immediately subsequent to the Covid-19 pandemic.

## V. Final Considerations

The mapping and the broadening in issues of a qualitative nature performed in this second phase of the systematic review of the constructs *existential vacuum* and *meaning of life*, reinforced certain information that had already surfaced in the previous phase, namely:

- The Covid-19 pandemic as a Catalyst and Motive Force of Studies on the Theme of Existential Questions

As described above, the Covid-19 pandemic was another historical factor that brought into the discussion the dilemmas of human existence, particularly with questions of life and death, with an emphasis on the abyss of human finitude, accentuating the symptoms of fear, panic, anxiety and despair, faced with such a menacing scenario. It was a turning point that alerted the scientific world to the importance of existential vacuum and meaning of life which, in another era, had already been presaged by Edmund Husserl, when he signaled the danger of the course of modern science in considering only the objective aspects of existence. In this way, it may be concluded that, although the pandemic has certainly provided impetus to scientific studies on the topic, in qualitative studies on the meaning of life or existential vacuum, the pandemic conditions in themselves were not necessarily thematized. In fact, as evidenced in both articles (Part 1 and Part 2), the peak of production occurred precisely in 2021. However, it was noted that few studies of a qualitative or mixed-methods nature confirmed a relationship between *meaning of life* and the pandemic as the central axis of study. In other words, publications increased during this period but the content was not directly related to the pandemic. It did have repercussions for other topics related to *existential vacuum* and *meaning of life*, outside of the pandemic, as was observed in the themes that were explored in most depth: consequences of existential questions and psychotherapy and *meaning of life.* In addition, as qualitative studies require a longer time to come to



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fruition, it is possible that new articles thematizing the pandemic will be published in the next few years.

In fact, via the graph depicting the distribution of methodologies over the period of 23 years, exhibited in the Results section, a shift can be observed in the type of studies performed as a consequence of the pandemic: a greater constancy and concentration of articles on existential issues using the empirical qualitative method. The same graph also demonstrates a more homogeneous and linear configuration in the publication of theoretical articles on the theme throughout the period of study, while the empirical qualitative studies were concentrated around the period between 2019 and 2023 (with an average of two articles a year), with a peak of production occurring in 2021 (four articles), matching the performance of the theoretical articles. In terms of content studied, these same articles also reveal a trend: studies that addressed experiences of *meaning of life* and *existential vacuum*, with a particular focus on the expression *existential loneliness*. The experience of *meaning of life* was studied in widows and widowers (Vähäkanga et al, 2022), in people with intellectual disability (Garcia & Pereira, 2021) and mothers with children in the Neonatal Intensive Care Unit (NICU) (Silva et al., 2021). Similarly, the experience of existential loneliness was studied in various populations, for instance: elderly migrants (Olofsson et al, 2021); spouses with an end-of-life partner (Larsson at al., 2020) and elderly subjects in diverse states of health (Larsson et al., 2023; Carr & Fang, 2023; Edberg et al., 2023). This suggests that there is a tendency, nowadays, to look to understand the existential state of the human being, unfolding a scientific interest in subjectivity, a necessity underlying the sciences ever since the modern era, which was pinpointed by Husserl, some 88 years previously.

- The Emphasis on the Logotherapy Approach in Scientific Studies of a Qualitative and Mixed-Methods Nature

The emergence of logotherapy may be considered a historic landmark that symbolized and materialized a change of course in studies in psychology and psychotherapy, denoting the transition from objectivity to subjectivity. Logotherapy attracted attention back to a period in history when man started to be conceived, not only as a spectator of the world, but also as a subject who constructs his own reality and who possesses direction, a meaning. In this era, the dilemmas of human existence came to the fore, such as life and death, eternity and finitude, determinism and freedom, stressing the importance of teleology and surfacing concerns about existential issues, not just with instructive and causal issues. The aforementioned approach, which, in principle, was seen to be a possibility for complementing currents in psychology, was empowered and continues inspiring new epistemological constructions in psychology, as was determined in the psychotherapeutic model introduced by William Breitbart, the North American psychiatrist (Moncayo & Breitbart, 2014), as well as providing inspiration to other areas such as education. It must be stressed that logotherapy, by emphasizing the human being's noetic dimension, broadens the conception of man as a biopsychosocial being, as well as the conception of health, understanding it as something beyond the absence of illness and a complete state of wellbeing, also including the meaning of transcendence, of going back to something or someone. In this way, it bears witness to the dimension of spirituality, not pathologizing religious experience but rather seeing it potentially as something which promotes health.

As a means to illustrate how logotherapy influences and impacts the field of psychology, several studies have provided important data to corroborate this information. The study conducted by Aquino (2011) sets out a proposal for intervention to prevent existential vacuum in adolescents, through the application of the logotherapy theory, the requirement being the reintroduction of *logos* in group meetings. This study reveals how the theoretical logotherapy model is applicable to the concrete world, with an adaptation of philosophical language to narrative language. Thus, the study highlighted the efficacy of the proposition, giving youngsters the tools to build a new network of meaning. Moreover, it represents an advance on the clinical boundaries in the consulting office, expanding the strategy to a community experience. In parallel, in the study by Kroeff (2011), some views of logotherapy as psychotherapy are presented. Among Its characteristics, it is emphasized that logotherapy tends to be more prospective than retrospective because, by focusing on the meaning to be realized, It shifts Its attention more towards the future dimension. Similarly, it tends to be less introspective, stating that the meaning to be realized lies in the world and in encounters with others. Additionally, regarding the therapist's role in logotherapy sessions, it is specified that there is no specific protocol involving methodological rigidity, but there are certain stipulations. For example, the therapist should work to broaden the patient's field of vision and awareness of issues related to meaning and values. It is also recommended that he/she acts with a certain degree of improvisation and individualization, depending on the patient. The central point in the clinical practice focuses on the "I-Thou" relationship (Frankl, 1967, as cited by Kroeff, 2011, p.72), meaning the therapist-patient relationship, through the technique of Socratic Dialogue[2], inspired by Greek Antiquity. From a different

[2] Socratic dialogue is a therapeutic technique using questions to extract from the individual undergoing therapy their own ideas, what they think and what they believe. This technique was inspired by

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perspective, the article by Nassif et al. (2010) argues in favor of incorporating the principles of logotherapy into clinical supervision, regardless of the theoretical orientation of those involve. The author claims that logotherapy, which stems from principles of collaboration and which promotes proactive, adaptive attitudes, contributes to a better therapeutic encounter and clinical supervision.

- Emphasis on Studies on the Concept of *Meaning of Life*

*Meaning of life*, far more so than *existential vacuum*, has been the target of studies in psychology over the last 23 years, revealing a scientific kick-start that focused on the potentiality of the human being and his healthy aspects, and not just on psychopathologies, with *meaning of life* being a driver of mental health. It also showed itself to be more systematized and unified than the concept of *existential vacuum*, though it is still the butt of conceptual confusion, given its contemporary, multidimensional nature. Thus, it is a type of construct that merits deeper theoretical exploration for a more effective appropriation by researchers and clinical psychologists.

- Emergence of Themes: *Spirituality and Religiosity and its Correlation with Existential Constructs*

Meaning in life this was identified as a mediator between religiosity, spirituality and positive aspects like psychological wellbeing and satisfaction with life. This fact highlights the theme of spirituality and religiosity introducing two important variables for consideration in programs of intervention and the therapeutic process, as they are related to the *meaning of life* and satisfaction with life. Simultaneously, they are phenomena deriving from the symbolic construction of man's struggle with the world around him, in other words, phenomena which constitute culture, an important aspect to be considered in clinical practice, particularly Brazilian culture where there exists such a diversity of religious beliefs.

The article by Aquino (2021), entitled "Religion, spirituality and health: a logo-therapeutic perspective" introduces important insights into the incorporation of these perceptions into clinical practice by psychology professionals. In it, the author borrows Frankl's perspective of religiosity, considering it to be a healthy dimension of the human being, thereby decreeing a more harmonious posture between psychology and religion. In the contemporary setting, this posture appears to be more antagonistic than empathetic. In this way, in psychotherapy, when this issue is raised spontaneously, the therapist, rather than rejecting the topic for a variety of reasons, should welcome it as a healthy dimension, as it is considered a motive force for meaning, not to mention its potential for therapeutic success. Complementarily, the article also accentuates the attributes the therapist should assume faced with the emergence of the theme, such as exercising tolerance and patience (Frankl, 1992 cited by Aquino, 2021). Another significant contribution of logotherapy is the non-pathologization of the religious experience. It is the duty of the therapist to adopt an adequate posture so as not to belittle the experience, without repressing it, nor to impose dogma, just let it come out as a form of expression of human existence.

- *Effects and Implications of the Existential Vacuum and Meaning of Life*

Also prominent is the theme of the effects and implications of *existential vacuum* and *meaning of life* as constructs that trigger discomfort or psychic suffering and wellbeing, respectively. This emphasis shows that both constructs can be considered key elements for a better understanding of existential issues in clinical practice, and may be demotivating, as in the case of a vacuum, or a motivating force, as in the case of meaning, in mental health. Accordingly, they show themselves to be basal elements and may, therefore, come to be a required subject for study in the area of psychology, not only in terms of academic training but also in research studies and clinical practice.

- *Psychotherapy and its Relationship with Existential Questions*

The theme of psychotherapy is also highlighted, particularly approaches of an existential, phenomenological and humanist nature, showing it to be an area full of potential to offer strategies of prevention, care and coping with the crisis of meaning. Equally, it can also provide the stimulation for the meaning of life, through interventions and models that stimulate adaptability and human potential. It should be noted that there is still only a modest progress being made in studies with these approaches in the processing of qualitative data, particularly when compared to the outcome obtained in the previous article, where the studies, despite being existential and humanistic in nature, favored psychometric data. This shows that it is an area that deserves to be explored and studied, with great potential for satisfying the demands of man in his lifeworld, of his subjectivity, his peculiarities, as a way to rehumanize. This scientific attitude, unlike conventional attitudes, whose object of study is generic and universalizable man, shows itself to be a source of multiple possibilities to deal with the problems of man and society, through a separate path that complements rational understanding, that seeks intuitive rationality and the discourse of *mythos*. Therefore, the possibility of reinterpreting the development of new epistemologies in psychology which are seen to be sufficiently effective and creative to deal with existential questions in an

Socratic maieutics, which literally means giving birth to ideas (Reale, 1992).



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increasingly complex world in constant transformation, will be left to future studies.

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# Problems in Physics Aimed at Biology: A Contribution to the Initial Formation of the Teacher through the Complexity in Problems Proposed by Halliday Volume II

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*Keywords:* *complex problems; physics teaching; biology teacher formation.*

*GJHSS-H Classification:* *LCC Code: Q181*

PROBLEMSINPHYSICSAIMEDATBIOLOGYACONTRIBUTIONTOTHEINITIALFORMATIONOFTHETEACHERTHROUGHTHECOMPLEXITYINPROBLEMSPROPOSEDBYHALLIDAYVOLUMEII

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# Problems in Physics Aimed at Biology: A Contribution to the Initial Formation of the Teacher through the Complexity in Problems Proposed by Halliday Volume II

Graziele Aparecida Correa Ribeiro [α], Awdry Feisser Miquelin [σ], Ingrid Aline de Carvalho Ferrasa [ρ] & Adriane Salm [ω]

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*Keywords: complex problems; physics teaching; biology teacher formation.*

## I. Introduction

The fragmentation of knowledge permeates all levels of education and can be identified in several undergraduate courses within universities. According to Rosnay (2013), this fragmentation can be observed in disciplines worked in isolation in schools, and within universities by the plastered curriculum, which leads to what Morin (2005) calls the fragmentation of identified content, as boxed in disciplines.

It is known that the structure of Brazilian education favors the perpetuation of mechanistic teaching, as its curricular basis is guided by the division of curricular knowledge. In this sense, the contents are mostly presented to students in a disconnected and meaningless way, causing them not to present the ability to raise hypotheses, argue and develop skills to solve problems that arise in their daily lives. The fragility in the division of contents leads to what Rosnay (2013) calls the loss of the global vision of the systems, which causes, within Science, a rupture of the disciplines popularly known as "sisters".

Such division enhances the misunderstanding of complex relationships within Science, in the basic formation of students by subjects such as, for example, Physics, Chemistry, Mathematics and others. According to Rosnay (2013), the disciplinary contents presented in basic education are guided by the microscope and the telescope, forgetting about a much larger world, the macroscope.

This fragmentation is also observed within Universities. Scientific knowledge is presented in parts, and students are not able to reconnect knowledge and envision the whole. Let's take Rosnay's question as an example:

> Why is blood red and the leaves green? Certainly, when asked, students will remember hemoglobin for blood and chlorophyll for plants, but if we think of a more complex relationship, they may never have heard of the porphyrin molecules present in each other that lead to this pigmentation, red and green. From this relationship, one can still explore energy in the biosphere from the Sun, the production and burning of energy by human beings, solar photons, the manufacture of carbon dioxide and sugar, thus exploring various areas of knowledge, and bringing the complex context for the classroom, but unfortunately, we do not find in the vast majority of books approaches of this type, neither in the basic education nor in the undergraduate books. (ROSNAY, 2013, p 496).

This type of problem-situation presented, are those defended by Jonassen (1997), which we call complex problems or without structure that, in addition to mathematical calculation, there is a need to know: Chemistry, Biology, Physics, etc. And for the students this is an unknown process, as they are not used to solving problems with this structure, not having the visualization of the whole process, only its fragmented parts.

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The complexity arises then, in order to reconnect knowledge within the Teaching Institutions and Science. Morin (1994) argues that reconnecting knowledge that has been fragmented is of Paramount importance for the construction of knowledge and deconstruction of mechanistic teaching, and one of the paths that we can follow for this deconstruction is the use of the complex problems brought by Jonassen (1997).

This work presents an excerpt from a more in-depth master's dissertation on the subject, and arises from the interest of researchers in analyzing the complex relationships present in the textbook "Fundamentals of Physics" by HALLIDAY, David; RESNICK, Robert; WALKER, Jearl. The book has IV volumes, and in volume II, there are several complex problems that do not focus only on Physics and permeate several areas, including the area of Biology. And we find it pertinent, for the discussion of complex problems and the initial formation of the teacher, which is our central research concept, since it presents problems related to fluids, which are linked to daily situations experienced by students, such as blood pressure and blood flow. Corroborating the definition of problems without structure defended by Jonassen (1997).

The research was developed at a Public University of Paraná, in a discipline that aims to promote the relationship of complexity and scientific literacy in the initial formation of Biology teachers. The objective, then, is to analyze the relations of complexity that emerged in the process of solving complex problems and their influence on the learning process, starting from the following problem: What is the influence of complex problems in Physicsin the learning process of undergraduate Biology students?

This work seeks to establish a new approach around complex problems, using the Grounded Theory as a methodological basis, which enabled the codification and saturation of data, as well as the analysis of complexity, and its importance in the process of initial formation of future teachers of Biology.

*a) Fragmentation of knowledge*

The curriculum structure of Brazilian education refers to mechanistic teaching, perpetuating the reproduction of knowledge. For students, there is a view of small fractions of knowledge that are unrelated to each other. This corroborates with one of the main problems of articulation of knowledge, since the contents are demonstrated without a real meaning, this lack of significance contributes to the difficulty of seeing the complex.

In the course of the learning process, we take a long time to understand the formation processes to which we were submitted throughout our school experience. Furth (1974) when referring to this process explains that "understanding is much more than transmitting external information. Understanding means restructuring the situation and transforming a given problem in terms of our own balanced internal structure" (p. 263). Thus, because it is an education system, which is often fragmented, it becomes difficult to restructure and see the problem in several dimensions and senses.

This fact goes back to the linear view of Science, and to the fragmented knowledge, exposed in isolated boxes. According to Rosnay (2013) "fragmented teaching leads to the reduction of knowledge to a certain number of disconnected disciplines, isolated from each other, it is an approach of an encyclopedic nature" (p. 494). The author also defines this teaching as analytical, knowledge separated, which separates the student from the totality of knowledge.

As this research aims to study and identify the construction of knowledge during the teacher formation process, let us take as a basis the description of fragmentation within universities, brought by Behrens (2013, p.23), according to this author, "the higher education system favors the fragmentation of knowledge, dividing the whole, dividing the courses into separate disciplines, periods and series. Universities organized themselves by dividing Science into departments, and this robotic process restricted each professional to hyper-specialization, thus causing a departure from reality in all aspects".

According to this author, the teaching system of universities has its methodology based on the creation of specialists in certain disciplines. The problem arises when we adopt this simplistic view, we are delimiting our vision, and not discussing problems with real social potential. This fragmentation of teaching ends up culminating in the reproduction of knowledge, which is characterized by fragmentation, since the pedagogical practice is centered on aspects such as: reading, listening, memorizing and repeating.

*b) The complexity*

The complexity tries to account for the mutilated knowledge within Science, as mentioned by Morin (2005), it struggles against the process of fragmentation and incompleteness of concepts that have a direct link between them, but that due to the mechanization of knowledge ended up being lost.

In this sense, complexity is a means of reconnecting and articulating knowledge, while simplifying thinking separates these different aspects, or unifies them through a mutilating reduction. We know that the education system needs to unify knowledge, bringing contextualization and the possibility of overcoming the barriers that divide knowledge. Lück (1995) defends an integrated teaching, where the subjects support each other, where students "can exercise citizenship critically and when faced with a global view of the world be able to face the complex,

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broad and global problems of the current reality" (1995 p. 64).

For Morin (2005), we are beings with intrinsic contextualization characteristics. From birth we have an innate curiosity, and we seek to discover and understand situations that surround us. But according to Morin (2013), in educational institutions, we are imposed hyperspecialization (specialization in a single knowledge), and we lose this characteristic, and we start not to group the information in a set, but in a fragmented way.

Morin's thinking (2005) argues that the Sciences must be integrated so that we can unite them and understand the interactions they make with each other. In the case of this research, which is part of a dissertation, even though Physics is the "sister" of the Biology, as Natural Science, at various favorable moments, the two are studied as if they had no relationship.

*c) Complex problem solving*

According to Jonassen (1997), Problem Based Learning (henceforth PBL) was initially developed in medical education in the 1950s, since students had an unsatisfactory clinical performance, which led to a fragmentation of health science. After the implementation of this technique, it was expanded to the educational area.

PBL is concerned with the learning that occurs in everyday life and it states that "by solving the various problems we face every day, we learn" (Barrows & Tamblyn, 1980, p. 10). In this way, we understand that we are in constant learning, as we are faced with the most diverse types of problems every day, and we provide them with different solutions.

For Jonassen (1997) "the few problems students encounter are usually well-structured (history) problems, which are inconsistent with the nature of the problems they need to learn to solve in their everyday lives" (p. 64). In this way, students are rarely adequately formed to solve problems within their social context, and this ends up fragmenting the knowledge that they assimilate during the educational process (JONASSEN, 1997).

Jonassen (1997) describes the problem-solving technique, and separates them into two niches: well-structured problems and those without structure. Well-structured or well-defined problems are those that are linear, and present a simple path to their resolution. Also according to Jonsassen (1997), well-structured problems are usually found at the end of textbook chapters and exams, and require the application of a finite number of concepts, rules and principles being studied in a restricted problem situation. Problems without structure are those that are presented in a complex way, i.e., there is more than one way to solve them, and the student goes through several areas of knowledge before reaching the final solution of the problem.

## II. Methodology

For the development and collection of research data, action research was used (Tripp, 2005), associated with the Grounded Theory methodology (Strauss and Corbin, 2008) for data analysis. For action research, participant observation is inserted in order to contextualize and understand the research scenario, and together with Grounded Theory to analyze the data that were collected through the process of the three coding: open coding, axial coding and selective. These three processes, according to Strauss and Corbin (2008), offer subsidies for the anchoring of a new theory around the problem of study.

According to Strauss and Corbin (2008), in open coding, the process of data analysis begins. All the material collected is analyzed and re-grouped. For this moment we use three questions that are part of the process and are described by the aforementioned authors: Does this data refer to this study? What category does this indicator refers to? What is happening? It needs to be taken into account that these questions must Always be guided by the research problem.

In axial coding, the data are regrouped, analyzed in a deeper way, with the intention that the analysis categories emerge. The last coding is the most abstract, the data are analyzed again, and saturated in order to reach the central category, essential for the development of the new theory, which seeks to solve the proposed problem.

*a) Research subjects and methodology steps*

The research involved 26 undergraduate students from a public university in Paraná, in a discipline that seeks the scientific and technological literacy of students. To develop what we propose, we divided the application of the proposal into five stages, forming a didactic sequence. For this research, all its development took place remotely, within the virtual learning environment platform provided by the University.

The didactic sequence is composed of five steps, developed for the collection and analysis of data. All the steps were designed with the objective of putting the student in contact with complexity, extrapolating disciplinary concepts, so that they could solve complex problems (without structure) presented in different ways, not based only on problems with mathematical calculation, but those that consider, for example, social, historical, cultural, moral and ethical problems.

*Step 1:* In order to investigate the students' conception of complexity, and the relationship of complex problems, a questionnaire was applied containing five open problems on the aforementioned topic.



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The problems used in the questionnaire are shown in table 01:

*Table 01:* Questions from the initial survey questionnaire

| |
|---|
| Do you remember, during graduation, having solved complex problems related to the biological area? |
| What is a scientific problem?<br>What is a problem? |
| What are complex problems? |
| How is a problem solved? |

*Source: The authors*

The main objective of this questionnaire is to learn about the initial conceptions that undergraduate students, future Biology professors, have on the subject. Then, the theme of complexity was introduced from a contrast between mechanized teaching and complex problems.

*Step 2:* In this activity, the intention was to incorporate the concept of complexity, during the formation process of the student and future teacher of Biology. The purpose of this activity was to watch a film, called Lorenzo's Oil, which explores the concept of complexity, in a real problem experienced by society, making students create cognitive structures that allow them to discuss the topic. For this moment, the students were instructed to develop a map or mental network around the complex elements observed in the film.

*Step 3:* To introduce the concept of problem solving and complex problems, a discussion paper called "Toward a design theory of problem solving" and a video entitled "Problem Solving" were used. The problem chosen for this discussion was the complexity involved in Covid-19. The main objective of this activity was to verify if the students had rooted the concept of complexity, and if they had the vision of a real complex problem, its social interactions and their relation with the environment. At this time, there was a discussion of the complexity of Covid-19 through maps and networks around the theme "complex relationships extracted from Covid-19".

*Step 4:* The objective of this class was to bring students closer to the topic "Blood Pressure", a topic which was taught in more than one discipline during the undergraduate course in Biology. Blood pressure is a very important key concept for the formation of the future teacher because when studying anatomy and cell biology, students explore several concepts such as: veins, arteries, capillaries, venules, heart shape, blood bombardment, which are intrinsically linked to blood pressure.

The use of maps and networks made it possible for us to analyze the change in concepts that are being structured during each activity, and thus have the means to use the Grounded Theory coding processes. Since, at this point, the students have already developed skills to look at the whole, as a whole, not dissociated from the parts.

*Stage 5:* In this stage, the complex relationships established by the students were analyzed when solving complex problems, present in the textbook of Halliday volume II. The previous steps are implemented as pilot classes, aiming to develop more critical readings of real situations, and possible complex relationships. Ten complex problems of Physics focused on Biology were chosen so that they could solve and extract the relations of complexity. This moment was favorable for the students to use their ability to organize data from the problems, their different readings and interpretations.

Jonassen (1997) argues that using group formation when solving complex problems is a fruitful way of learning. Thus, they were helped on the Moodle platform to enroll in one of the five groups available, choose three complex problems, carry out their resolution, and develop a map, a network, or a flowchart about these relations, so that they could be later discussed with the class.

## III. Results

At this point, the report of the activities and the discussion about the data collected regarding the five stages applied are presented, in the form of a didactic sequence. The developed sequences were based on the theme of complexity, using the problem solving theory proposed by Jonassen (1997), and the methodology of the Grounded Theory of Strauss & Corbin (2008).

For the first step, as proposed in the first class, the students answered the initial survey questionnaire. This was the first contact of many with the complexity and discussion of complex problems, which explains the vague knowledge on the subject. It was noticed that the students were not able to answer all the questions accurately, because they lack conceptual background to define the answers. The answers are presented below for each question, identified by an alphanumeric indicator, according to Table 02:



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*Table 02:* Placement of students in solving complex problems

| Some students' statements about whether they had solved complex problems |
|---|
| *A1:* "A complex problem does not come to mind now. Because I can't say what a complex problem is" |
| *A2:* "I remember solving problems with definitive solutions, reaching a final conclusion, such as mathematical and physical calculations. But complex problems that generate new questions and do not have a final solution, I have not had the opportunity to experience it yet". |
| *A3:* "Yes, in the disciplines of Interdisciplinary Project and CTS, all projects have a problem solved". |

*Source: The authors*

Student A2's answer presents as a reflection the importance of establishing complex relationships, since he claims to have solved mathematical and physical problems, but that he had not yet experienced complex ones. According to Morin (2005) the fragmentation of teaching prevents concepts from being worked on in their entirety. It can be seen that, even without this conception, the student states that problems solved merely with the application of formulas are not complex, approaching the well-structured and unstructured problems described by Jonassen (1997). On the other hand, student A3 states that he has already solved complex problems in the Interdisciplinary Project discipline, and that in all projects that are developed in this discipline, it is necessary to solve some type of complex problem.

According to Jonassen (1997) most students do not solve complex problems. Table 02 shows that students showed difficulty in describing a complex problem, as they had not discussed these relations in the classroom, so the concepts presented were not part of the reality experienced by students in most classes of the Biology course. Such property leads students to a hyperspecialization of their area of knowledge, as defended by Morin (2013). It is important to emphasize that this feeling of not knowing and not having had contact with complexity was already expected, since our objective is to show its importance in the construction of knowledge.

*Data coding during questionnaire analysis*

In Grounded Theory, Strauss and Corbin (2008), describe the three questions that should be asked when starting the data collection process through open coding, which are:

(i) Does this data refer to this subject?
(ii) What category does this indicator refer to?
(iii) What is happening?

To start the open coding, referring to the answers of the initial survey questionnaire of the 26 students, the authors use the title of this work, aiming to identify the first categories of analysis. These steps are described in Grounded Theory, defended by Strauss and Corbin (1990), according to table 03:

*Table 03:* Initial analysis categories

| Search Title | Analysis Categories |
|---|---|
| Complexity Relations in Solving Physics Problems Proposed by Halliday – Volume II: Assumptions for Initial Teacher Formation | Teacher Formation;<br>Problem Solving;<br>Complexity. |

*Source: The authors*

After defining the categories of analysis, the structuring of the 130 responses obtained in the application of the questionnaire was followed. Subsequently, the verification was carried out to see whether each answer met one, one, two, or the three defined analysis categories.

The open and axial coding categories were defined by colors, for better visualization, as can be seen in table 04.

Responses that did not meet any of the categories were discarded.



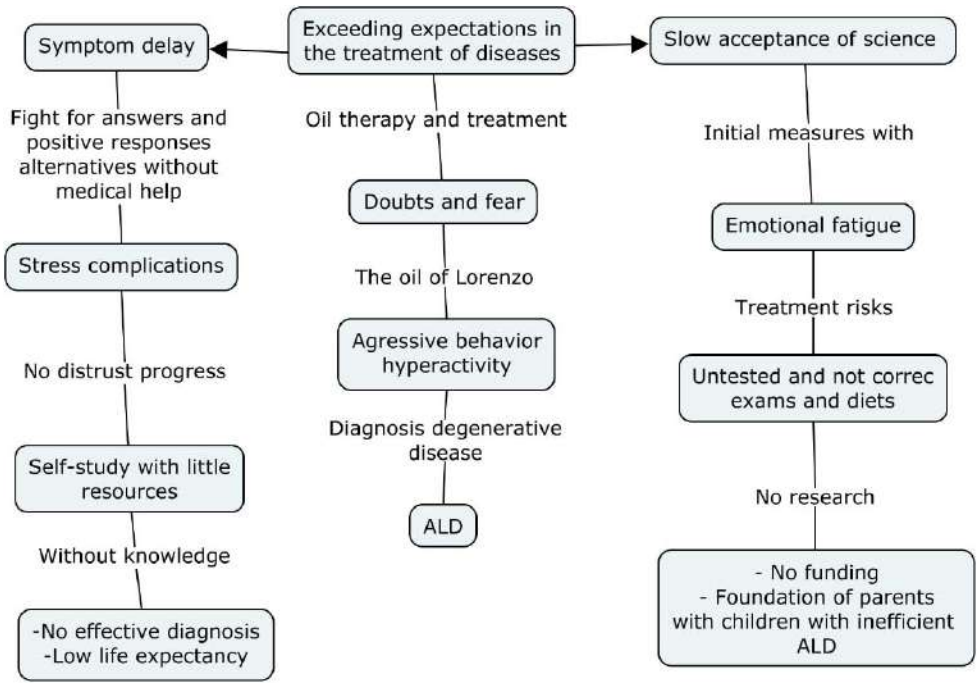
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*Table 04:* Open and axial coding for the questionnaire question

| Open coding | Codes/Categories | Axial coding/Subcategories |
|---|---|---|
| *A1:* I don't have enough basis to distinguish that it was in fact a complex problem. | What would that base look like? | Search<br>Investigation<br>Theorical knowledge |
| *A2:* Even if they are not resolved, I believe that complex problems generate new questions and do not have a final solution. | What makes you have this concept of a complex problem, if you haven't solved any yet? | |
| *A3:* Normally at APCC (practical classes as a curricular component) | The disciplines being the same for all students, what could be used to root this conception?<br>*Emerging code:* Importance of disciplines that encourage critical thinking and student development. | |

*Source: The authors*

In step two, the activity was the discussion of maps and networks about the film "Lorenzo's Oil". Below are some of the selected maps (Figure 01) in order to guide the discussions and analysis of the results, which were part of the data collection and analysis




*Source: Student A1 (2021)*

*Figure 01:* A1: Complex relationships "Lorenzo's Oil"

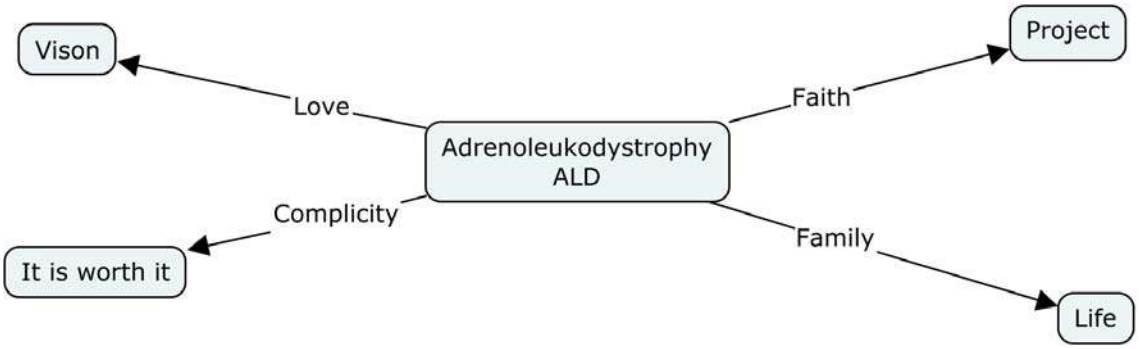
Student A1 while analyzing the complex relations presented in the film, made some complex connections such as: the delay in the disease Adrenoleukodystrophy (ALD) due to the lack of research; lack of funding; the fear of the family that culminated in psychological exhaustion; and a slow science, which delayed the study of disease. In the speech of student A1, it is possible to analyze that, although he showed doubts about the concept of complexity, during the discussion of the maps, he understood that the approach is beyond internal discussions, i.e., it is centered on the discipline, corroborating with Morin (2005), who argues that complexity is a global view of the world. According to student A1:

> I tried to extract the complex relations from the film, but I still wasn't sure what those relations were. [...] I researched a little, and I think I understood a little more. Now lisstening to your explaination, I'm starting to understand what complex relations mean. I had thought it was just internal relations, but it is much more than that ... (AUDIO TRANSCRIPT BY THE AUTHORS DURING THE VIDEOCONFERENCE CLASS, A1 – FIELD JOURNAL dated 9/25/2021).



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In figure 02, the analysis of student A2 is presented through the network of concepts, and through its collaboration we extract the relations for the analysis.

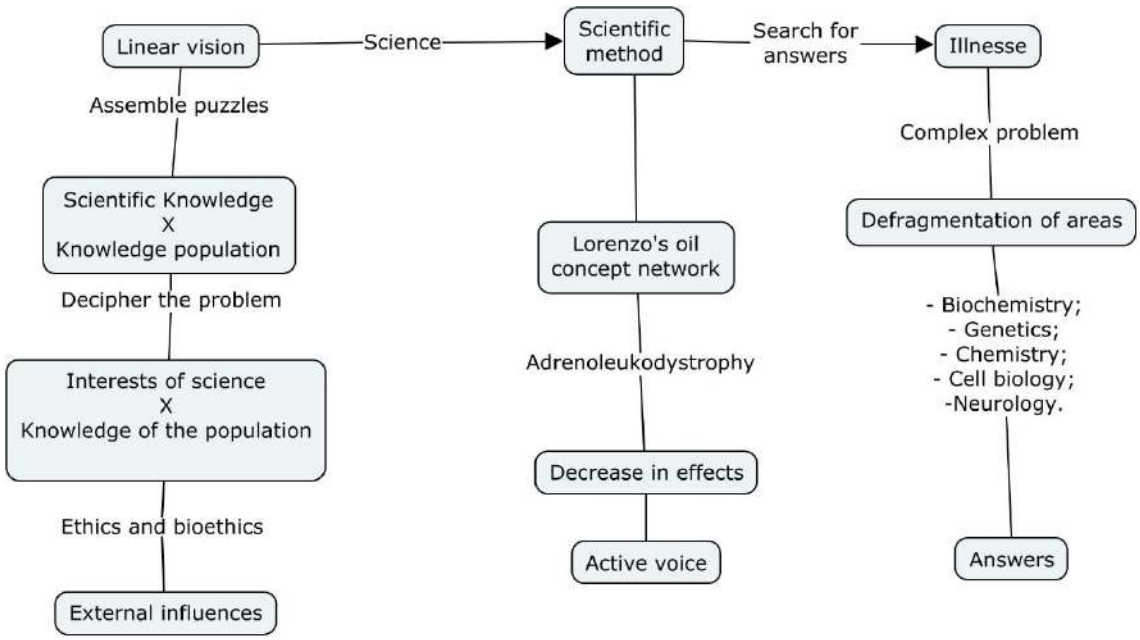



Source: Student A2

*Figure 02:* A2: The complex relationships "Lorenzo's Oil"

Student A2 did not extract deep complex relations. According to Jonassen (1997), this type of failure is common, as students are not familiar with the topic. Their relations focused on the feelings that emerged in the family during the struggle to find a cure, not extrapolating linear relationships.

On the other hand, we observed that student A10 (figure 03), through the presentation of the content of the previous class, obtained a broader analysis, he was able to see beyond the complex biological processes, and the interactions between areas of knowledge, such as Chemistry, Biochemistry , Genetics, Neurology, among others. The student described a linear view of Science in relation to the disease, which fragmented knowledge so that it was not possible to assemble the puzzle, emphasizing that in order to solve the problem, it was necessary to defragment the areas.




Source: Student A10

*Figure 03:* A10: Complex relationships "Lorenzo's Oil"

In the A10 student network, it is possible to identify complex relations and, as Morin (2005) defends, a broader view of the problem. However, as there is no familiarity with the topic (Jonassen, 1997), the concepts are still shallow. This is in line with what Blumer (1969) defends, that the more contact human beings have with certain situations, the more schemas will be consolidated. In table 05, it is possible to analyze the speeches referring to this process of discussion of maps and networks during the discussion of the groups.



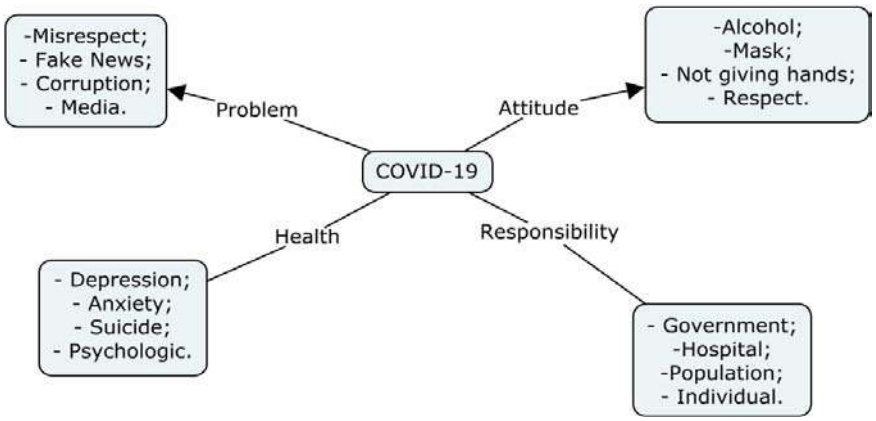
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*Table 05:* Open and axial coding of Lorenzo's Oil film.

| Open coding | Codes/Categories | Axial coding/subcategories |
|---|---|---|
| *A1:* I related the term with CTS, because I already took this course [...] I also read Edgar Morin, the study textbook, Reconnection of Knowledge | The importance of the STS discipline for critical training | • Teacher training<br>• Concrete examples |
| *A2:* I was in doubt, I remembered the example you gave, the porphyrin molecules, explaining several concepts, and so I think I managed to open the box a little | Importance of concrete examples | |

*Source: The authors*

The emerging categories at this step, analyzing the maps, and the students' speech fragments, show a need for concrete examples to understand the complexity, as well as a deeper relation with the disciplines, which can be solved with teacher formation. Figure 04, as part of step three, it shows that the relations of complexity began to be deepened by the students.



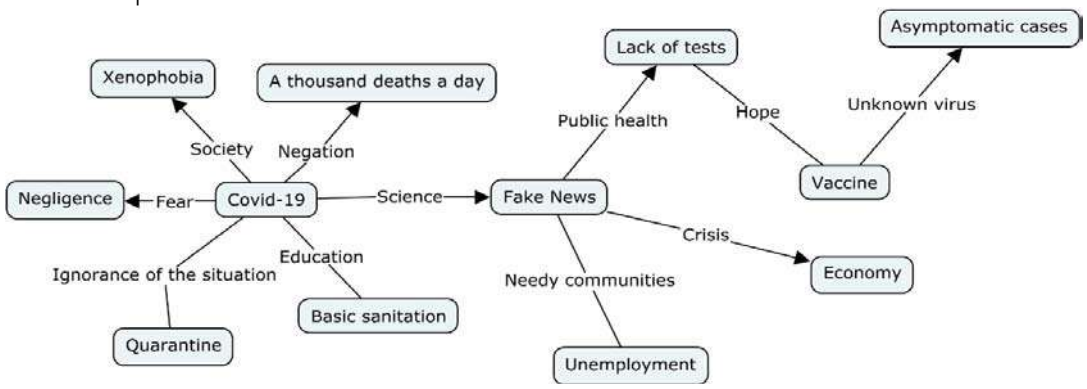

*Source: Student A1*

*Figure 04:* A1: The complex relations of covid-19.

In the scheme of student A1, the expansion of concepts in relation to complexity can be seen, as the student managed to leave the general theme, and establish relations with other areas of knowledge. This fact is explained by Morin (2013), who states that by extrapolating disciplinary concepts, we reconnect lost knowledge in several areas of knowledge. It is possible to notice that the student organized the problem and delimited the complex relations, placing the first relations of health, demonstrating the problems that worsened such as: suicide, depression and anxiety.

In figure 05, as in student A1, a broader theorization of concepts can be seen, which according to Jonassen (1997), shows that the more complex problems are analyzed, the more concrete concepts will emerge in the process.

Figure 05. A7: the complex relations of covid-19




*Source: Student A7*

*Figure 05:* A7: The complex relations of covid-19



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An important fact about the Covid-19 problem that student A7 demonstrated was the reflection on Fake News, which delay knowledge about the disease, since during the pandemic several theories emerged against the development of the vaccine and Science. At this stage, based on Jonassen (1997), complex relations are developing, and students are already able to discuss the topic in question. Then, in Table 06, the moments of open and axial coding of the Covid-19 problem, and their reflections are presented.

*Table 06:* Open and axial coding of the Covid-19 problem

| Open coding | Codes/Categories | Axial coding/Subcategories |
|---|---|---|
| *A1:* I remembered the STS teacher's classes, some discussions of other disciplines, and reading I realized how complex this problem is, so I was able to see more things, and I also researched a lot on the subject. | The importance of the CTS discipline, for a more critical view | • Teacher training<br>• Search<br>• Empirical knowledge |
| *A2:* I related to several things that I saw, the government saying the virus in China, saying that there is no research at a public university. | Dexterity, when formulating relationships through observations of real situations | |

*Source: The authors*

At this step, the importance of teacher formation is shown, whereas during this process, the student relates complex issues such as Covid-19 with the CTS class, when the student starts to organize the relations, avoiding the fragmentation of knowledge as evidenced by Morin (2013).

In step four, in regard to the discussion of complex blood pressure relations, it was one of the most problematized moment, where more questions arose, which involved basic physics, applied physics, biological sciences and fluids I, the students already had theoretical knowledge of the theme, and there were reports of greater difficulty. We can observe the map of student A2 (figure 06), and A3 (figure 07).

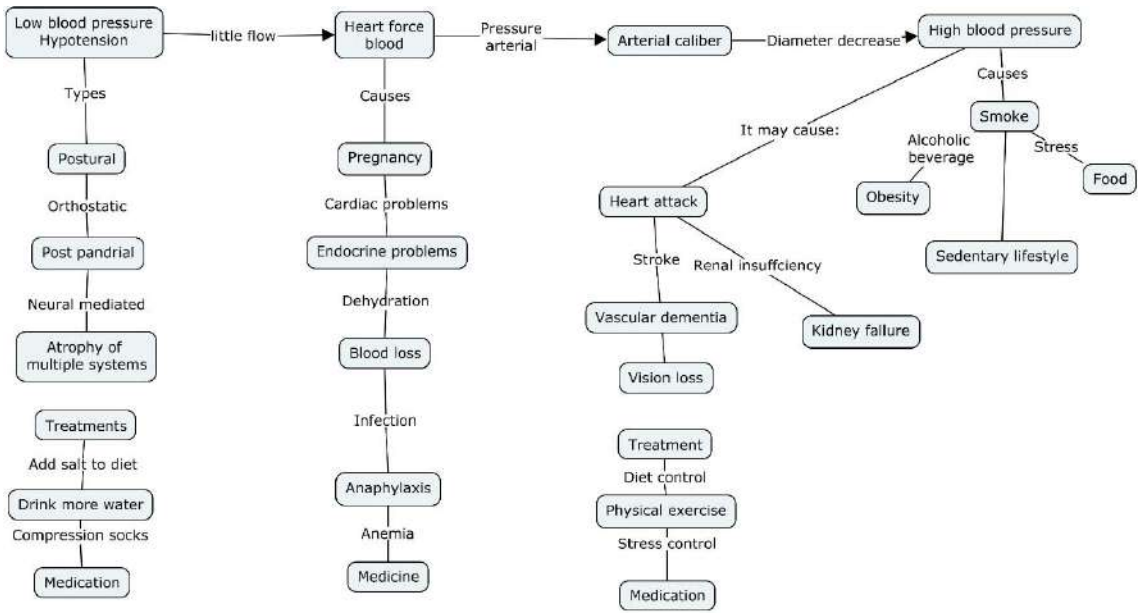
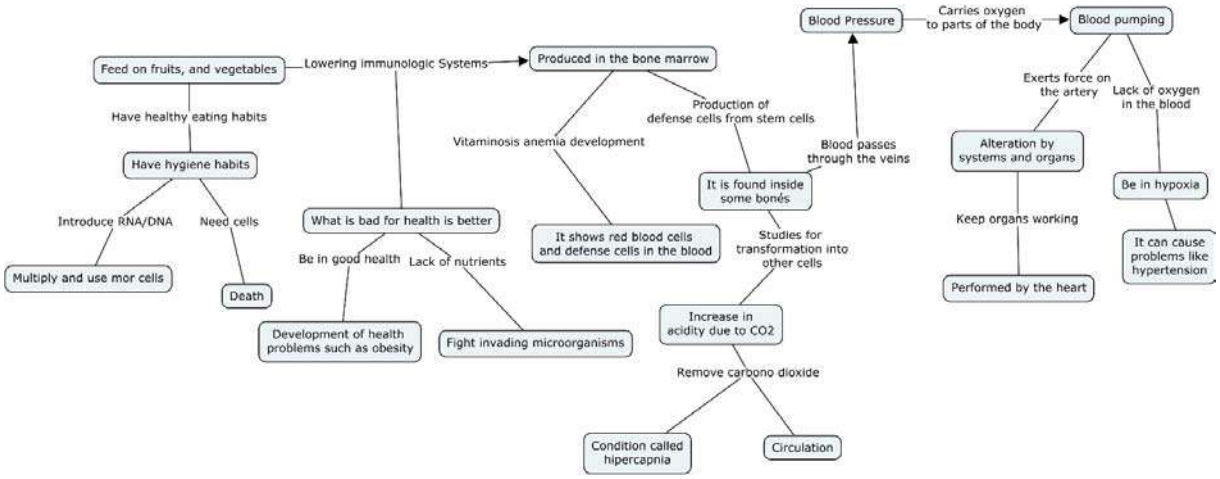



*Figure 06:* A2: Complex blood pressure relations



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*Source: Student A2 and A3*

*Figure 07:* A3: Complex blood pressure relations

In both A2 and A3 student relations, a large number of more in-depth complex relations stand out when compared to the first maps. That is, the ability to solve complex problems begins to emerge (Jonassen, 1997). Table 07 presents the speech of students A2 and A3, during the dialogue used in the process of open and axial coding, and their reflections.

*Table 07:* Coding open and axial blood pressure

| Open coding | Códigos/Categorias | Codificação axial/subcategorias |
|---|---|---|
| *A2:* We study pressure in Physics and Biology and in none of the disciplines do we address the history and development of blood pressure [...] | Awareness that complex concepts are not addressed in the classroom. | • Curiosity<br>• Search<br>• Historical Appreciation |
| *A3:* I knew what blood pressure, systole and diastole were, but I had never stopped and thought about other relationships.<br>[...] so I researched more, and saw a lot of interesting things from the history of the development of the sphygmo-manometer, I think this complex relationship of science caught my attention. | Knowledge of the topic, but without the establishment of complex relationships<br><br>Search for a better understanding of the concept and science. | |

*Source: The authors*

In the speech of student A2, the conceptual domain of the problem discussed through the research is noted, in his map we see the relations between the discipline of Physics and Biology, and the interest in the historical development of the sphygmomanometer (curiosity and historical appreciation). In the speech of student A3, the complex approach was not explored in the classroom.

Thus, in relation to step five, the problem solving step, ten complex problems were used in the dissertation, listed in table 08:

*Table 08:* Complex Halliday Problems

| Complex Problems |
|---|
| 1) A novice diver, practicing in a pool, draws in enough air from the tank to expand his lungs before leaving the tank at depth L and swimming to the surface. He ignores instructions and does not exhale during the ascent. Upon reaching the surface, the difference between the external pressure to which it is subjected and the air pressure in the lungs is 9.3 kPa. How deep did it start? What risk are you taking? |
| 2) The femur, which is the main bone of the leg, has a minimum diameter, in the male adult of approximately 28 cm, what is the value of the compressive load necessary to break it? |



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| | |
|---|---|
| 3) | The cross-sectional area A_0 of the aorta (the largest artery emerging from the heart) in a normal person at rest is 3 $cm^2$, and the velocity u_o of the blood is 30 cm/s. A typical capillary (diameter 6μm) has a cross-sectional area of $3.10^{-7}$ $cm^2$ and a flow velocity v of 0.05 cm/s. How many capillaries does this person have? |
| 4) | During World War II, a damaged freighter barely able to float in the salt waters of the North Sea was wrecked as it sailed up the Thames towards London docks. Why? |
| 5) | Blood takes about 1.00 s to pass through a 1.00 mm long capillary in the human circulatory system. If the diameter of the capillary is 7.0 $\mu$m and the pressure drop is 2.60 kPa, determine the viscosity of the blood. Assume laminar flow. |
| 6) | A fish maintains itself at the same depth in fresh water by adjusting the amount of air in porous bones or air pockets to make its average density equal to that of water. Assume that, with empty air pockets, a fish has a density of 1.08 g/cm3. To what fraction of its new volume must the fish inflate the air pockets to make its specific gravity equal to that of water? |
| 7) | Divers are advised not to travel by air for the first 24 hours after diving because the pressurized air used during diving can introduce nitrogen into the bloodstream. A sudden drop in air pressure (such as when an airplane takes off) can cause nitrogen to form bubbles in the blood, capable of producing painful or even fatal embolisms. What is the pressure change experienced by a special operations soldier who dives to a depth of 20 m one day and parachutes from an altitude of 7.6 km the next day? Assume that the average density of air over this range of altitudes is 0.87 $kg/m^3$. |
| 8) | Argentinosaurus blood pressure. (a) If the head of this gigantic sauropod was 21 m high and the heart 9.0 m high, what gauge (hydrostatic) pressure was needed at the height of the heart so that the pressure in the brain was 80 torr (enough to supply the brain)? Assume that the density of Argentinosaurus blood was $1.06 \times 10^3$ $kg/m^3$ (b) What was the blood pressure (in torr) at the animal's feet? |
| 9) | In a giraffe, with the head 2.0 m above the heart and the heart 2.0 m above the ground, the gauge (hydrostatic) pressure of the blood at the level of the heart is 250 torr. Assume the giraffe is standing upright and the specific gravity of the blood is 1.06 × 10 3 $kg/m^3$. Determine the arterial (manometric) pressure in torr (a) in the brain (the pressure must be sufficient to supply the brain with blood) and (b) in the feet (the pressure must be compensated by the stretched skin, which behaves like an elastic stocking). ). (c) If the giraffe were to lower its head sharply to drink water without spreading its legs, what would be the increase in blood pressure in the brain? When a pilot takes a very sharp turn in a modern fighter plane, the blood pressure in the brain drops and blood stops supplying the brain. If the heart maintains the gauge (hydrostatic) pressure of the aorta at 120 torr when the pilot undergoes a horizontal centripetal acceleration of 4g, what is the blood pressure in the brain (in torr), located 30 cm from the heart towards the center of the curve? The lack of blood in the brain can cause the pilot to see in black and white and the visual field to narrow, a phenomenon known as "tunnel vision". If it persists, the pilot may suffer the so-called g-LOC (g-inducedlossofconsciousness — loss of consciousness induced by g). The specific mass of blood is $1.06 \times 10^3$ $kg/m^3$ |

*Source: The authors*

Of these ten problems, two of them are systematized here. The choice was made because they are the problems with the most complex relations formed, i.e., the problems in which students most identified relations outside physics, and identified several areas of knowledge, which were the most discussed ones during the resolution step, as according to the concept of complexity brought by Morin (2013). At this point, Jonassen's (1997) problem solving steps are presented, in which students developed skills in extrapolating complex problems, as mentioned by Morin (2005). Students began to observe the whole, and not just the fragmented and separated parts in isolated boxes.

*Problem 1:* During the Second World War, a damaged freighter that was barely able to float in the salty waters of the North Sea, sank because it went up the Thames towards the London docks. Because?

*Complex relations:*

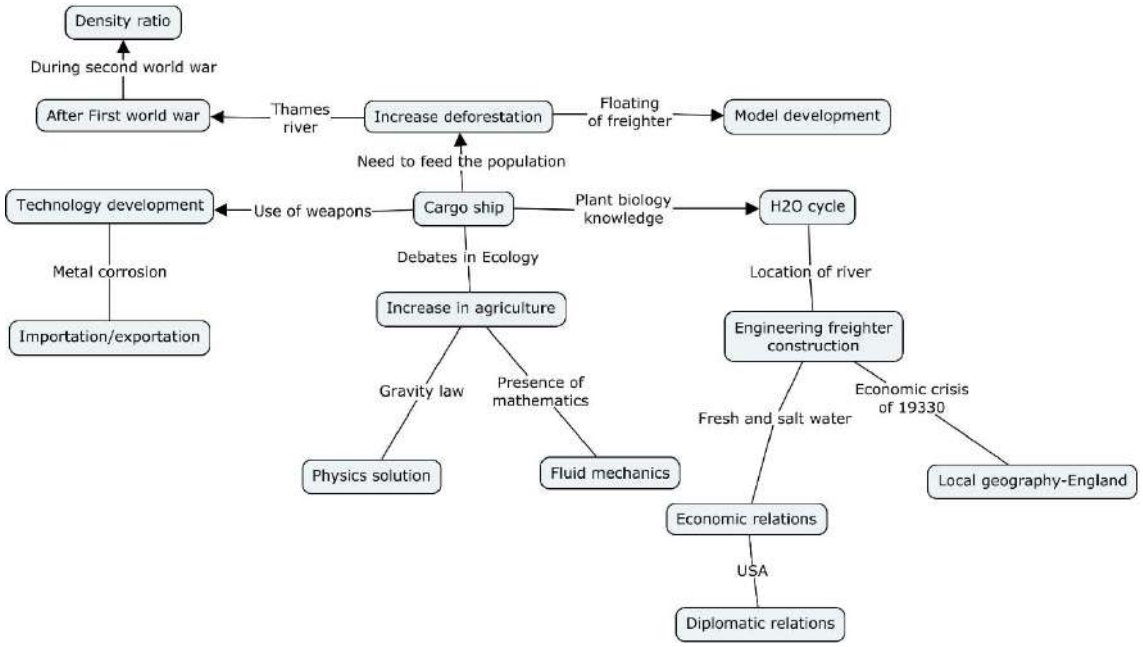
- History;
- Geographic;
- Social;
- Economical

*Resolution:*

The freighter sank due to the difference in density between salt and fresh water. As fresh water is less dense than salt water, the freighter was able to float smoothly. Already, when it started to navigate in salty waters, the ship sank, not being able to maintain the necessary balance to float at a greater density.



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*Source: Student A1*

*Figure 08:* A1: Freighter Problem 1

In figure 08it is noticeable from a simple problem of density difference, that student A1 was able to formulate several complex relations, before reaching the resolution of the physics present in the problem. The student established relations with the economy of the time, the geography of the place, the First and Second World Wars, and the influence of the USA during this War process, the development of new technologies, the relations of the ecology, fauna and flora of the place, as well as several other complex relations that the reader can analyze on the map, and which were extrapolated by the most different areas of knowledge, leading us to what Morin (2013) calls the reconnection of knowledge. Diversified knowledge, aligned for the construction of scientific knowledge, i.e., lost knowledge that were unified and woven together, for the observation of a whole much greater than the sum of the parts (MORIN, 2005).

*Problem 2:* Argentinosaurus blood pressure. (a) If the head of this gigantic sauropod was 21 m high and the heart was 9.0 m, what gauge (hydrostatic) pressure was needed at heart level for the pressure in the brain to be 80 Torrs (sufficient to supply the brain)? Assume that the specific mass of Argentinosaurus blood was $1.06 \times 10^3$ kg/m$^3$ (b) What was the blood pressure (in Torrs) at the height of the animal's feet?

*Complex relations:*

- Historical;
- Blood circulation;
- Animal kingdom;
- Paleontology;
- Geology / Earth formation
- Mesozoic era
- Triassic, Jurassic and Cretaceous.



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*Resolution*

head height = 21 m→ $p$?

heart height = 9,0 m→ $p = torr \rightarrow 10665{,}8\ Pa$

The gauge pressure is given by:

$$p = p_o + \rho.g.h$$

Where $p_0$ is the pressure in the brain

- $\rho = Especific\ mass \rightarrow \rho = 1{,}06.10^3 \frac{kg}{m^3}$
- p= heart pressure.

$$p_{heart} = 10665{,}8\ Pa + \left(\frac{1{,}06.10^3 kg}{m^3}\right).\left(9{,}8\frac{m}{s^2}\right).(21m - 9m)$$

$$p_{heart} = 10665{,}8\ Pa + \left(\frac{1{,}06.10^3 kg}{m^3}\right).\left(9{,}8\frac{m}{s^2}\right).(12m)$$

$$p_{heart} = 10665{,}8\ Pa + 124{,}656.\ 10^3\ Pa$$

$$p_{heart} = 135321{,}8\ Pa = 1{,}4.\ 10^5\ Pa\ ou\ 1{,}0.10\ \ torr$$

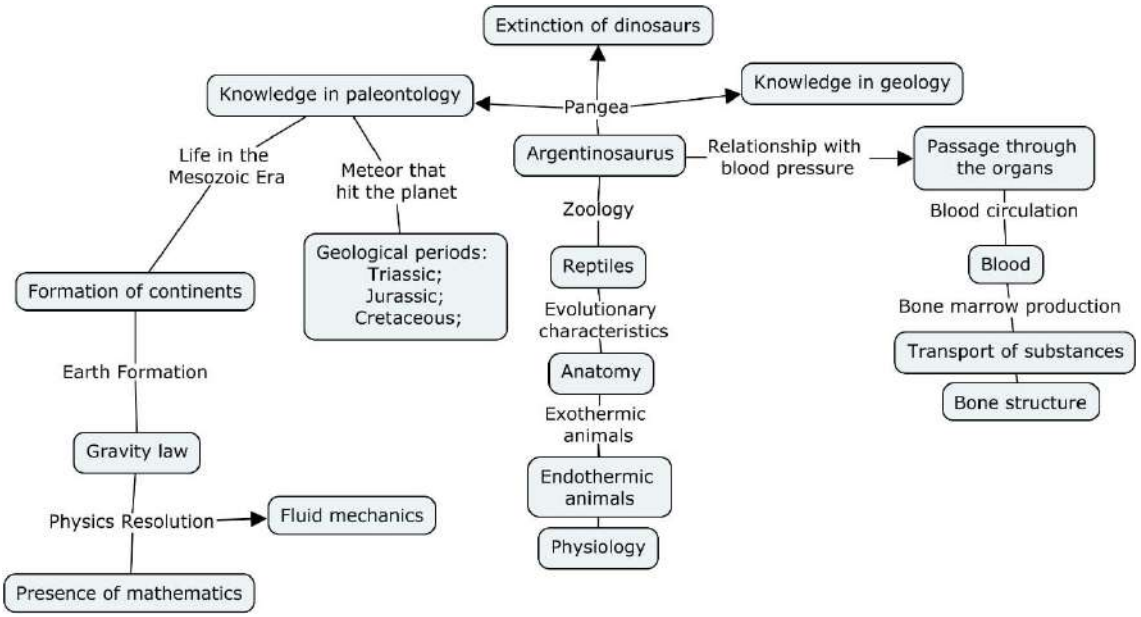
b) $p_{feet} = p_{brain} + \rho.g.h_{head}$

$$p_{feet} = 10665{,}8\ Pa + \left(\frac{1{,}06.10^3 kg}{m^3}\right).\left(9{,}8\frac{m}{s^2}\right).(21m)$$

$$p_{feet} = 10665{,}8\ Pa + 218{,}48.10^3\ Pa$$

$$p_{feet} = 228.813{,}8\ Pa = 2{,}3.\ 10^5\ Pa\ ou\ 1{,}7.10^3\ torr$$

*Figure 09:* A2: Complex relations of Argentinosaurus –problem II




*Source: Student A2*

It is notable the presence of several complex relations in figure 09, of student A2, and its complexity relations with various areas of knowledge. It is important to point out that even though some problems were repeated in the teams, the mathematical resolutions were the same, however, the complex relations



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established are completely different. This aligns with what Jonassen (1997) proposes, when he states that students are individuals who have individual skills, and therefore, putting them to solve problems without structure (complex), as a team, brings out the best that each one has to offer, corrobohating what Morin (2005) who describes it as thinking outside the box, building knowledge in various different ways, since the proposal of using problems of this type is to demonstrate that the calculation itself is not enough, there is much more to be explored.

It is possible to verify an "outside the box" thinking both in the network in figure 08 of the freighter, and in the network in figure 09 on the problem of Argentinosaurus. The students make connections with knowledge that would not be discussed if the focus of this work was not driven towards complexity. Students showed a greater interest in discovering different relations within the problems they are solving. In the network that relates to Figure 09, the change of conception that the students had is clear, we identified several complex relations, such as those related to the biosphere, the atmosphere, the layer of gases, the lithosphere, in order for them to be able to build a resolution to the problem.

For Morin (2005), complexity gives students meaning and leads them to reflect on the real problems of their daily lives. "It is necessary to say that it is not the amount of information, nor the sophistication in Mathematics itself that can provide relevant knowledge, but the ability to put knowledge in context" (MORIN, 2005, p. 37). Reinforcing the importance of working with problems that are part of the students' daily life, as pointed out by Jonassen (1997).

The two problems highlighted present a simplistic solution from a mathematical point of view, and it could be solved only with the direct application of physical formulas, but the act of extrapolating to different situations such as the role of ships during World War II, of relating a shipwreck with water pollution, with the birthplace of an ecosystem for new fish, with the political situation in Brazil, shows that when they developed the key concepts for the answer to the problem, they passed through other areas, building a knowledge that made sense. As student A1 reports:

> We didn't find it a difficult exercise, you know, it took a while to pay attention to the density of the water, and to relate it to the shipwreck. But I don't think we would think about the other things if we weren't studying complexity. We would describe the difference in density and that's it. (AUDIO TRANSCRIBED BY THE AUTHORS DURING THE VIDEOCONFERENCE CLASS, A1 – FIELD JOURNAL OF 10/23/2020).

In the reports, we identified a broader view of complexity and its relations, since at the beginning, students had difficulty articulating the concepts studied with complexity, and could not relate to the biological concepts that they had already studied in the classroom. This fact can be observed in the first map, on the film Lorenzo's Oil (figure 02). By comparing it with the network of complex problems (figure 08), it is notable that there was an evolution in the conception of complexity, in conformity with Jonassen (1997), when stating that the resolution of problems without structure (complex), happens in stages.

Also, future Biology teachers, who have never had contact with complex problems, as detected in the collected data, were able to identify the relations and they realized the importance of this approach in the classroom, as demonstrated by the speech of student A2:

> I never thought about solving problems of this type, at first I found it very difficult, because I couldn't see the complex relations, but then I realized that complexity is in our daily problems, and that we can use these situations to teach the most diverse content in the classroom. (AUDIO TRANSCRIPT BY THE AUTHORS DURING THE VIDEOCONFERENCE CLASS, A2 - FIELD JOURNAL OF THE DAY, 10/23/2020).For all the data in this research, the moments of open and axial coding were performed, to arrive at the emerging subcategories, presented in table 09.

*Table 09:* Codingopen and axial to complex problems

| Open coding | Codes/Categories | Axial coding/Subcategories |
|---|---|---|
| *A1:* It's different to solve it that way, because you organize things, you see that it's not just numbers, there are things behind it. When would we research the political relations of the time? Or look over the Themes | Organization of problem-solving steps; Importance of research for discovering complex historical relationships | • Resolution Strategies<br>• Search<br>• Historical Appreciation |

*Source: The authors*

The importance of three codes during the problem solving step is highlighted: research, resolution strategies and historical valuation. All these codes were refined again in selective coding, which is described below, as a result of the theoretical contribution, according to Grounded Theory carried out.



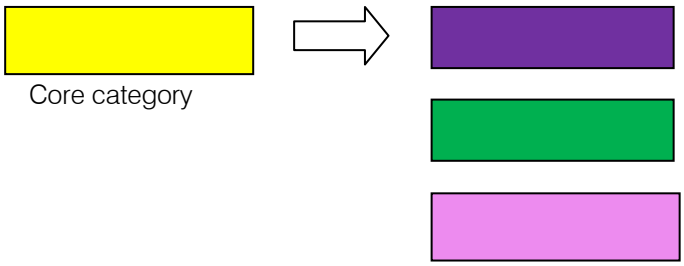
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*a) The theoretical contribution around complex problems*

The last step of Grounded Theory data encoding is selective encoding. In this step, all the codes that we identified in the previous steps are saturated so that we can highlight the central category, and around it describe our theoretical contribution to complex problems.

Our phenomenon of study is complexity. The research phenomenon is the learning relations built by Biology students when solving complex problems. The context is Biology students and the strategies used to achieve the objectives, i.e., all the processes described in the results, to reach the central category, which is the use of Grounded Theory for new approaches to complexity in problem solving.

The research contribution around the resolution of complex problems, starts from the following codes confronted with the situations described above, and sustained by Strauss and Corbin (1990).




*Source: The authors*

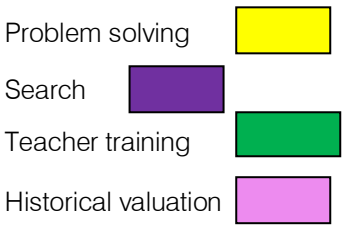



*Figure 10:* Central category after selective coding.

The central categories, which emerged from the research, prove to be valuable in solving complex problems for teacher formation. And this relation emerged from the speeches, networks and problem solving made by the students. It is important to note at this point that we will not rely on any theoretical aspect, as we aim to present theoretical support, through data from this research. The problem solving theory proposed by Jonassen (1997) was developed by Biology students in solving complex problems. The problems are not equivalent in] terms of form and resolution process, as shown in the students' maps, networks and flowcharts, in which complexity relations prevailed. The theoretical concept of complexity (MORIN, 2013) enabled students to build complex relations, opening the door to different resolutions and types of problems, followed by creations, schemes and new possibilities in problem solving.

Jonassen (1997) states that in order to solve a problem without structure, that is, a complex one, the students need to recognize the complexity of the problem, exercise varied reasoning according to the context, be familiar with what is solved, develop a cognitive structure respecting the culture and the context they experience. In order for students to be familiarized with approaching complex problems, it is necessary to invest in their formation, in order to overcome the mechanization of teaching and encyclopedic classes.

Also, in the course of problem solving, it is possible to perceive the contact students have with CTS and Scientific and Technological Literacy through the discussions they presented in the discipline - Interdisciplinary Projects V.

This discipline enhances in the students the treatment with the resolution and visualization of complex relationships, seeing the whole. This indicator reflects the importance of this type of formation, so that students may be successful in approaching complexity, in varied problems, describing a learning relation, developed by the students themselves, and the need for disciplines that awaken such conceptions.

Another indicator, which reflects a learning relationship, is the historical valuation of the problem. In the HALLIDAY textbook, D; RESNICK, R; WALKER, J, volume II, there are very rich problems for this purpose. The students' reports show that working from complex situations is new, and that they motivate thinking beyond the discipline in the process of forming the education professional. Historical appreciation is important in the construction of knowledge, as it signals that the concepts were not generated in a linear way, but that



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there are adverse situations, relations to bem ade with other theorists, representations within art, music, which enrich the discussion, which may make students more interested in the subject, as they are able to see that beyond mathematics, there is a chronological order that is not addressed in class. This question, as it is possible to observe in the coding processes, was created by the students, who delimited that this is an important fact, that they needed to know the history in order to have a broader view of the problems.

Another indicator refers to a learning relationship in the construction of knowledge: research. Analyzing the questionnaire, the networks and the speech fragments, we identified the term several times. Showing that students established research as a means of organizing relationships and understanding problems. The networks built, all the knowledge involved was beyond Biology. The topic addressed generated several ramifications on the same problem, validating the importance of research in the learning process, as it contributed to the non-reproduction of content, and to a broader learning of the complex concepts of Physics. Thinking about teaching complexity encompasses a teacher formation that allows students to relate the production of knowledge in the most diverse areas, as discussed here: Science, History, Art, Music, Theater, Ethics, Geography, etc. Although this relation appears to be difficult, it is possible.

Problem solving, as the central category of this research, was only satisfactorily developed by the support of the three categories, which are: research, teacher formation and historical valorization, which together aimed at expanding the students' worldview, future teachers. It is clear that the act of solving complex problems puts the focus on making sense of the solution and not simply applying to it a mathematical equation. Unlike what happens with well-structured problems, complex problems cannot be solved through impartiality, but it aims at a social, historical logic, one of affective relationships, one which aims at knowing how to act in the face of pre-defined knowledge.

## VI. Conclusion

The relations of complexity obtained during the problem solving process, culminated in the change of students' conception around complexity; the use of pilot classes on the theme of complexity; and Halliday's complex problems enabled the construction of knowledge around complexity, as well as extrapolation in relation to the construction of concepts beyond mathematics.

Complex problems showed a strong influence on the students' view of the whole, and not the fragmented concept, so that when solving the problems, the students themselves defined the paths for solving them, and understand the relations of complexity through from Grounded Theory. Halliday's textbook was of fundamental importance, because in addition to underpinning physical concepts, it showed that it is possible to establish several complex relations, and to teach Biology and Physics, together with the most diverse areas of knowledge.

In this way, the mechanization of teaching can be modified with the use of complexity and with a greater investment in the formation of future Biology teachers, in regard to the preparation of these professionals inside and outside universities, who, when knowing the complexity and complex problems, without structure, can thus broaden their view of the world.

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# Carbon Credits: Sustainability and Governance of Commercial Companies

By Matheus Marapodi

*Abstract-* Globalization, the technological revolution and the alleged climate crisis have brought about significant changes in the patterns of economic development experienced by humanity. The evidence that human activities play an important role in environmental degradation is more evident. Faced with this scenario of crises and uncertainties, the economic sustainability of large corporations may be compromised by external issues, over which societies have no control. Much has been disclosed about the need for companies to seek the ability to generate value for the public in order to obtain higher levels of economic and environmental sustainability. Within this perspective, that corporations must be able to generate value and not just profits, the present work is inserted. The prospect that natural resources can be exploited in an exhaustive manner until they are exhausted in order to obtain maximum profits in business, does not hold up, corporate law increasingly turns to the need to develop its activities in a sustainable way both by economic and environmental bias.

*GJHSS-H Classification:* *FOR Code: 150302*




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# Carbon Credits: Sustainability and Governance of Commercial Companies

## Créditos de Carbono: Sustentabilidade e Governação das Sociedades Comerciais

Matheus Marapodi

*Resumo-* A globalização, a revolução tecnológica e a alegada crise climática têm proporcionado alterações significativas nos padrões de desenvolvimento econômico experimentados pela humanidade. Os indícios de que as atividades humanas têm um papel importante na degradação ambiental mostram-se mais evidentes. Diante desse cenário de crises e incertezas, a própria sustentabilidade econômica das grandes corporações pode encontrar-se comprometida por questões externas, sobre as quais as sociedades não têm qualquer controle. Muito se tem divulgado sobre a necessidade das empresas buscarem a capacidade de gerar valor para o público a fim de serem obtidos maiores níveis de sustentabilidade econômica e ambiental. Dentro dessa perspectiva, de que as corporações devem ser capazes de gerar valor e não apenas lucros, insere-se o presente trabalho. A perspectiva de que os recursos naturais podem ser explorados de forma exaustiva até o seu esgotamento, a fim de serem obtidos lucros máximos nos negócios, não se sustenta. O direito corporativo, cada vez mais, volta-se para a necessidade do desenvolvimento das suas atividades de forma sustentável, tanto pelo viés econômico, quanto ambiental. No presente artigo, será apresentada como a experiência do mercado de carbono, desenvolvida a partir da entrada em vigor do Protocolo de Quioto no ano de 2005 insere-se nesse debate, os incentivos à negociação desses créditos de carbono após o PQ proporcionaram a criação de um mercado que movimenta valores significativos e que tem a sua contribuição para o desenvolvimento de novas tecnologias e a exploração de atividades econômicas de forma menos agressiva ao meio ambiente.

*Abstract-* Globalization, the technological revolution and the alleged climate crisis have brought about significant changes in the patterns of economic development experienced by humanity. The evidence that human activities play an important role in environmental degradation is more evident. Faced with this scenario of crises and uncertainties, the economic sustainability of large corporations may be compromised by external issues, over which societies have no control. Much has been disclosed about the need for companies to seek the ability to generate value for the public in order to obtain higher levels of economic and environmental sustainability. Within this perspective, that corporations must be able to generate value and not just profits, the present work is inserted. The prospect that natural resources can be exploited in an exhaustive manner until they are exhausted in order to obtain maximum profits in business, does not hold up, corporate law increasingly turns to the need to develop its activities in a sustainable way both by economic and environmental bias. In this article, it will be presented how the experience of the carbon market developed since the entry into force of the Kyoto Protocol in 2005 is part of that debate, the incentives to negotiate these carbon credits brought by the legislation after the FP provided the creation of a market that moves significant values and that has its contribution to the development of new technologies and the exploration of economic activities in a less aggressive way to the environment.

## I. Introdução

Desde a primeira revolução industrial o ser humano vem aumentando de forma significativa a sua capacidade de alterar o ambiente em que vive. O amplo desenvolvimento econômico promovido pelos países centrais teve reflexos positivos em diversas áreas, todavia, a perspectiva de explorar os recursos naturais como se eles fossem infinitos, não se sustenta no mundo contemporâneo, exigindo que os padrões de desenvolvimento empreendidos até aqui, sejam revistos.

No debate abrangente que envolve as tensões entre o direito humano ao desenvolvimento e o direito ao meio ambiente ecologicamente equilibrado, deve ser considerada a perspectiva empresarial, pois, em que pesem as evidências naturais e científicas que indicam a necessidade de ser protegido o ambiente, é importante reconhecer que o objetivo de gerar lucros tem sido um dos principais motores do desenvolvimento produzido pela perspectiva capitalista no mundo ocidental. Nesse escopo, é muito difícil conciliar o dever de maximizar resultados económicos positivos, que incumbe à administração das sociedades comerciais, com proteção ambiental.

Forçoso é reconhecer que via de regra, em razão dos elevados custos envolvidos de uma possível mudança de paradigmas na forma de exploração do negócio, assim como em razão de uma possível diminuição da capacidade de concorrer no mercado, as questões ambientais foram deixadas em segundo plano pela gestão das empresas, despertando a desconfiança do mercado e dos acionistas. Apesar do imperativo económico que rege o mundo dos negócios, as questões relacionadas ao meio ambiente têm ganhado centralidade nas discussões relacionadas ao governo das sociedades, trazendo profundas

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alterações na forma como as empresas vêm sendo exploradas.

A partir do final dos anos 50 [1], os movimentos ambientalistas têm conseguido ampliar a sua atuação sendo verificado, principalmente a partir da conferência Rio-92, um aumento significativo da consciência ambiental e a proliferação de normas jurídicas que estabelecem limites à exploração dos recursos naturais pelas empresas. As questões relacionadas ao meio ambiente são por natureza transdisciplinares, todos somos envolvidos pelo ambiente em que estamos inseridos. Apesar disso, em disciplinas jurídicas a temática ambiental tem sido debatida principalmente por ramos ligados ao direito público, como o direito constitucional e o direito administrativo. Poucos são os os estudos de direito comercial sobre esses temas, o que é de lamentar, pois as atividades econômicas desenvolvidas pelas empresas possuem um papel significativo na degradação ambiental. Na prática jurídica é possível observar que em raras oportunidades o direito comercial se aproxima do direito ambiental, nestas raras aproximações, costuma-se ver o departamento jurídico institucional envolvido no cumprimento das normas necessárias ao licenciamento ambiental e outras obrigações ambientais impostas pelo poder público às empresas.

A partir da Rio-92 o desenvolvimento da legislação ambiental e principalmente das normas jurídicas que envolvem os compromissos internacionais que pretendem reduzir as emissões de gases provacadores de efeito estufa – GEEs, vem sendo difundida a ideia de que a exploração da empresa de forma ambientalmente sustentável pode ser economicamente viável e lucrativa, não precisando ser vista com desconfiança pelos órgãos responsáveis pela gestão das sociedades. O conceito de desenvolvimento sustentável, desenvolvido a partir dos anos 80, vem sendo adotado pelos códigos de "*corporate governance",* sob o título sustentabilidade. Esse conceito de sustentabilidade, que será desenvolvido com mais profundidade no próximo capítulo, contribui para agregar valor às sociedades, além de proporcionar novas oportunidades de negócios e rendimentos.

No debate sobre essa aparente dicotomia entre o dever de gerar resultados económicos positivos imposto à administração da sociedade comercial e a sustentabilidade ambiental, entra o debate sobre os mecanismos econômicos concebidos pelo Protocolo de Quioto - PQ que viabilizaram a criação do mercado de créditos de carbono. A exploração do mercado de créditos de carbono, indica ser possível atrair investimentos e envolver a gestão na redução das emissões de gases poluentes. A partir da entrada em vigor do Protocolo de Quioto – PQ em 2005, com a criação do mercado de créditos de carbono, verificou-se ser possível explorar o negócio de uma forma menos agressiva ao ambiente, pois a sustentabilidade, além de agregar valores sociais e ambientais, não-económicos à empresa, conseguiu robustecer os rendimentos de muitas empresas que se dedicaram à exploração do mercado de carbono.

No presente estudo, buscar-se-á apresentar como a experiência do mercado de créditos carbono tem contribuído para o desenvolvimento de novas tecnologias e aumentar a receita de empresas que se dedicam a explorar as suas atividades de forma mais amigável ao ambiente. Eventualmente, poderá ser possível admitir que talvez não exista uma dicotomia tão profunda entre meio ambiente e gestão, talvez, as mudanças indiquem que esse é um novo caminho. Nesse escopo, será apresentado um estudo de caso sobre o projeto Novagerar empreendido no Rio de Jarneiro que tendo sido o primeiro projeto de Mecanismo de Desenvolvimento Limpo – MDL autorizado a negociar créditos de carbono pelo PQ, proporcionou a obtenção de 150 Milhões de Dólares provenientes do Fundo Carbono da Holanda e viabilizou a implantação do projeto de redução de emissões de Gases de Efeito Estufa – GEEs.

O presente trabalho pussui como referencial teórico o conceito de sustentabilidade trazido por Elkington[2], frequentemente reproduzido nas discussões internacionais sobre o tema. Elkington defende a tese de que as atividades empresariais deveriam ser pautadas em três dimensões: dimensão econômica, social e ambiental.

Na primeira parte do trabalho, será desenvolvida uma breve contextualização sobre o desenvolvimento das tensões entre a sustentabilidade, fortemente proclamada pelas conferências internacionais e o dever primordial da administração das sociedades trazer lucros para os acionistas. Na segunda parte do trabalho, serão desenvolvidos os conceitos jurídicos que tornaram possível a criação do mercado de créditos de carbono, bens incorpóreos (imateriais) e negociáveis, conhecidos como créditos de carbono.

[1] Elimar Pinheiro destaca que a poluição nuclear decorrente dos testes nucleares nos anos entre os anos 40 e 60 gerou chuvas radioativas há milhares quilômetros dos locais de detonação, isso gerou debates e a percepção de que os danos ao meio ambiente não respeitam fronteiras. NASCIMENTO, Elimar Pinheiro do. Trajetória da sustentabilidade: do ambiental ao social, do social ao econômico. Estud. av., São Paulo , v. 26, n. 74, p. 51-64, 2012 . Disponível em <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-40142012000100005&lng=pt&nrm=iso>. acessos em 10 nov. 2020. http://dx.doi.org/10.1590/S0103-40142012000100005.

[2] ELKINGTON. Jhon. *Canibais com Garfo e faca.* M. Books do Brasil Editora LTDA. 2012. p. 33.



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## II. Contextualização

A ideia de que o objetivo principal da empresa é gerar valor e não apenas lucros tem sido muito difundida nos últimos anos. Diversos autores[3], principalmente ligados à gestão e ao marketing, têm defendido que o objetivo principal das sociedades não seria apenas gerar lucros[4], mas sim, valor. Dentro dessa perspectiva, o lucro seria parte do valor a ser perseguido pelos órgãos de gestão, à essa imposição económica que é inerente à atividade empresarial seriam adicionados outros princípios que acrescentariam valor e valores ao exercício da atividade desempenhada pela empresa. Essa mudança de perspetiva sobre os objetivos que devem nortear a administração das sociedades que tradicionalmente defendeu a primazia nos direitos dos acionistas, aparece na recente declaração Business Roundtable: *"Each of our stakeholders is essential. We commit to deliver value to all of them, for the future success of our companies, our communities and our country.[5]"*

### a) *Tensões entre Corporate Governance e Sustentabilidade*

Nesta secção do trabalho serão apresentados os fundamentos que aproximam a sustentabilidade dos estudos relacionados à governação das sociedades, observando que tanto a governação das sociedades, quanto a sustentabilidade empresarial "*tendem proporcionar maior qualidade e perenidade nos negócios"*[6].

Os estudos relacionados à governação das sociedades tiveram seu início a partir dos anos 70 do século XX, com as investigações sobre o escândalo *Watergate* nos Estados Unidos [7] que comprovaram irregularidades na campanha eleitoral que levou Nixon à presidência do Estados Unidos, grandes empresas promoveram o financiamento ilegal da sua campanha e chegaram a subornar políticos estrangeiros, a divulgação do escândalo comprometeu a imagem das empresas, indicando a necessidade de serem estabelecidas normas capazes de assegurar o aperfeiçoamento dos sistemas de direção e controle das sociedades [8]. Posteriormente, nos anos 90, observou-se a publicação dos primeiros códigos de boas práticas de governação.

No início do século XXI, novos desvios e fraudes trouxeram um novo impulso aos estudos sobre governação das sociedades. A fraude contábil da Enron em 2001 que, até a divulgação do escândalo, era reconhecida como um exemplo prodigioso de sucesso [9] deixou evidente a necessidade de serem aprimoradas as normas que estabelecem as boas práticas dos órgãos de gestão e fiscalização. Sobre o tema é importante citar a eloquente lição de Coutinho de Abreu:

> "Mais recentemente, vários e graves escândalos financeiros e colapsos empresariais reavivaram a discussão. Os colapsos Enron, WorldCom (e outros mais) ilustram falhas enormes: práticas contabilistas inflando receitas e lucros, fiscalização interno-orgânica ineficiente, controlo contabilístico externo deficiente (auditores não independentes), práticas permissivas de conflito de interesses entre sociedade e administradores (v.g., concessão de vultosos mútuos aos directores, stock options integrando em larguíssima percentagem a remuneração dos administradores, executivos e não-executivos)... As crises societárias do princípio do século tiveram, desta vez, resposta legislativa pronta e forte: o (em short title) Sarbanes-Oxley Act of 2002 (promulgado em 30 de Julho de 2002), porventura a maior reforma do direito societário norte-americano desde os anos 30.[10]"

Dos Estados Unidos a temática *corporate governance* alastrou-se para a Europa e para outros países. Levando a um grande movimento de aprimoramento das regras sobre a administração e controle das sociedades [11].

Com relação à temática ambiental é importante notar que nos anos 70, tivemos importantes eventos que contribuíram para o aumento das preocupações com a excessiva exploração econômica dos recursos naturais [12]. Nesse período, tivemos as duas crises do petróleo (1973 e 1979) que evidenciaram os diversos riscos económicos, sociais e políticos decorrentes da exploração excessiva de uma matriz energética completamente dependente de um único recurso natural. Outra evidência que surgiu apartir dessas crises nos anos 70, foi a percepção de que os depósitos de petróleo têm um limite, esse recurso natural irá se esgotar mais rapidamente, quanto maior for o

[3] Philip Kotler professor de Marketing Internacional na Universidade de Kellogg, Chicago, possui diversos textos sobre o tema, neste sentido, Achrol, R.S., Kotler, P., 2012. "*Frontiers of the marketing paradigm in the third millennium".* Journal of the Academy of Marketing Science. doi: 10.1007/s11747-011-0255-4

[4] A Teoria do Acionista defende que o principal objetivo da gestão é gerar resultados positivos para os sócios. Sendo esse o principal objetivo de de uma empresa.

[5] *Tradução livre:* "Cada um de nossos stakeholders é essencial. Temos o compromisso de entregar valor a todos eles, para o sucesso futuro de nossas empresas, nossas comunidades e nosso país."

[6] GUIMARÃES, T. M.; PEIXOTO, F. M.; CARVALHO, L. *Sustentabilidade Empresarial e Governança Corporativa: Uma Análise da Relação do ISE da BM&FBOVESPA com a Compensação dos Gestores de Empresas Brasileiras*. Revista de Educação e Pesquisa em Contabilidade (REPeC), v. 11, n. 2, 25 maio 2017.

[7] COUTINHO DE ABREU. Jorge Manuel. *"Governação das Sociedades Comerciais".* 2ª Edição. Almedina. Coimbra. 2010

[8] Coutinho de Abreu destaca que

[9] HAMILTON. Stewart. *"Greed and Corporate Failure. The Lessons from Recent Disasters."* Palgarve Macmillan. Nova Iorque. 2006.

[10] Ob. citada. p. 10-11.

[11] No Brasil, merece nota o trabalho do Instituto Brasileiro de Governança Corporativa - IBGC que desde do final dos 90 tem trabalhado para produzir boas práticas de governação nas sociedades anônimas abertas.

[12] LAGO, André Aranha Correa do, *Estocolmo, Rio, Joanesburgo. O Brasil e as três conferências ambientais das Nações Unidas.* 1ª Edição. Brasília. Funac. 2006. pg. 37.



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consumo, a ideia de limite, levou ao desenvolvimento de uma conscientização sobre a necessidade de serem produzidos automóveis e outros equipamentos mais econômicos e menos poluentes [13] .

Também no início dos anos 70, tivemos a primeira conferência internacional sobre o meio ambiente humano, na cidade de Estocolmo em 1972. O trabalho da conferência foi muito influenciado pelo Relatório Founex[14], que foi o resultado do trabalho elaborado pelos peritos em meio ambiente e desenvolvimento, convidados pelo comitê preparatório da conferência de Estocolmo, reunindo-se na cidade de Founex entre os dias 4 e 12 de junho de 1971. Algumas das conclusões de Founex ainda hoje influenciam os debates sobre desenvolvimento econômico e meio ambiente, uma dessas importantes conclusões que ainda hoje é levada em pauta, afirma enquanto os padrões de consumo dos países desenvolvidos levam à degradação do meio ambiente, nos países subdesenvolvidos os problemas ambientais estavam relacionados ao próprio subdesenvolvimento. Ou seja, nos países menos desenvolvidos a carência económica é mais um fator de degradação ambiental, pois sem desenvolvimento económico a exploração do meio ambiente é feita de forma desordenada e degradante.

Nos anos 80 e 90, tivemos uma grande divulgação dos problemas relacionados ao meio ambiente. Como pano de fundo das discussões internacionais desse período, verificou-se uma grande divergência entre os países desenvolvidos e os menos desenvolvidos. Os países mais pobres, como fazem até hoje, defenderam nas discussões internacionais sobre meio ambiente que a proteção ambiental não pode servir como um empecilho para a busca do desenvolvimento económico. Fundamentam a sua defesa na tese de que os seus principais problemas ambientais, são decorrência direta do pequeno desenvolvimento econômico experimentado pelas suas populações. Pelo lado dos países mais desenvolvidos e mais interessados na diminuição da degradação ambiental, existiu a acusação de que os países mais pobres estariam degradando excessivamente as condições ambientais e consumindo os recursos naturais de uma forma irresponsável. Essa polêmica iniciada nos anos 80, no âmbito das primeiras discussões internacionais sobre a matéria ambiental, persiste até hoje, o que torna difícil qualquer avanço sobre o tema.

Apesar das muitas divergências e polêmicas, em 1987 o Relatório Brundtland propôs o princípio do "desenvolvimento sustentável", que procura alguma conciliação entre os objetivos desenvolvimentistas almejados pelos países menos desenvolvidos e o dever de preservar ambiente. O princípio do desenvolvimento sustentável reconhece a legitimidade da busca pelo desenvolvimento económico, porém, a partir da consagração desse princípio, o bem-estar económico e financeiro deverá ser buscado por novos meios. Sob a perspectiva do desenvolvimento sustentável, o progresso finaceiro passa pelo reconhecimento de que o mesmo não deve ser buscado a qualquer custo, sendo necessário direcionar o desenvolvimento por estratégias sustentáveis ambientalmente.

A partir da Rio-92 o princípio do desenvolvimento sustentável e outros temas relacionados ao meio ambiente, como mudanças climáticas, ganharam grande repercussão fazendo com que a temática ambiental saísse do âmbito tradicional de discussões, mais ligados ao direito público e direito internacional, para ingressar em diversas outras áreas, até mesmo no direito empresarial. No direito comercial e no direito económico, o termo sustentabilidade muitas vezes foi interpretado apenas pelo viés financeiro, para avaliar a probabilidade de sucesso dos negócios, todavia, o termo sustentabilidade agrega ao seu conteúdo as perspectivas ambiental e social.

*b) Desenvolvimento sustentável, sustentabilidade e governação*

A partir da Cúpula da Terra, realizada no Rio de Janeiro em 1992, as questões relacionadas ao meio ambiente ganharam muita importância no âmbito internacional, a partir dessa reunião, consolidou-se a ideia que as questões ambientais exigem, em diversas oportunidades, soluções transnacionais, pois, o ambiente natural que nos envolve, não respeita as fronteiras políticas, nesse contexto, a globalização e até mesmo a perspectiva do globalismo [15] ganharam relevo, influenciando de modo significativo a forma como a população mundial vive.

Esse ideal que defende a proteção do meio ambiente é bastante recente, todavia, tornou-se pedra fundamental nos dias atuais em qualquer debate econômico ou social. O conceito de desenvolvimento sustentável *(já comentado na seção 2.1),* encontra-se no centro de qualquer debate econômico, influenciando de modo significativo o direito. No direito comercial e na governação das sociedades, a sustentabilidade pode ser considerada como o fio condutor que deverá pautar a atuação empresarial, assentada no tripé de Elkington

[13] Sobre o tema é muito citada a obra intitulada *Os limites do Crescimento* 1973.

[14] Título original da obra: The Founex Report on Development and Environment. Disponível para download em: www.earthsummit2012.org/fileadmin/files/.../founex_report_1972.pdf.

[15] Perspectiva exacerbada da globalização que defende a governança global sobre temas muito importantes internacionalmente. Sobre o tema conferir:
DOMIANELLO. Sara. *"Le garanzie della laicità civile e della libertà religiosa nella tensione fra globalismo e federalismo".* Università degli Studi di Milano. 2011. DOI: 10.13130/1971-8543/890;
ARNDT. H.W. *"l´economia del globalismo".* Moneta e Credito. V. 45, n. 177. 1992



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que pretende levar as empresas a altos níveis de desenvolvimento econômico, ambiental e social.

Canotilho ressalta que o princípio da sustentabilidade deve ser considerado um dos princípios estruturantes do direito constitucional, de aplicação obrigatória na ordem constitucional vigente:

> "a sustentabilidade configura-se como uma dimensão autocompreensiva de uma constituição que leve a sério a salvaguarda da comunidade política em que se insere. Alguns autores aludem mesmo ao aparecimento de um novo paradigma secular, do género daqueles que se sucederam na génese e desenvolvimento do constitucionalismo (humanismo no séc. XVIII, questão social no séc. XIX, democracia social no séc. XX, e sustentabilidade no séc. XXI)."
>
> Tal como outros princípios estruturantes do Estado Constitucional – democracia, liberdade, juridicidade, igualdade – o princípio da sustentabilidade é um princípio aberto carecido de concretização conformadora e que não transporta soluções prontas, vivendo de ponderações e de decisões problemáticas. É possível, porém, recortar, desde logo, o imperativo categórico que está na génese do princípio da sustentabilidade e, se se preferir, da evolução sustentável: os humanos devem organizar os seus comportamentos e acções de forma a não viverem: (i) à custa da natureza; (ii) à custa de outros seres humanos; (iii) à custa de outras nações; (iiii) à custa de outras gerações. Em termos mais jurídico-políticos, dir-se-á que o princípio da sustentabilidade transporta três dimensões básicas: (1) a sustentabilidade interestatal, impondo a equidade entre países pobres e países ricos; (2) a sustentabilidade geracional que aponta para a equidade entre diferentes grupos etários da mesma geração (exemplo: jovem e velho); (3) a sustentabilidade intergeracional impositiva da equidade entre pessoas vivas no presente e pessoas que nascerão no futuro…"

Alguns parágrafos à frente prossegue:

> "A sustentabilidade em sentido amplo procura captar aquilo que a doutrina actual designa por "três pilares da sustentabilidade": (i) pilar I – a sustentabilidade ecológica; (ii) pilar II – a sustentabilidade económica; (iii) pilar III – a sustentabilidade social3. Neste sentido, a sustentabilidade perfila-se como um "conceito federador" que, progressivamente, vem definindo as condições e pressupostos jurídicos do contexto da evolução sustentável…"

As discussões sobre sustentabilidade também têm assumido centralidade na "*corporate governance.* Diversos autores [16] defendem que a sustentabilidade pode ajudar as corporações na obtenção de longos períodos de sucesso econômico, sendo a sustentabilidade econômica fundamental para a saúde financeira da empresa. O negócio será sustentável economicamente se a expectativa de retorno financeiro justificar os investimentos.

Por outro lado, a sustentabilidade também contempla as vertentes ambiental e social. Essas vertentes da sustentabilidade, ainda que não se encontrem diretamente ligadas ao objeto social das corporações, podem encontrar justificativas econômicas, pois, o cumprimento da legislação ambiental e laboral, acaba aumentando o valor da sociedade para o seu público consumidor e para comunidade, o que no médio e longo prazo, poderá trazer retornos financeiros [17].

A importância da iniciativa privada para a promoção do desenvolvimento sustentável tem sido reconhecida em diversos documentos [18]. Sobre o tema é importante trazer a lição de Suzana Tavares: *o investimento privado é considerado um dos principais drivers do crescimento sustentável e os auxílios públicos um driver desses investimentos."*[19]

O direito europeu tem sido um dos exemplos de maior profusão de normas relacionadas ao meio ambiente em nível mundial, existindo um elevado número de leis relacionadas à matéria. Até mesmo em recentes legislações, voltadas para a regulamentação do direito societário podemos encontrar referências à sustentabilidade [20].

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[16] Pequena lista de bibliográfica de alguns autores que se propõe a estudar algumas das relações entre *corporate governance* e sustentabilidade:
JACOBI E SINISGALLI. Pr e Pada. *Governança ambiental e economia verde. Ciência & Saúde Coletiva* 17:1469–1478. 2012.
CRUZ E GLASENAPP. Márcio e Cristiano. *"Governança e Sustentabilidade: Constituindo Novos Paradigmas na Pós-modernidade".* Revista Brasileira de Meio Ambiente Digital e Sociedade da Informação. v.1, n. 2. 2014.
GUIMARÃES, PEIXOTO E CARVALHO. Tayse, Fernanda e Luciana. *"Sustentabilidade Empresarial e Governança Corporativa: Uma Análise da Relação do ISE da BM&FBOVESPA com a Compensação dos Gestores de Empresas Brasileiras"*. Revista de Educação e Pesquisa em Contabilidade (REPeC) 11:134–149. 2017.
Brammer S, Pavelin S (2008) Factors influencing the quality of corporate environmental disclosure. Business Strategy and the Environment 17:120–136.
John C. Dernbach, Navigating the U.S. Transition to Sustainability: Matching National Governance Challenges with Appropriate Legal Tools, 44 Tulsa L. Rev. 93 (2013). Available at: https://digitalcommons.law.utulsa.edu/tlr/vol44/iss1/6.
BRAN, BODISLAV, RADULESCU, IOAN. Florina, Dumitru-Alexandru, Carmen Valentina e Ildiko "*Corporate Governance Intervention for a Sustainable Socio-Economic Model".* Revista de cercetare si interventie sociala. Department of Sociology and Social Work and Holt Romania Foundation.

[17] A Nike sofreu uma grande desvalorização dos seus papéis no ano de 1996 por não respeitar a legislação trabalhista. No Brasil em 2011 a Zara contratou empresa terceirizada que utilizava mão-de-obra em situação análoga a dos escravos, isso levou à condenação da empresa no ano de 2017 pela justiça do trabalho,

[18] à guisa de exemplo: OCDE. *Investment for Sustainable Development, Element 11. Paper 3.* OCDE and POST 2015, Reflections, 2015. United Nations Economic and Social Council - ECOSOC, *Public Aid as a Driver for Private Investment.* 2013.

[19] TAVARES. Suzana. *"Uso de Recursos Renováveis na Energia in Desafios Actuais em Matéria de Sustentabilidade Ambiental e Energética."* Instituto Jurídico. Universidade de Coimbra. 2015. pg. 78

[20] Apenas para evidenciar que a sustentabilidade, cada vez mais, aproxima-se da "*corporate governace",* é importante ressaltar, que até mesmo a recente directiva 2017/828, transposta para a legislação portuguesa em agosto de 2020, lei nº 50/2020, que trata especificamente dos direitos dos acionistas em sociedades cotadas, não deixa de fazer referências à sustentabilidade em pelo menos 8



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Em matéria de códigos e princípios de *corporate governance,* diversas entidades têm rendido-se à sustentabilidade. Recentemente a *Business Roundtable,* que tradicionalmente defendeu a primazia dos direitos dos acionistas, afirmando em diversas oportunidades que o objetivo de gerar lucros é o que deve movimentar toda a estrutura societária, no final do ano de 2019 muda o seu discurso para reconhecer que é dever das sociedades priorizar os direitos de todos os *stakeholders.* Sob essa nova perspectiva, o importante é gerar valor, não apenas lucros, investir no progresso pessoal e profissional dos empregados, promover a inclusão, o desenvolvimento das comunidades em que atuam e também, proteger o ambiente[21]. No mesmo sentido, o código de *principles of corporate governance* da entidade publicado em 2016[22] dedicou um capítulo para discutir os compromissos com o desenvolvimento, as comunidades e sustentabilidade.

> "Sustainability. A company should conduct its business with meaningful regard for environmental, health, safety and other sustainability issues relevant to its operations. The board should be cognizant of developments relating to economic, social and environmental sustainability issues and should understand which issues are most important to the company's business and to its shareholders.[23]"

Outros detalhes importantes que podem ser encontrados no seu portal da internete, evidenciam a mudança de perspectiva da *Business Roundtable* e o aumento das preocupações com as questões ambientais. A *Business Roundtable* dedica uma seção do site a apresentar diversos vídeos explicativos, produzidos por executivos, sobre diversos aspectos relacionados à sustentabilidade.

Sobre o tema mudanças climáticas, a *Business Roundtable* publicou recentemente, em setembro de 2020, o documento intitulado *Addressing Climate Change*. Nesse documento a organização apresenta a sua perspectiva de combate às mudanças climáticas, no título III do documento - *Key Principles to Guide Public Policy,* encontra-se a defesa de que o combate às mudanças climáticas, quando possível, deverá se valer dos instrumentos de mercado. Observe: *Leverage market-based solutions wherever possible*[24]*.* Posteriormente, a organização propõe a criação de instrumentos de mercado que possam promover a redução das emissões de carbono, *in verbis:*

> "Business Roundtable supports a market-based emissions reduction strategy that includes a price on carbon where it is environmentally and economically effective and administratively feasible, but it does not endorse any specific market-based mechanism.
>
> This approach would reduce the administrative complexity and uncertainty associated with a regulatory approach to limiting emissions and help ensure that U.S. companies remain competitive. It would also send an important market signal that would lead to greater efficiency; technological innovation; and deployment of the low-, no- and negative-GHG emissions technologies that will be necessary for reducing GHG emissions by at least 80 percent by 2050.[25]"

Não é objetivo do presente estudo esmiuçar cada nuance do princípio da sustentabilidade, todavia, é importante destacar que inobstante à militância preservacionista e à perspetiva social que reconhece os legítimos interesses dos mais pobres em conseguirem mecanismos que viabilizem a inserção dessas populações em melhores condições de vida, a primeira parte do princípio, que trata exatamente do conceito de desenvolvimento económico, muitas vezes é esquecida, como se fosse possível atingir altos níveis de desenvolvimento "sem esforço", quase como se o desenvolvimento viesse "naturalmente", como que por "geração espontânea". Ou ainda, que a defesa ambiental e a ampla tutela dos direitos sociais, com as sociedades comerciais avocando para o seu objeto social tarefas que nitidamente cabem ao estado, seriam conquistados os objetivos mais elevados do direito ao desenvolvimento econômico, tudo isso, em um mundo ideal, sem problemas ambientais, sociais ou económicos. Esse ideal utópico, que lamentavelmente é encontrado em alguns textos que abordam a questão ambiental, não se sustenta dentro da realidade do mercado capitalista. O mercado e o liberalismo económico que ainda dominam no mundo ocidental, possuem uma importância muito grande, não podendo ser simplesmente ignorados.

oportunidades (Considerações iniciais nº 3, 12, 14, 22, 29 e 30, Artigo 9º - A, nº 4, e Artigo 3º - G, n 1, a), no mesmo sentido a lei portuguesa que transpôs a diretiva fal a em sustentabilidade em 5 momentos (Atigo 26º, 1, c; 26º, 2, letras "a" e "c"; 26º, 4, c; e artigo 26º - D, nº 1)

[21] Íntegra da declaração disponível em: https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans

[22] Disponível em: https://s3.amazonaws.com/brt.org/Principles-of-Corporate-Governance-2016.pdf

[23] Tradução livre: Sustentabilidade. Uma empresa deve conduzir seus negócios levando em consideração o meio ambiente, saúde, segurança e outras questões de sustentabilidade relevantes para suas operações. O conselho deve estar ciente dos desenvolvimentos relacionados às questões de sustentabilidade econômica, social e ambiental e deve compreender quais questões são mais importantes para os negócios da empresa e seus acionistas

[24] Tradução livre: Aproveite as soluções baseadas no mercado sempre que possível.

[25] Tradução livre: A Business Roundtable apóia uma estratégia de redução de emissões com base no mercado que inclui um preço sobre o carbono onde é ambiental e economicamente eficaz e administrativamente viável, mas não apóia nenhum mecanismo específico com base no mercado.
Essa abordagem reduziria a complexidade administrativa e a incerteza associada a uma abordagem regulatória para limitar as emissões e ajudaria a garantir que as empresas dos EUA permaneçam competitivas. Também enviaria um sinal de mercado importante que levaria a uma maior eficiência; inovação tecnológica; e implantação de tecnologias de baixa, nenhuma e negativa emissão de GEE que serão necessárias para reduzir as emissões de GEE em pelo menos 80 por cento até 2050.

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É exatamente aqui que reside a importância do estudo do mercado de carbono pelo direito comercial, pois a criação desse mercado teve o mérito de tornar economicamente atrativo investir em novas tecnologias, ambientalmente sustentáveis. O mercado de carbono usa os instrumentos capitalistas de mercado para atrair investimentos em tecnologia e desenvolvimento de projetos menos agressivos ao ambiente, em suma, ganham-se rendimentos (desenvolvimento econômico e muitas vezes tecnológico), geram-se empregos (benefícios sociais) e diminui-se a poluição atmosférica (benefícios ambientais - sociais).

## III. O Mercado de Carbono

O estudo do mercado de créditos de carbono encontra-se inserido nos debates internacionais sobre mudanças climáticas, nesta seção do trabalho serão apresentadas as principais características desse mercado, a sua conceituação jurídica e a sua contribuição para o envolvimento das empresas na busca de uma economia de baixo carbono. Ainda que existam críticos às evidências das mudanças no clima e muitos interesses econômicos envolvidos no assunto, a criação do mercado de carbono, assim como as alterações legislativas que viabilizaram as negociações desses bens imateriais, constituem um vasto e profícuo campo de estudo em diversos ramos do direito.

O mercado de créditos de carbono tem atraído a atenção das empresas para o desenvolvimento de tecnologias capazes de promover a redução de GEEs e chamado a atenção dos investidores. A bem da verdade, em muitos projetos de Mecanismo de Desenvolvimento Limpo - MDL, o que atrai o investimento é a perspectiva econômica[26] que tornou possível a obtenção de lucros elevados investindo na redução de GEEs[27]. Essa perspectiva económica evidencia o poder do mercado de carbono para atrair investimentos no desenvolvimento de tecnologias ambientalmente sustentáveis, em áreas que outrora eram desinteressantes.

A apresentação do tema exige que sejam tecidos comentários sobre a natureza dos créditos e uma breve exposição sobre os passos que precederam à sua constituição. Diversos autores de direito ambiental defendem que a preocupação do ser humano com as questões ambientais é bastante recente[28], sendo comum a verificação de referências indicarem que somente após o término da segunda guerra mundial, após a destruição provocada pela detonação das bombas nucleares, iniciou-se uma preocupação com a possibilidade de alteração/ destruição do ambiente pelas tecnologias humanas. Antes desse período, era comum que o ambiente natural fosse desvalorizado e até mesmo colocado como uma fonte de problemas e entraves ao desenvolvimento.

A convenção-quadro das nações unidas sobre mudanças climáticas – CQNUMC, assinada durante a conferência Rio Eco 92, sofreu forte influência de dois importantes documentos: o relatório Brundtland[29] (comentado em tópico anterior) e o First Assessment Report – AR1[30] (primeiro relatório de avaliação publicado pelo IPCC em 1992). O AR1 já indicava a grande probabilidade das alterações climáticas possuírem origem antrópica. Apesar da fase inicial das pesquisas, já eram identificados fortes indícios de que a temperatura do planeta estava sendo alterada pelas excessivas emissões antrópicas de GEEs. No mesmo sentido, os relatórios que o sucederam[31] indicam com um grau de certeza bastante elevado, que o aquecimento planetário verificado nos dias atuais está sendo produzido pelos seres humanos e não por causas naturais.

A CQNUMC entrou em vigor em 24 de março de 1994, após a obtenção das assinaturas de 155

[26] Um exemplo, muito divulgado, do poder de atração de investimentos do MDL foi verificado no projeto Nova Gerar em Nova Iguaçu, pioneiro na geração de energia elétrica a partir do gás de aterro. O investimento em usina termoelétrica para a recolha do gás de aterro e geração de energia, evita que seja lançada uma grande quantidade de GEE na atmosfera. Todavia, esse projeto, somente saiu do papel por causa dos créditos de carbono, pois, vender a energia gerada pelo gás de aterro não justifica os custos de instalação e desenvolvimento. Foram os créditos de carbono que tornaram possível o investimento, pois, a expectativa de receita com a venda das RCEs justificou a implantação do projeto. O final da história foi a venda dos créditos de carbono gerados pelo empreendimento para o Fundo Carbono da Noruega pelo valor de 150 milhões de dólares. O relatório de validação do projeto perante o conselho executivo do MDL – CEMDL pode ser encontrado em: http://cdm.unfccc.int/UserManagement/FileStorage/FS_609234123.
Cf. MARCOVITCH. Jacques. *Para Mudar o Futuro: mudanças climáticas, políticas públicas e estratégias empresariais"*. São Paulo. Editora da Universidade de São Paulo. São Paulo. Editora Saraiva. 2006. p. 207 -215.

[27] A experiência do mercado de carbono iniciado a partir da entrada em vigor do Protocolo de Quioto – PQ no ano de 2005, indica ser possível tornar economicamente vantajosa a exploração empresarial de forma menos agressiva ao ambiente. De acordo com a Bloomberg, somente no ano de 2018, o mercado europeu de créditos de carbono foi estimado em expressivos 38 mil milhões de Euros. Cf. em: https://www.bloomberg.com.br/blog/bilionario-mercado-de-carbono-europeu-enfim-cumpre-sua-funcao/. Acesso em 31 de outubro de 2020.

[28] Sands identifica o ano de 1945 como um dos principais marcos para o desenvolvimento do direito internacional do ambiente. SANDS, Philippe. *Principles of International Environmental Law*. Cambridge: Cambridge University.Press, 2. ed., 2003 . p. 25.

[29] BRUNDTLAND et all. Gro Harlem. – *O Nosso Futuro Comum: Relatório da Comissão Mundial sobre Meio Ambiente e Desenvolvimento"*. 1ª Edição. Rio de Janeiro: Editora. FGV, 1991.

[30] Conhecido pela sigla AR1. Disponível no portal do Painel Intergovernamental sobre mudanças climática: https://www.ipcc.ch/report/ar1/syr/

[31] O portal do IPCC indica que está a ser prepara o 6º Relatório de Avaliação, Cf. https://www.ipcc.ch/reports/



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países[32]. A Partir de 1992, foi sendo sendo desenvolvida uma ampla rede de legislação internacional, que fundamentada na ciência de mudanças climáticas viabilizou a criação do mercado de créditos de carbono a partir da entrada em vigor do PQ em 2005[33]. O PQ foi o fruto exitoso da terceira conferência das partes – COP 3 da CQNUMC, realizado em Quioto, Japão, no ano de 1997, foi muito influenciado pelas conclusões do Segundo Relatório de Avaliação do IPCC[34]. Esse documento apresentava que, apesar da grande divulgação dos problemas relacionados às alterações climáticas, as emissões de GEEs continuavam a aumentar, sendo necessárias intervenções que pudessem restringir as emissões desses gases.

Tomando por base as emissões de GEEs do ano de 1990, o PQ estabeleceu que os países desenvolvidos, relacionados no Anexo 1, deveriam reduzir globalmente as emissões de GEEs na razão de 5 por cento por ano. Para isso, cada país deveria buscar formas de reduzir as emissões globais de gases poluentes. Com o objetivo de favorecer o cumprimento das metas obrigatórias de redução das emissões de GEEs e atrair recursos para o combate às mudanças climáticas, o PQ estabeleceu que seriam criados mecanismos de flexibilização[35], a fim de que parte das metas de redução pudessem ser atingidas através da negociação desses mecanismos financeiros.

Esses instrumentos financeiros acabaram por ficar conhecidos como créditos de carbono. O PQ criou três modalidades de créditos de carbono: a venda de emissões – VE (o crédito de carbono deste tipo é conhecido pela sigla – ET), a implementação conjunta - IC (conhecido pela sigla – PIC) e o mecanismo de desenvolvimento limpo (conhecido pela sigla – MDL). Apesar da aprovação do PQ durante a COP 3 no ano de 1997, somente em 2005, oito anos após a sua divulgação, o mesmo entrou em vigor, após a ratificação do tratado pela República Russa. A partir da entrada em vigor do PQ tornou-se possível a negociação de créditos de carbono no âmbito do PQ[36].

*a) A Convenção sobre Mudança do Clima e o Protocolo de Quioto*

Nesse tópico será apresentado o desenvolvimento da legislação relacionada às alterações climáticas. A CQNUMC possui como um dos seus principais objetivos reduzir as emissões de GEEs, com esse objetivo em mente percebeu-se que simples compromissos internacionais com o objetivo de reduzir as emissões da GEEs dariam pouco resultado, sendo necessária a elaboração de outros documentos que pudessem dar maior proteção jurídica e instrumentos para o combate à exacerbação do efeito estufa de origem antrópica. O Protocolo de Quioto, já comentado, veio como resposta a estes anseios de maior proteção contra a alterações do clima[37]. Suzana Tavares[38] lembra que:

> "Este Protocolo, que procurava dar operacionalidade e eficácia jurídica aos objectivos da referida Convenção Quadro, pretendia, no essencial, garantir o combate efectivo às alterações climáticas através do

[32] A CQNUMC reúne-se anualmente em conferência das partes "COP" para discutir o andamento das iniciativas que buscam combater o avanço do aquecimento planetário

[33] LAGO, André Aranha Correa do, *Estocolmo, Rio, Joanesburgo. O Brasil e as três conferências ambientais das Nações Unidas.* 1ª Edição. Brasilia. Funac. 2006. Pág. 35.

[34] Second Assessment Report - SAR

[35] Frequentemente críticos ao mercado de carbono estabelecido a partir do PQ afirmam que os créditos de carbono seriam injustificáveis, pois, através dos mecanismos de flexibilização os poluidores comprariam o direito de poluir. Todavia, essa impugnação não se justifica, a legislação em vigor hoje na UE estabelece que apenas uma pequena parte das metas de redução pode ser cumprinda através de créditos de carbono. De acordo com a legislação em vigor 90 por cento da meta deverá ser cumprida, 10 por cento do total estabelecido como meta pode ser cumprido através da aquisição de créditos de carbono. Além disso, as reduções certificadas foram verificadas em outra parte do globo terrestre reduzindo as emissões planetárias de GEEs.

[36] Antes do PQ entrar em vigor já existia o mercado voluntário de carbono, nesse mercado as empresas participantes assumem metas de redução de emissões em relação aos seus pares, sem qualquer obrigação legal, trata-se de um mercado carbono estabelecido em paralelo ao proveniente do acordo multilateral celebrado em Quioto. A Chicago Climate Exchange - CCX foi criada no ano de 2003 pelo financista Richard Sandor que é professor da conceituada escola de negócios Kellogg. Ele foi vice-presidente da bolsa de derivativos de Chicago, os negócios com o mercado voluntário de carbono se iniciaram dois anos antes do mercado derivado do PQ. Diversas empresas ao redor do globo se filiaram à CCX que possui compromissos de redução bem mais modestos do que os estabelecidos pelo PQ. Hoje a CCX foi extinta, mas, na época em que operou, a empresa que quisesse participar desse mercado, deveria assumir o compromisso de reduzir as suas emissões em 6 % até o ano de 2010, caso as empresas filiadas consiguissem reduzir as emissões além das metas estabelecidas, poderiam vender os créditos excedentes para outras empresas participantes a fim de que as mesmas conseguissem cumprir as suas metas. Trata-se de um mercado auto-regulado e com menos restrições do que a compra e venda de créditos certificados pelo PQ. Sandor, antes de cestabelecer a CCX, participou do formação do mercado de gases poluentes que combateu a chuva ácida nos Estados Unidos. O valor dos créditos de carbono no mercado voluntário atingem valores bastante inferiores aos obtidos no âmbito do PQ.

[37] Os Estados Unidos na administração Clinton assinaram o PQ, todavia, durante a administração Bush fizeram o seu *"Opt-out"* e decidiram não ratificar o PQ. Com essa decisão estadunidense a entrada em vigor do tratado ficou em suspenso, pois, os EUA sozinhos representavam mais do que 30 por cento das emissões globais de CO2, sendo praticamente inviável a entrada em vigor do documento sem a participação dos EUA. Todavia, a Federação Russa identificou as emissões de GEEs do país havia caído significativamente com o desfazimento da URSS e que as emissões de GEEs do país no início dos anos 2000 eram inferiores às verificadas no ano 1990. Ou seja, a Federação Russa não seria prejudicadza pela PQ, muito pelo contrário, poderia valer-se dos incentivos econômicos previstos no documento e ingressar no mercado de créditos de carbono.

[38] TAVARES. Suzana, CORDEIRO. António, Mariana. dos Santos, CUNHA. Jorge. *"Oportunidades Ecónomicas dos Mercados de Carbono."*Instituto Jurídico. Universidade de Coimbra. 2016. pg. 10



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estabelecimento de compromissos quantificados de limitação ou redução das emissões dos seis principais gases com efeito de estufa (GEE) por si regulados, cujos valores globais deveriam ser inferiores em pelo menos 5% em relação aos níveis de 1990."

O texto do PQ[39] previu a criação de três modalidades de créditos de carbono: o comércio de emissões - CE, Artigo 17 e duas modalidades de créditos de carbono baseados em projetos de engenharia que produzam a redução certificada das emissões de GEEs, a Implementação conjunta - IC e o Mecanismo de Desenvolvimento Limpo - MDL, previstos respectivamente nos artigos 6 e 12.

O PQ estabeleceu que os países mais desenvolvidos, constantes do Anexo 1, deveriam reduzir as suas emissões de GEEs em 5,2 por cento, em comparação com as emissões verificadas no ano de 1990[40]. Todavia, seria virtualmente impossível atingir a redução das emissões de GEEs sem a participação da iniciativa privada, pois, apesar do PQ estabelecer metas de redução obrigatórias dirigidas aos países signatários do acordo, quem efetivamente provoca as emissões dos gases poluentes são as atividades das empresas e da população em geral.

Neste sentido, os incentivos aos mecanismos económicos que tornaram possível o desenvolvimento do mercado de carbono, tiveram o importante papel de atrair investimentos para o desenvolvimento de novas tecnologias e práticas de gestão empresarial menos agressivas ao meio ambiente.

O PQ estimula que os países signatários sejam induzidos à cooperação entre si e a promover a redução das emissões nas seguinte áreas[41]: a) buscar formas mais eficientes e menos poluentes nos serviços de energia e transportes; b) fomento à utilização de fontes energia renováveis; c) eliminar mecanismos financeiros e de mercado inapropriados; d) limitar as emissões de metano na gestão de resíduos e dos sistemas energéticos; e) proteger florestas e outros sumidouros de carbono.

Sobre o tema, Sands[42] esclarece a importância dos mecanismos econômicos para o desenvolvimento de práticas e tecnologias ambientalmente sustentáveis, acreditando que os instrumentos do mercado podem incentivar comportamentos menos agressivos ao ambiente:

"The use of economic policy instruments to protect the environment has been under discussion for several years as the international community addresses the fact that many environmental regulations have not resulted in environmentally cleaner behaviour, technologies or products. It is believed that current mechanisms have failed to provide adequate economic incentives to limit activities which are environmentally damaging and have failed to achieve their environmental objectives. The use of economic instruments is premised on a belief that the market can be used to provide incentives to guide human behavior [43]"

Para o cumprimento das referidas metas previstas no PQ, além da instituição de um regime que obriga os signatários ao cumprimento de metas obrigatórias de redução de GEEs, foram constituídos os mercados voluntários de carbono, que hoje, podem ser caracterizados como um relevante instrumento da política internacional do clima e uma excelente oportunidade de negócios.

*b) Natureza Jurídica dos créditos de carbono*

Os créditos de carbono foram regulamentados através do Acordo de Marraquexe no ano de 2001[44] sendo conceituados como reduções certificadas de uma tonelada de gás carbônico equivalente - CO2, gás de efeito estufa – GEE mais abundante na atmosfera do planeta, Os créditos de carbonos têm sido conceituados pela doutrina como bens imateriais, que por sua natureza, possuem valor econômico e admitem diversos tipos de negociação no mercado.

[39] O Protocolo de Quioto foi incorporado ao ordenamento jurídico brasileiro através do Decreto Legislativo nº 144 de 2202. Disponível em: https://www2.camara.leg.br/legin/fed/decleg/2002/decretolegislativo-144-20-junho-2002-458772-norma-pl.html

[40] Nessa época foram divulgados estudos científicos importantes em matéria de ciência das mudanças climáticas. Esses artigos fizeram a análise do gelo depositado em geleiras, o primeiro estudo do gênero foi o publicado pela Revista *Nature* em 1999. Esse trabalho consistiu na análise do núcleo do gelo da geleira de Vostok (Antártida) e conseguiu apresentar evidências das concentrações de GEEs na atmosfera em períodos anteriores à existência humana, conseguindo avaliar as concentrações de gases atmosféricos nos últimos 400 mil anos. Cf. PETIT, JR *et al. "Climate and atmospheric history the past 420,000 years from Vostok ice core, Antartica",* publicado na Revista Nature nº 399 em 1999.
Os gráficos desse estudo e de outros mais recentes que lhe seguiram, demonstram que nos últimos 100 anos as concentrações de GEEs estão aumentando em escalas sem precedentes na história humana, o que eventualmente poderá levar a um cenário climático desconhecido. Cf. Portal do IPCC Os resultados de estudos mais recentes apresentam as concentrações desses gases na atmosfera nos últimos 800.000 anos. Disponível em: https://www.unenvironment.org/pt-br/noticias-e-reportagens/reportagem/concentracao-global-de-co2-bate-recorde-mesmo-durante-crise-do.

[41] TAVARES. Ob. cit. p. 10.

[42] SANDS. Philippe. Principles of International Environmental Law. Cambridge: Cambridge University Press, 2. ed., 2003 . p. 159.

[43] Tradução livre: "A utilização de instrumentos de política econômica para proteger o meio ambiente tem estado em discussão há vários anos, pois, a comunidade internacional indica o fato de que muitas das normas ambientais não resultaram em comportamentos, tecnologias ou produtos mais limpos. Acredita-se que os mecanismos atuais falharam em fornecer incentivos econômicos adequados para limitar as atividades que são prejudiciais ao meio ambiente e não conseguiram atingir seus objetivos. O uso de instrumentos econômicos têm como premissa a crença de que o mercado pode ser usado para fornecer incentivos para orientar o comportamento humano"

[44] Acordos de Marraquexe COP7, versão original em inglês disponível no portal da Convenção-quadro sobre mudanças climáticas: A "certified emission reduction" or "CER" is a unit issued pursuant to Article 12 and requirements thereunder, and is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5. Disponível em: https://unfccc.int/cop7/documents/accords_draft.pdf



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Portanto, o mercado de créditos de carbono consiste em um mercado de negociação de bens imateriais.

Existe alguma divergência sobre a natureza jurídica dos créditos de carbono, alguns defendem que os créditos de carbono possuem a natureza de "ativos intangíveis" (bens incorpóreos, ou imateriais), negociáveis exclusivamente por meio eletrônico. Esse entendimento, fundamentado na doutrina de direito civil é encontrado nos trabalhos de Gabriel Sister[45], Haroldo Machado Filho e Bruno Kerlakian Sabbag[46]. Esses estudos afirmam que os créditos de carbono deveriam ser considerados bens incorpóreos, em virtude de não possuírem existência física, nem documental. Desta forma, mereciam ser considerados ativos, por possuírem valor econômico. Os defensores dessa corrente entendem que seguindo as premissas traçadas, o mercado de créditos de carbono iria se formalizar mediante contratos de cessão de direitos, próprios para proporcionar a negociação dos demais ativos intangíveis disponíveis no mercado.

Lucio Paiva[47] possui estudo interessante em que procura descortinar as principais correntes sobre o tema. Uma das primeiras perspectivas considerou que os créditos de carbono deveriam ser considerados *commodities* ambientais. Suzana Tavares, em recente obra, ao comentar sobre críticas de grupos de ambientalistas, ao mercado de carbono, deixa consignada a existência desse entendimento:

> "Os mercados de carbono em geral não foram muito bem acolhidos pelos defensores dos valores ambientais e da ética ambiental pelo simples facto de serem mecanismos de mercado. Para os cultores do ambiente como ética e como valor (viver a vida de forma virtuosa), a mera existência de um mercado de carbono, ou seja, a possibilidade de pagar para poluir (para emitir gases com efeito de estufa) e com isto transformar o ambiente num bem transaccionável (numa commodity)...[48]"

O entendimento de que os créditos de carbono possuem a natureza jurídica de *commodities* padece de críticas, pois *commodities,* por conceito, representam produtos que podem servir como matéria-prima[49] de outros produtos e os créditos de carbono não podem se considerados produtos, nem matérias-primas. Sobre o tema[50] é importante trazer a lição de António Lombardi que sustenta que os créditos de carbono possuem a natureza de bens imateriais[51]:

> "Créditos de carbono não são *commodities*. Falta-lhes simplesmente tudo o que define uma commodity. Uma *commodity* é por exemplo, um saco de milho, mas nunca uma RCE. Por definição as mercadorias, commodities, devem ter padrão, ser negociadas em ambiente de bolsa em contratos iguais etc. Não é o caso das RCEs; estas são diferentes de um projeto para o outro, em que pese o fato de tornarem-se fungíveis uma vez tendo sido emitidas. Mas é fato que ainda é possível obter diferenciais competitivos nas negociações de crédito de carbono levando-se em conta a natureza do projeto e, portanto, a origem do crédito em transação."

c) *As licenças de emissões e as negociações de créditos de carbono na Europa*

O comércio europeu de licenças de emissões foi estabelecido com base no sistema *cap and trad* [52] e regulamentado pela Directiva 2003/87//CE. O seu principal objetivo foi contribuir para que fosse possível o cumprimento das metas de redução de emissões de GEEs pela UE, através da criação de um mercado europeu de licenças de emissão - CELE. Após a sua publicação a Directiva 2003/87//CE foi sendo alterada pelas outras Directivas que lhe sucederam, 2004/101/CE, 2008/101/CE e 2009/29/CE.

No direito português, o CELE foi introduzido pelo Decreto-Lei nº 233/04 que fez a transposição da Directiva 2003/87/CE. Esse diploma estabelece um sistema de concessão de licenças de emissão em que,

[45] SISTER, Gabriel. *Mercado de Carbono e Protocolo de Quioto: Aspectos Negociais e Tributação*. São Paulo: Campus Jurídico, 2008, p. 115.

[46] MACHADO FILHO, Haroldo; SABBAG, Bruno Kerlakian. *Classificação da natureza jurídica do crédito de carbono e defesa da isenção tributária total às receitas decorrentes da cessão de créditos de carbono como forma de aprimorar o combate ao aquecimento global*. E-Gov.2011. Disponível em: <http://www.egov.ufsc.br/portal/sites/default/files/anexos/32148-38095-1-PB.pdf>. Acesso em: 20 de agosto de 2020.

[47] PAIVA, Lúcio Flávio Siqueira de. *A natureza jurídica dos certificados de redução de emissões*. Disponível em http://seer.ucg.br/index.php/estudos/article/viewFile/1037/734. Acesso em 09 de agosto de 2020.

[48] TAVARES. Ob cit. Pg. 64

[49] RODRIGUES. Cláudio Henrique Viegas. *Mercado de Capitais.* Editora São Luis. 2020. Pg. 144.

[50] No Brasil a Lei que instituiu a Política Nacional de Mudança do Clima - PNMC Lei nº 12.187 de 2009 (Artigo 9º) filiou-se à tese de que as RCEs seriam valores mobiliários. Esse entendimento possui algumas vantagens, em primeiro lugar aproxima as RCEs do direito societário e ainda, permite que as negociações envolvendo esses bens sejam fiscalizadas pela pela Comissão de Valores Mobiliários – CVM.

[51] LOMBARDI, Antônio, *Créditos de Carbono e Sustentabilidade: os caminhos do novo capitalismo.* 1ª Edição. São Paulo. Lazuli Editora. 2008. Pág. 85.

[52] Através dele, uma autoridade competente estabelece um limite de emissões, que é distribuído (ou leiloado) entre os setores da economia. Se uma determinada empresa emitiu mais do que lhe era permitido, ela pode adquirir direitos de emissão de terceiros para evitar a imposição de penalidades; se emitiu menos, a diferença para o máximo permitido pode ser negociada. A parte do —cap - significa que todo participante possui um limite anual em que fica estabelecido o quanto pode emitir. Portanto, cada participante sabe quanto pode emitir e quais são as suas metas de redução. A parte — trade significa que quem não cumprir as suas metas será obrigado a ir ao mercado comprar de outro, que possua crédito de emissões. A cada ano, os limites de emissão são reduzidos, o que leva inexoravelmente à redução das emissões globais de gases poluentes *"auxiliadas pela mão invisível do capitalismo.Cf.* WALKER E KING, Gabrielle e David. *"O Tema Quente. Quente: como combater o aquecimento global emanter as luzes acesas".* Editora Objetiva. Rio de Janeiro. 2008. p. 158

Através desse sistema são estabelecidas metas de emissão para cada país, ou região. Aqui em Portugal, essas licenças são distribuídas gratuitamente aos poluidores por períodos de 8 anos.



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os operadores das atividades descritas no Anexo 1[53], somente poderão exercer as suas atividades se possuírem os títulos de emissão de GEEs, conforme disciplina o Artigo 7º n. 1. O livro-verde sobre a transacção dos direitos de emissão de Gases com Efeito Estufa[54] explica esse sistema de forma bastante clara:

> "A transacção dos direitos de emissão, tanto a nível interno como a nível internacional, é um sistema segundo o qual são atribuídas licenças de emissão a determinadas entidades, tais como empresas. As empresas que reduzam as suas emissões para um nível inferior à quota que lhes foi atribuída podem vender os seus "créditos" a outras entidades que não consigam atingir o seu objectivo com tanta facilidade. Este comércio em nada prejudica o objectivo ambiental, uma vez que o volume global das quotas é fixo. Pelo contrário, permite uma implementação economicamente eficiente do objectivo global e fornece incentivos ao investimento em tecnologias favoráveis ao ambiente."

A Directiva 2003/87/CE é a responsável pela regulamentação do CELE no âmbito da UE, sendo uma licença de emissão, o direito de emitir uma tonelada de dióxido de carbono durante um determinado período. As instalações que desenvolvem as atividades enunciadas no anexo I do documento, a saber: atividades no setor da energia; siderurgia (produção e transformação de metais ferrosos); da indústria mineral e da fabricação de papel; e, que emitem os GEEs, devem possuir uma licença emitida para este fim. Essas licenças são expedidas pelas autoridades competentes comunitárias e locais, com base *National Allocation Plan – NAP* estabelecido para cada país da União Europeia[55].

A Directiva nº 2004/101/CE, por sua vez, viabilizou as negociações envolvendo créditos de carbono europeus, provenientes do mercado do CELE com os créditos de carbono baseados em projetos, provenientes de PIC, normalmente instalados em países do leste europeu e MDL constituído em países subdesenvolvidos. Por conseguinte, os operadores têm a possibilidade de utilizar estes dois mecanismos no quadro do regime de comércio de licenças para cumprirem as suas obrigações.

A fim de assegurar que os Estados-Membros efetivamente reduzam as emissões antrópicas de GEEs o uso dos mecanismos de flexibilização baseados em projetos (PIC e MDL) não é irrestrito, ou seja, somente uma pequena parte das metas de redução de GEEs assumidas podem ser cumpridas através desses mecanismos, indicando a sua complementaridade. A norma de regência, Directiva 2004/101/CE estabelece que no máximo 8 % das metas de redução de emissões poderão ser cumpridas através de MDL e IC. Exemplificando: se um determinado Estado-Membro encontra-se obrigado a reduzir as emissões de GEEs em 100 Gigatoneladas – Gtn de CO2 equivalente, deverá conseguir reduzir em pelo menos 92 Gtn as emissões locais, o restante, poderá ser cumprido através de IC ou de MDL.

Merece ser ressaltado que a compra de créditos de carbono derivados de CELE, não se encontra sujeito a esse limite, tendo em vista, que os créditos de carbono negociados a partir do CELE somente são emitidos quando países constantes do Anexo I do PQ conseguem reduzir as emissões além dos limites a que se encontravam obrigados.

Neste sentido, trecho do parecer de justificação da Directiva 2004/101/CE:

> "- diz respeito ao limite máximo para actividades de projectos (nº 2 do artigo 11º -A). O MDL e a IC devem complementar, e não substituir, os esforços envidados no próprio país tendo em vista a redução das emissões. É preciso evitar que sejam negligenciados investimentos em instalações europeias tendo em vista o facto de que é menos oneroso para as empresas empreenderem actividades em países em desenvolvimento ou em países com economias em transição. Por conseguinte, a Comissão propõe no referido nº 2 do artigo 11º-A, cujo teor é complicado, que os créditos de actividades de projectos não devem ultrapassar 6% do montante total das licenças de emissão. No entanto, a Comissão poderá eventualmente aumentar este valor para 8%. No concernente a este aspecto, o relator propõe uma simplificação mediante a fixação do valor em 8%, podendo o mesmo ser revisto passados quatro anos [56]."

Em Portugal, os títulos de emissão são emitidos pela Agência Portuguesa do Ambiente – APA. Desde a entrada em vigor do Decreto- Lei n.º 233/2004, todos os operadores de atividades descritas na legislação, deverão possuir o título que lhes autorize a emitir GEEs.

Tendo sido apresentadas as linhas gerais do mercado de carbono no âmbito europeu, se evidencia que a normatização europeia do tema é extremamente meticulosa, possuindo o objetivo de promover a

[53] À guisa de exemplo: setor de energia, produção e transformação de metais, indústria mineral, instalações de produção de vidro, fabrico de produtos cerâmico, paste de papel e cartão.

[54] Livro Verde sobre a transacção de direitos de emissão de gases com efeito de estufa na União Europeia - 52000DC0087. Disponível em: https://eur-lex.europa.eu/legalcontent/PT/TXT/?uri=CELEX:52000DC0087

[55] Esses pedidos de licença de emissão de GEEs devem descrever: A instalação, as suas atividades e as tecnologias utilizadas; os materiais utilizados suscetíveis de emitir os GEEs indicados no anexo II; As fontes de emissão dos gases; assim como, as medidas previstas para o monitoramento e comunicação das emissões. Se as autoridades considerarem que o operador da instalação é capaz de monitorar as emissões concedem a licença, que pode abranger diversas instalações exploradas no mesmo local pelo mesmo operador.

[56] Disponível em: https://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A5-2004-0154+0+DOC+XML+V0//PT



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redução das emissões de GEEs na Europa. É importante a observar que o CELE pretende incentivar as empresas locais a investirem na redução das emissões de GEEs, pois, o eventual remanescente de licenças poderá ser transacionado.

Também destaca-se, que a possibilidade das metas europeias poderem ser parcialmente cumpridas através de créditos de carbono baseados em projetos (PIC ou MDL), provenientes de países menos desenvolvidos, proporciona a redução das emissões planetárias de GEEs, e ainda, poderá contribuir para o fomento ao desenvolvimento de novas tecnologias, empregos e renda nesses lugares, cumprindo o princípio da sustentabilidade.

## V. Considerações Finais

No presente estudo buscou-se apresentar como a *corporate governance* está sendo influenciada pelo princípio da sustentabilidade. Como pano de fundo, foi apresentada a questão do aquecimento global, de origem antrópica e a importância do mercado de carbono como indutor de comportamentos empresariais mais sustentáveis. Os estudos de *corporate governance,* por sua vez, estão passando por muitas mudanças. A sustentabilidade e o objetivo das sociedades comerciais gerarem valor para todos os envolvidos e não apenas para os acionistas, têm sido cada vez mais difundidos.

Neste sentido, ressalta-se a importância do desenvolvimento do mercado créditos de carbono. Trata-se de um caminho eficiente para diminuir as emissões de GEESs provenientes de empresas poluidoras, pois, o aumento de rendimentos, pode induzir a prática empresarial para a busca de soluções ambientalmente sustentáveis, em especial, nota-se o efeito na utilização de novas tecnologias e aumento da percepção de valor. Dentro do tema créditos de carbono, ressalta-se a importância dos projetos de MDL e de IC que concedem créditos de carbono para os empresários que se dedicam a investir em novas tecnologias que provoquem a redução certificada de emissões de carbono. A criação do mercado de carbono e a possibilidade dos investimentos em novas tecnologias traduzirem-se em rendimentos poderão justificar economicamente o exercício das atividades de forma mais sustentável.

Este trabalho aborda temas inquietantes e pouco discutidos. Neste momento, pretende deixar a ideia de que a sustentabilidade e os compromissos relacionados ao meio ambiente que as empresas são obrigadas a cumprir pela legislação podem gerar lucros e benefícios ambientais. Os mecanismos de flexibilização previstos no PQ que autorizam a negociação das RCEs motivam os empresários a investir.

Por fim, ressalta-se a importância da utilização dos mecanismos de mercado para o envolvimento dos empresários no combate à mudança do clima. A perspectiva de lucro trazida pelos créditos de carbono é fundamental para o envolvimento e obtenção de resultados em matéria ambiental. A lógica que pauta o comportamento dos sócios e da administração das sociedades é a perspectiva capitalista, não há como querer transformar as empresas em instituições de caridade, para esse papel existem outras entidades jurídicas.

Caso se pretenda que a iniciativa se volte para o combate às mudanças climáticas serão necessários outros incentivos econômicos, os créditos de carbono são um bom começo, possuem o seu papel na estratégia de combate às mudanças climáticas, mas, se existirem mais incentivos teremos mais envolvimento. Uma deficiência do mercado de créditos de carbono reside na dificuldade, talvez até, impossibilidade desses mecanismos serem utilizadas por pequenas e médias empresas, em razão de todos os custos que envolvem um projeto que promova a redução certificada de emissões de GEEs. Não existem incentivos nessa área para que os "pequenos" explorem as suas atividades de forma mais limpa, será que somente as grandes empresas poluem? Será que os pequenos não precisam de incentivos econômicos?

A vasta legislação que regulamenta o tema precisa ser aprimorada, são necessários novos estudos sobre o tema o que abre um vasto campo de investigação sobre a matéria. Da mesma forma, é necessário destacar a importância de que a legislação ambiental, sempre que for possível, estabeleça mecanismos de mercado, buscando envolver as empresas na busca de soluções capazes de promover o desenvolvimento econômico. Por fim, é importante reconhecer que o objetivo de lucrar através do desenvolvimento, é inerente ao mundo capitalista e à natureza humana, todavia, diante do princípio da sustentabilidade, parece ser necessário criar caminhos para que se torne um bom negócio explorar as atividades econômicas de forma menos agressiva ao meio ambiente.

## Lista de Abreviaturas

APA – Agência Portuguesa do Ambiente

AR1 – First Assessment Report ou FAR

AR5 - Assessment Report 5

CELE - mercado europeu de licenças de emissão

CEMDL – Conselho Executivo do MDL

COP3 – 3ª Conferência das Partes da CQNUMC

CQNUMC – Convenção-quadro das Nações Unidas sobre Mudanças Climáticas

CVM – Comissão de Valores Mobiários

GEE - Gás de Efeito Estufa

GWP – Global Warming Potential



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IPCC- Painel Intergovernamental de Mudanças Climáticas

IBGC- Instituto Brasileiro de Governança Corporativa

IC – Implementação Conjunta

MDL – Mecanismo de Desenvolvimento Limpa

NAP - National Allocation Plan

ONU – Organização das Nações Unidas

PNMC - Política Nacional de Mudança do Clima

PQ - Protocolo de Quioto

RCEs - Reduções certificadas de emissões

SAR – Second Assessment Report

VE – Venda de Emissões

UE - União Europeia

URE - Unidades de Redução de Emissões

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# Factors Affecting Entrepreneurial Intention of Indigenous Entrepreneurs of Bangladesh

By Tanima Howlader
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*Abstract-* Nearly everywhere in the world, entrepreneurship is an immensely popular academic topic. Today, all nations view entrepreneurship as a vital component of employment, productivity, and economic growth. It crosses boundaries and gives people and communities the power to determine their own futures. This research paper examines the factors that affect indigenous entrepreneurs in Bangladesh while making entrepreneurial decisions. A systematic questionnaire was used in the study to solicit the opinions of 90 indigenous entrepreneur respondents from three different parts of Bangladesh. The results show that a variety of factors, including economic, technological, psychological, motivational, personality traits, knowledge, and skills, have a direct and indirect influence on entrepreneurial decision-making.

*Keywords: entrepreneurial intentions, entrepreneurs, bangladesh, indigenous, indigenous entrepreneurs.*

*GJHSS-H Classification: JEL Code: L26*

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*Abstract-* **Nearly everywhere in the world, entrepreneurship is an immensely popular academic topic. Today, all nations view entrepreneurship as a vital component of employment, productivity, and economic growth. It crosses boundaries and gives people and communities the power to determine their own futures. This research paper examines the factors that affect indigenous entrepreneurs in Bangladesh while making entrepreneurial decisions. A systematic questionnaire was used in the study to solicit the opinions of 90 indigenous entrepreneur respondents from three different parts of Bangladesh. The results show that a variety of factors, including economic, technological, psychological, motivational, personality traits, knowledge, and skills, have a direct and indirect influence on entrepreneurial decision-making.**

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## I. Introduction

One of the main forces behind development in the economy, technological advancement, and social advancement is entrepreneurship. Entrepreneurship is acknowledged as a significant factor in a nation's ability to create new jobs. The entrepreneurial sector may facilitate young people to become less dependent on the job market by providing more opportunities for income and lowering unemployment (Amiruddin et al., 2020). Therefore, rather than being a state of being, entrepreneurship is a process of "becoming" (Rasli et al., 2013). Therefore, governments and policymakers around the world are adopting various actions to highlight entrepreneurship-related opportunities and support entrepreneurs. Several pertinent groups have expressed concern about the significance of influencing entrepreneurial intention, which entails a desire and willingness to launch an enterprise (Al-Harrasi et al., 2014).

For the people of Bangladesh, entrepreneurship has emerged as a significant profession. Bangladesh once had an image as an underdeveloped country and a stagnant economy as a result of the British colonial exploitation and the oppression of Pakistani regimes. However, Bangladesh now has achieved great strides in both economic and social growth. Entrepreneurship is one of the several economic activities that Bangladeshi people are currently involved in. In Bangladesh, it was always believed that only men should engage in entrepreneurship. However, as a result of globalization, women are now supporting themselves and their families by carrying out their own businesses (Islam, 2019). Therefore, the government is making an additional attempt to empower youth and get them working for themselves in order to lower unemployment. Up until January 2023, the Department of Youth Development provided skill improvement training in a variety of trades to a total of 33.11 lakh youth for their job and self-employment as young people and young women. Among them, 7.54 lakh of the trained young have taken up self-employment (Ministry of Finance, 2023). Like numerous people, there are numerous indigenous people who are entrepreneurs. Indigenous entrepreneurship is a way to create and extract value that is based on the unique socioeconomic conditions of the community where an entrepreneur or business is based (Colbourne, 2017). Along with the predominant Bengali population, Bangladesh is a nation of great historical and ethnic variety, belonging to around 54 groups of Indigenous Peoples who speak at least 35 different languages. The indigenous population of the nation comprises about 1,650,159 people, or 1% of the entire population, according to the 2022 census (IWGIA, 2023). Indigenous populations can be found in several areas of Bangladesh, primarily in the bordering states of Rajshahi-Dinajpur which are located in the northwest, Mymensingh-Tangail which are located in the central north, Greater Sylhet which is located in the northeast, and Chittagong, Cox's Bazar, and Greater Barisal which are located in the south and southeast (Dhamai, 2014).

Indigenous entrepreneurship is a comparatively recent field of study, and much effort is being put into developing theories to help explain its characteristics and have an impact on policy and practice (Paul Mika, 2020). Numerous studies concentrating on entrepreneurship and the factors influencing intentions to become entrepreneurs have been conducted due to the rapid growth of entrepreneurship in Bangladesh. However, there is seldom any research where the attention is centred on the factors that are influencing indigenous people to choose their career in this field. So, this study will try to close the literature gap.

This study attempts to address the question: "What are the factors that are influencing the entrepreneurial intention of indigenous entrepreneurs in Bangladesh?". Based on the research question the data have been gathered, analyzed, and the findings have been accumulated. Based on the description above, the

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objective of the study is to find out the dominant factors that influence entrepreneurial intention of indigenous entrepreneurs of Bangladesh. The article is structured in the following way: first, it describes the pertinent literature. The research methodology was then described after that. Afterwards, it addressed the results of the study. Finally, the study outlined the conclusion.

## II. Literature Review

### a) *Entrepreneurship*

The words "entreprendre" and "entrepreneur" were created by Richard Cantillon. The word originally came from the French verb "entrenprendre," which meaning "to undertake" (Jonsson, 2017). An entrepreneur is a person who provides services or products by combining capital, labor, and other resources while competing with other people in the market in order to make a profit (Uddin et al., 2014). The process of starting a new business or organization is referred to as entrepreneurship (Shane & Venkataraman, 2000). Entrepreneurship is widely regarded as a vital driver of economic expansion, technological advancement, and job creation (Badulescu & Badulescu, 2013). Several academics have discussed the significance of entrepreneurship in the economy. Kritikos described the role the entrepreneurship on jobs and economic growth. According to him, even though some individual businesses fail, entrepreneurs provide the vitality that keeps economies strong and thriving. If entrepreneurs are persistently supported, in both good and bad economic times, then all enterprises are kept vigilant and inspired to strive constantly to grow (Kritikos, 2014).

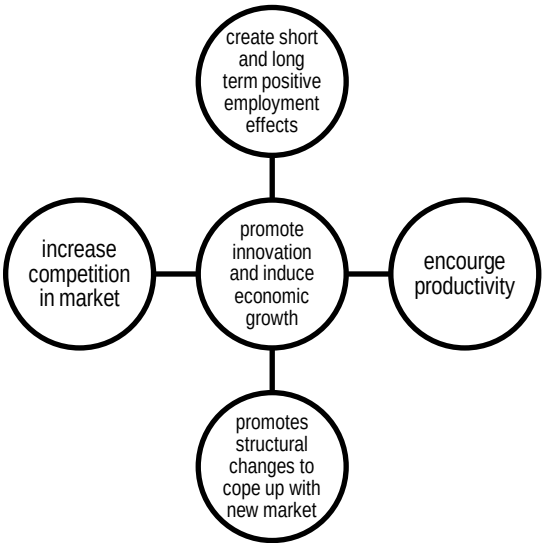



*Figure 1:* Impact of entrepreneurship on jobs and economic growth. Source: Kritikos, 2014

### b) *Entrepreneurial intention*

An individual's goals, motivations, and preparedness to get involved in entrepreneurial endeavors or launch a new company are referred to as entrepreneurial intentions. This aspiration is a critical prerequisite behind starting entrepreneurial practice and building a business. In the study of entrepreneurship, entrepreneurial intention has grown to be a popular area. It is an effective method of instilling in people a desire to do something productive and to embark on new projects (Ngat & Tuyet, 2023). Attitudes (attitude toward the behavior, subjective norms, and perceived behavioral control) are the best predictors of intention. Exogenous factors (such as characteristics, demography, skills, and social, cultural, and financial support) also have an impact on attitudes, which in turn affects intentions and behavior (Souitaris et al., 2007). An individual's views of their social and physical settings, as well as their perceived contexts, expectations, attitudes, beliefs, and choices, all influence their intentions (Boyd & Vozikis, 1994). It has been demonstrated that social models are a reliable and potent indicator of entrepreneurial interests. To put it another way, those who have experienced entrepreneurship to the same extent as family members and/or close acquaintances are generally more inclined to initiate business on their own than people who have not (Hmieleski & Corbett, 2006). People who share numerous similar traits may act differently in a changing context, whereas others who have completely distinct traits may react similarly in the same context. Even if a person has the same talent and resources to succeed as an entrepreneur, it may be difficult to predict their next move across multiple times, and we may not be able to pinpoint the specific element that changed their decision (Ngoc Khuong & Huu An, 2016).



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*c) Indigenous entrepreneurship*

Indigenous entrepreneurship is the notions, management, and development of innovative business processes (startups or enterprises) led by indigenous people who are pursuing their own objectives. These objectives may be viewed as collectively or individually beneficial to the community (Valencia León, 2020). It is a somewhat well-known topic within the field of entrepreneurship. Indigenous businesses and entrepreneurship have the potential to be effective instruments for fostering financial independence, self-determination, and conserving culture in Indigenous communities (Butler & Hinch, 1996). There are several universal factors that define indigenous entrepreneurship- Heterogeneity, resources, sustainability, context and place, success, partner group, culture, sense of community and family and cooperation (Valencia León, 2020).

Experience is one of the factors that can affect the emergence of entrepreneurial intentions among the indigenous entrepreneurs. Experience increases a person's sense of self-efficacy, has a favorable impact on feasibility, which is seen as one of the determinants of entrepreneurial intentions, and also encourages an entrepreneurial mindset. If the entrepreneur began or took over his business in the same industry that his role model operates in, the role model would boost self-efficacy in the first place. Gaining confidence would lead to the development of entrepreneurial intention in addition to the exhibition of entrepreneurial behavior by positively affecting the perceived feasibility. Thus, Entrepreneurial inclinations are significantly influenced by personal background. Another important component in the development of entrepreneurial intentions is the perception of viability and desirability. An entrepreneur is more likely to develop entrepreneurial intents if they believe that launching or taking over a business is realistic and worthwhile (Uygun & Kasimoglu, 2013).

## III. Methodology

This study used a descriptive survey approach. Data had been gathered from primary sources. The factors impacting entrepreneurial intentions were examined using primary data. The study drew in a total of 90 respondents. A structured question set of both open-ended and close-ended questionnaire, which comprises of 15 questions, has been constructed as the main data-gathering tool. There were physical and electronic distribution methods used for the questionnaires. The questionnaire is divided into two sections: Section A gathers data on the respondents' demographics, and Section B asks them about the factors they think influenced them. Convenience sampling was utilized in the study since it is both convenient to carry out the study. In order to analyze the data, frequency and percentage in charts, tables were carried out. Table 1 displays an overview of the demographic data provided by the respondents.

*Table 1:* Demographic profile of the respondents

| Variable | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| Below 20 | 3 | 3.3 |
| 21-40 | 62 | 68.9 |
| 41-60 | 19 | 21.1 |
| 61-above | 6 | 6.7 |
| **Educational background** | | |
| Below Secondary | 10 | 11.1 |
| Secondary | 25 | 27.8 |
| Higher Secondary | 20 | 22.2 |
| Graduate | 30 | 33.3 |
| Post-graduate | 5 | 5.5 |
| **Marital status** | | |
| Single | 33 | 36.6 |
| Married | 48 | 53.3 |
| Divorced | 9 | 10 |
| **Sex** | | |
| Male | 47 | 52.2 |
| Female | 43 | 47.7 |
| **Geographical location** | | |
| Chittagong Hill Tracts | 42 | 46.7 |
| Sylhet | 26 | 28.8 |
| Rajshahi | 22 | 24.4 |
| **Experience in business** | | |
| Less than 1 year | 25 | 27.7 |
| 1-2 years | 17 | 18.8 |



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| | | |
|---|---|---|
| 2-4 years | 34 | 37.7 |
| 4-above years | 14 | 15.5 |
| **Type of business** | | |
| Parlour | 9 | 10 |
| Boutique/cloths | 28 | 31.1 |
| Handicrafts | 11 | 12.2 |
| Food | 17 | 18.9 |
| Tailoring | 3 | 3.3 |
| Grocery and stationary | 5 | 5.5 |
| Ornaments | 17 | 18.9 |

## IV. Findings and Discussion

Responses from indigenous entrepreneurs were used to study the factors affecting Bangladeshi indigenous entrepreneur's entrepreneurial intentions. The participants were asked to complete the questionnaire. Table 2 shows the main factors that influence indigenous entrepreneurs' entrepreneurial intentions. Under these key factors, various other factors are also included.

*Table 2:* The dominant factors that influence entrepreneurial intentions

| Factors |
|---|
| Economic |
| Technological |
| Psychological |
| Motivational |
| Personal traits |
| Knowledge and skills |

*a) Economic factors*

According to the research, their entrepreneurial decisions are significantly influenced by economic factors. Access to capital and loans was a factor in 10 respondents' entrepreneurial decisions. The COVID-19 pandemic is having a noticeable disruptive effect on a variety of industries. Eleven respondents acknowledged its influence, demonstrating the resilience and perseverance of indigenous businesspeople. During that time, a lot of people experienced financial hardship and job loss, which had an impact on their entrepreneurial decisions. The second largest group of participants, 23, acknowledges the impact of market conditions on their entrepreneurial decisions. The sample regions are popular tourist destinations in Bangladesh. Since tourists desire to acquire those local products, the business owners use this as an opportunity to sell their goods. Access to Local Markets was highlighted by 15 respondents, which indicates the dependence on the current environment for marketing and distribution. A total of 24 respondents, or the majority, give priority to raw material availability. This emphasizes how essential a reliable supply network is to indigenous enterprises.

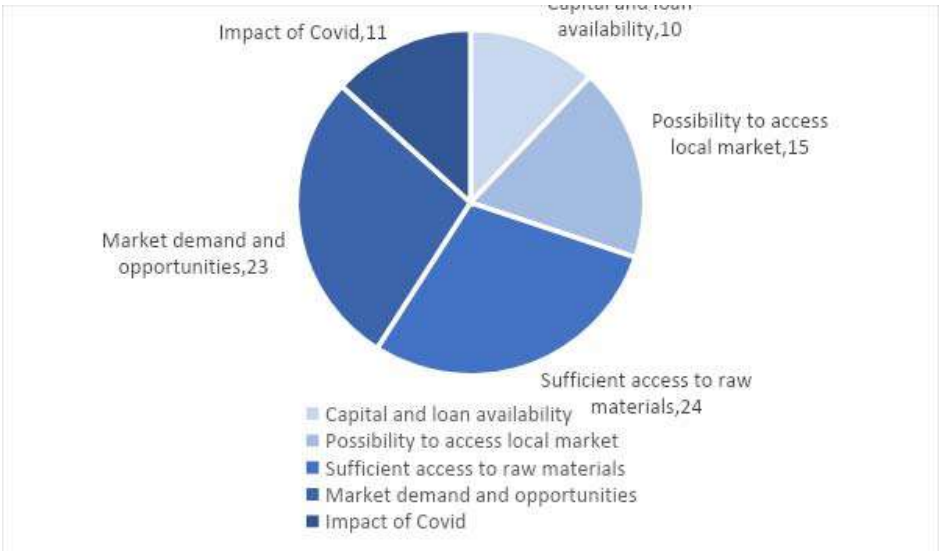



*Figure 2:* Economic factors



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*b) Technological factors*

Among the respondents, 77.8% stated that the availability of modern technology had an impact on their entrepreneurial decisions, and 57.7% highlighted the importance of knowledge of social media marketing in entrepreneurial decision. This demonstrates how technology can be a powerful driver of entrepreneurship. They believe that technology has the power to reshape society, serving not just as a tool but also as a doorway to wider market access, more productivity, and more intense competition. They will be able to engage with more potential customers by using technology and reaching out to larger audiences. 83.3% of respondents claimed that easy communication and transportation options affected them. This represents their practical viewpoint, which acknowledges that effective networking and logistics support are crucial for addressing operational challenges. Besides that, a vast majority of respondents, around 42.3%, don't have enough knowledge about social media marketing, so that factor did not influence them to pursue their entrepreneurial decision.

*Table 3:* Technological factors

| | Response | |
|---|---|---|
| | Yes | No |
| Availability of modern technology | 77.8% | 33.3% |
| Knowledge about marketing in social media | 57.7% | 42.3% |
| Easy communication and transportation facilities | 83.3% | 16.6% |

*c) Psychological factors*

Indigenous populations in Bangladesh are motivated to start businesses by psychological factors. Their confidence, freedom, success-hunger, competitiveness, and risk-taking attitude make up the psychological basis driving their business decisions. Twenty-five individuals acknowledge its significant influence. Self-confidence isn't just a quality these business owners possess; it's also an external influence that gives them the courage to take chances, embrace possibilities, and remain positive in the face of difficulties. Freedom was highlighted by 30 people and stands for the independence to make choices and follow one's own path. Their decision to pursue an entrepreneurial career is driven by their desire for financial independence. Thirst for achievement is a motivational force for 13 people to pursue their businesses as entrepreneurs. Thirteen individuals highlighted the value of taking risks. Nine people defined competitiveness as their drive to succeed in a highly competitive marketplace.

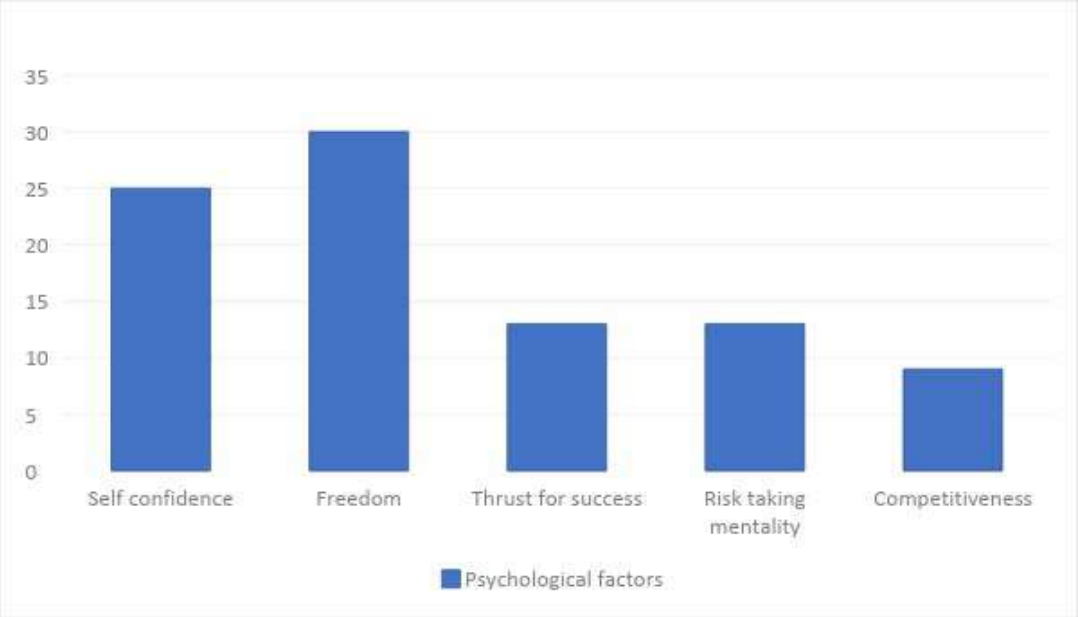



*Figure 3:* Psychological factors

*d) Motivational factors*

These Indigenous entrepreneurs' motivation is shaped by the success stories of others from their surroundings, support from family, local customs, family challenges, and the uncertain job market. For seven people, the success stories of others acted as a subtle but powerful motivator. They frequently become motivated by the success of other businesspeople when they see it. The successes of them serve as an example for these indigenous businesspeople. Twenty-



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one participants mentioned that their choice was influenced by encouragement from friends and family. For 23 people, the local customs and practices served as inspiration. They recognized how entrepreneurship has always played a significant role in the development of the heritage of their community. They sell their products to tourists since they are from a tourist area, and this encourages them to keep their culture alive. Family crises are cited as a strong motivator by 19 respondents. They were motivated to launch their own firm by the duty to look after their families. Twenty people's thoughts were influenced by the employment market's volatility. Because they have experienced the instability of regular employment, they had taken an alternative path. Bangladesh has a high unemployment rate; thus people turn to business as a means of survival.

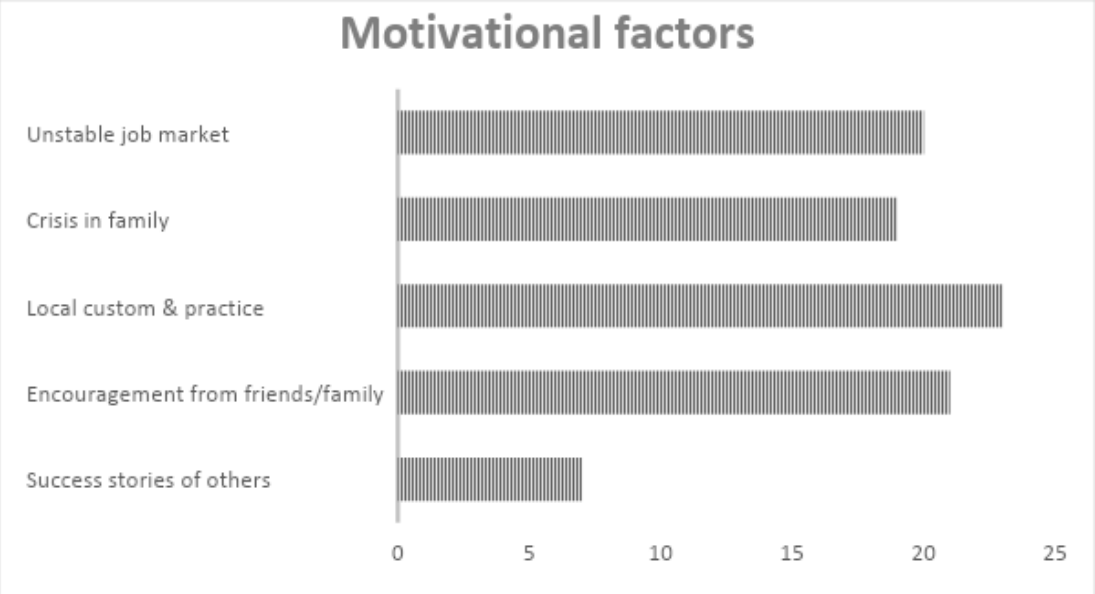



*Figure 4:* Motivational factors

*e) Personal traits*

Among the participants, 8 people mentioned how their leadership abilities influenced their decision to launch their firm. 15 people have a family background that is deeply connected with entrepreneurship. According to them, business ownership has been transferred to them through the generations as a heritage. Their familial past not only shapes their choices but also firmly grounds them in a culture they are devoted to preserving their business. Twenty-two individuals launched their businesses with assistance from their surroundings. Eleven respondents said that their decision was impacted by their capacity for innovation and change. The majority of 34 people mentioned autonomy as their influential factor. They felt that following an entrepreneurial career would provide them with the freedom and authority they seek.

*Table 4:* Personal traits

| Factors | Frequency | Percentage |
|---|---|---|
| Leadership | 8 | 8.9 |
| Family background related to entrepreneurship | 15 | 16.6 |
| Family support | 22 | 24.4 |
| Ability to make changes, innovation | 11 | 12.2 |
| Autonomy | 34 | 37.8 |

*f) Knowledge and skills*

Approximately 7.7% of respondents said they had gained expertise and abilities from formal entrepreneurial training courses. This result highlights the potential value of structured training programs in promoting the entrepreneurial mindset. Only 5.5% of respondents said they had learned new information and skills through entrepreneurship education, which influenced them to seek a career in this field. A vast majority portion, 25.5% of respondents admitted that they had received their entrepreneurship knowledge and skills from their family's business practices. By working there, they acquired practical business experience. Around 33.3% of the respondents said that working part-time jobs helped them advance their entrepreneurship knowledge and skills. This means that practical expertise earned through part-time employment can act as a useful and effective route to entrepreneurship.



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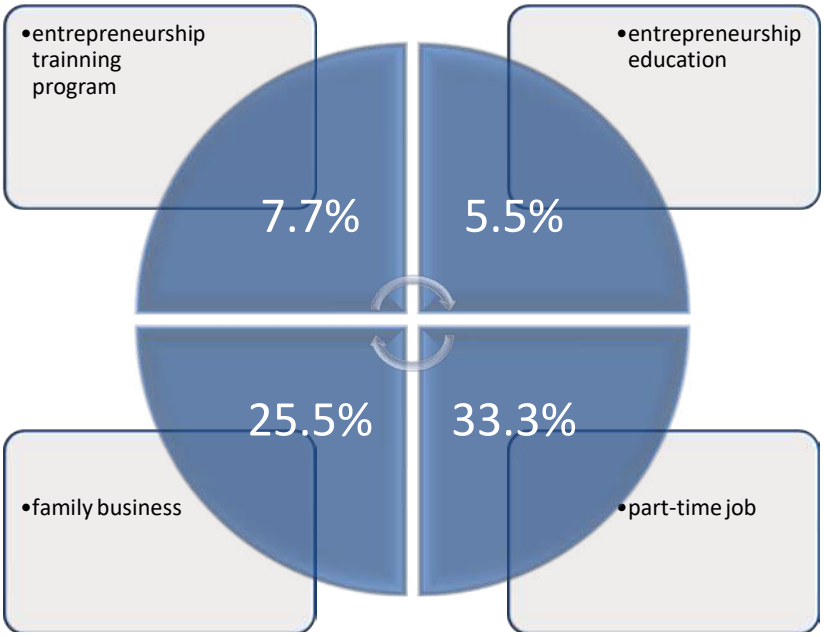



*Figure 5:* Knowledge and skills

## V. Conclusion

Indigenous groups have always protected their distinctive traditions and cultures. These indigenous communities in Bangladesh are representative of the great diversity. In the midst of this diversity, entrepreneurial endeavours have come into their own as a driving force for financial independence and sustainability. Entrepreneurship is more than just a means of financial gain; it is a factor that has the power to reshape societies, advance society, and solve some of the most important problems the world is currently experiencing. It fosters creativity, empowers people, and improves a community's quality of life. This research paper examines the factors that affect indigenous communities's entrepreneurial decisions in Bangladesh. In addition to being crucial for their economic development, these communities' entrepreneurial decisions have a significant impact on both the conservation of their indigenous history and the long-term development of their communities. Recognizing the factors that drive indigenous community's entrepreneurship decisions is critical for developing appropriate plans and policies that foster sustainable and inclusive economic growth.

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Fellows may join as a member of the Editorial Board of Global Journals Incorporation (USA) after successful completion of three years as Fellow and as Peer Reviewer. Additionally, Fellows get a chance to nominate other members for Editorial Board.

Career | Credibility | Exclusive | Reputation

## S

All members get access to 5 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 10 GB free secure cloud access for storing research files.

# ASSRC

## ASSOCIATE OF SOCIAL SCIENCE RESEARCH COUNCIL

ASSOCIATE OF SOCIAL SCIENCE RESEARCH COUNCIL is the membership of Global Journals awarded to individuals that the Open Association of Research Society judges to have made a 'substantial contribution to the improvement of computer science, technology, and electronics engineering.

The primary objective is to recognize the leaders in research and scientific fields of the current era with a global perspective and to create a channel between them and other researchers for better exposure and knowledge sharing. Members are most eminent scientists, engineers, and technologists from all across the world. Associate membership can later be promoted to Fellow Membership. Associates are elected for life through a peer review process on the basis of excellence in the respective domain. There is no limit on the number of new nominations made in any year. Each year, the Open Association of Research Society elect up to 12 new Associate Members.

Global Journals sends a letter of appreciation of author to the Dean or CEO of the University or Company of which author is a part, signed by editor in chief or chief author.



W

A ASSRC member gets access to a closed network of Tier 2 researchers and scientists with direct communication channel through our website. Associates can reach out to other members or researchers directly. They should also be open to reaching out by other.

Career | Credibility | Exclusive | Reputation



U

V I L

Associates receive a printed copy of a certificate signed by our Chief Author that may be used for academic purposes and a personal recommendation letter to the dean of member's university.

Career | Credibility | Exclusive | Reputation




V

Associates can use the honored title of membership. The “ASSRC” is an honored title which is accorded to a person’s name viz. Dr. John E. Hall, Ph.D., ASSRC or William Walldroff, M.S., ASSRC.

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U

All the Associate members of ASSRC get a badge of "Leading Member of Global Journals" on the Research Community that distinguishes them from others. Additionally, the profile is also partially maintained by our team for better visibility and citation.

Career | Credibility | Reputation

## X

Associates receive discounts on future publications with Global Journals up to 30%. Through our recommendation programs, members also receive discounts on publications made with OARS affiliated organizations.

Career | Financial



## Y S

Y

Associates get secure and fast GJ work emails with 5GB forward of emails that they may use them as their primary email. For example, john [AT] globaljournals [DOT] org.

Career | Credibility | Reputation



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To take future researches to the zenith, fellows receive access to almost all the premium tools that Global Journals have to offer along with the partnership with some of the best marketing leading tools out there.

Financial

## U E W

O

Associates are authorized to organize symposium/seminar/conference on behalf of Global Journal Incorporation (USA). They can also participate in the same organized by another institution as representative of Global Journal. In both the cases, it is mandatory for him to discuss with us and obtain our consent. Additionally, they get free research conferences (and others) alerts.

Career | Credibility | Financial

## W

Y I I

All associates receive the early invitations to all the symposiums, seminars, conferences and webinars hosted by Global Journals in their subject.

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S E T

Y F R0

Associates can publish articles (limited) without any fees. Also, they can earn up to 30-40% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.

Exclusive | Financial

UE0

Associate members are eligible to join as a paid peer reviewer at Global Journals Incorporation (USA) and can get a remuneration of 15% of author fees, taken from the author of a respective paper.

Financial

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All members get access to 2 selected scientific museums and observatories across the globe. All researches published with Global Journals will be kept under deep archival facilities across regions for future protections and disaster recovery. They get 5 GB free secure cloud access for storing research files.

| S | X | Y | T |
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| **Certificate,** LoR and Momento<br>**2** discounted publishing/year<br>**Gradation** of Research<br>**10** research contacts/day<br>**1 GB** Cloud Storage<br>**GJ** Community Access | **Certificate,** LoR and Momento<br>**Unlimited** discounted publishing/year<br>**Gradation** of Research<br>**Unlimited** research contacts/day<br>**5 GB** Cloud Storage<br>**Online Presense** Assistance<br>**GJ** Community Access | **Certificates,** LoRs and Momentos<br>**Unlimited** free publishing/year<br>**Gradation** of Research<br>**Unlimited** research contacts/day<br>**Unlimited** Cloud Storage<br>**Online Presense** Assistance<br>**GJ** Community Access | **GJ** Community Access |

# Preferred Author Guidelines

**We accept the manuscript submissions in any standard (generic) format.**

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

Authors should submit their complete paper/article, including text illustrations, graphics, conclusions, artwork, and tables. Authors who are not able to submit manuscript using the form above can email the manuscript department at submit@globaljournals.org or get in touch with chiefeditor@globaljournals.org if they wish to send the abstract before submission.

## Before and during Submission

Authors must ensure the information provided during the submission of a paper is authentic. Please go through the following checklist before submitting:

1. Authors must go through the complete author guideline and understand and *agree to Global Journals' ethics and code of conduct,* along with author responsibilities.
2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

**Declaration of Conflicts of Interest**

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

## Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

## Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

**Changes in Authorship**

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

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**Appealing Decisions**

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

**Acknowledgments**

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

**Declaration of funding sources**

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

## Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

***Manuscript Style Instruction (Optional)***

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

***Structure and Format of Manuscript***

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

## Format Structure

***It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.***

All manuscripts submitted to Global Journals should include:

**Title**

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

**Author details**

The full postal address of any related author(s) must be specified.

**Abstract**

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

**Keywords**

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

**Numerical Methods**

Numerical methods used should be transparent and, where appropriate, supported by references.

**Abbreviations**

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

**Formulas and equations**

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

**Tables, Figures, and Figure Legends**

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

**Figures**

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

## Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

## Tips for writing a good quality Social Science Research Paper

Techniques for writing a good quality homan social science research paper:

***1. Choosing the topic***: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

***2. Think like evaluators:*** If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

***3. Ask your guides:*** If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

***4. Use of computer is recommended:*** As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

***5. Use the internet for help:*** An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



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***6. Bookmarks are useful:*** When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

***7. Revise what you wrote:*** When you write anything, always read it, summarize it, and then finalize it.

***8. Make every effort:*** Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

***9. Produce good diagrams of your own:*** Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

***10. Use proper verb tense:*** Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

***11. Pick a good study spot:*** Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

***12. Know what you know:*** Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

***13. Use good grammar:*** Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

***14. Arrangement of information:*** Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

***15. Never start at the last minute:*** Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

***16. Multitasking in research is not good:*** Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

***17. Never copy others' work:*** Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

***18. Go to seminars:*** Attend seminars if the topic is relevant to your research area. Utilize all your resources.
Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

***19. Think technically:*** Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

***20. Adding unnecessary information:*** Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

***21. Report concluded results:*** Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

***22. Upon conclusion:*** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

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## Informal Guidelines of Research Paper Writing

***Key points to remember:***

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

**Final points:**

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

*The introduction:* This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

**The discussion section:**

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

**General style:**

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

**To make a paper clear:** Adhere to recommended page limits.



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*Mistakes to avoid:*

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

**Title page:**

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

**Abstract:** This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

*Reason for writing the article—theory, overall issue, purpose.*

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

**Approach:**

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

**Introduction:**

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

*The following approach can create a valuable beginning:*

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

**Approach:**

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

**Procedures (methods and materials):**

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

**Materials:**

*Materials may be reported in part of a section or else they may be recognized along with your measures.*

**Methods:**

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

**Approach:**

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

**What to keep away from:**

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- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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**Results:**

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The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

**Content:**

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

**What to stay away from:**

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- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

**Approach:**

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

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If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

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- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

**Approach:**

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| ***References*** | Complete and correct format, well organized | Beside the point, Incomplete | Wrong format and structuring |

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