



Academic Motivation and Career Decidedness of STEM and HASS Students during Higher Education

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Abstract

The present paper justifies the design of the research, which centers on examining the intricate relationship between students' academic motivation and career decidedness within the context of Portuguese higher education. The study is underpinned by an extensive review of literature from the last seven years, delving into students' career motivation, and unveils a promising path for investigation. Grounded in the conceptual framework of Self-Determination Theory, as proposed by Deci and Ryan in 1985, intrinsic motivation, often synonymous with autonomy, is considered the keystone of individual self-regulation and behavioral performance, and exhibits positive correlations with academic motivation and career decidedness. Therefore, a thorough analysis of the interplay between the various types of academic motivation and career decidedness among higher education students becomes imperative. This exploration encompasses multiple factors, including gender, age, field of study (STEM, humanitarian, arts, and social sciences), and educational level. To conduct this investigation, a quantitative methodology is employed, utilizing questionnaires to assess participants' academic motivation types and levels of career decidedness. The research results bear significant potential for practical implications aimed at enhancing academic practices within higher education institutions, ultimately contributing to a positive impact on students' career decidedness and related outcomes.

Keywords: career motivation, self-determination theory, university students, vocational choice

1. Introduction

The career trajectory of higher education graduates is a crucial outcome of their education and an escalating concern for higher education institutions. Employability, defined as "the possibility to access a suitable job or to remain employed, resulting from the dynamic and evolving interactions between governmental and educational policies, organizational strategies, individual characteristics, and the social, economic, cultural, and technological context" (Monteiro et al., 2023), has become a focal point. The transition to the labor market is currently fraught with numerous challenges, stemming from both the state of the labor market itself and the inability of higher education institutions to adapt to rapid changes.

The primary obstacles in the contemporary shift to the labor market involve heightened unemployment, intense competition among graduates, an increase in temporary job contracts (Jagielska, 2023; Tuononen et al., 2019), a rise in part-time employment (Jackson & Wilton, 2017), and a shortage of job opportunities directly related to one's field of study (James et al., 2021). Therefore, it is not surprising that there is a compelling need to enhance students' employability, especially underscored by the Bologna system (Fényes et al., 2021), particularly in situations where students must secure financial loans to pursue higher education (Fernández et al., 2023).

Furthermore, the formidable challenge of securing employment in the era of the fourth industrial revolution compounds these difficulties. This period, characterized by computerization, widespread adoption of artificial intelligence, a transformative approach to labor, and rapid changes, is reshaping entire production and management systems (Jagielska, 2023). As a result, the labor market's demands are shifting towards highly qualified professionals and lower-skilled service workers, with middle-skilled roles gradually undergoing automation (Harari, 2019; Steiner et al., 2019).

In an effort to adapt to the new demands of the labor market, higher education institutions are revising their curriculums to emphasize supra-professional skills, including the "big Cs": critical thinking, creativity, communication, and collaboration (Harari, 2019; Monteiro et al., 2023), as well as emotional intelligence, stress control, empathy, and personal development (Yeung, 2019). Additionally, there is a growing emphasis on advocating for more diverse academic disciplines, such as Social and Humanitarian Sciences and the Bachelor of Arts (Jagielska, 2023; James et al., 2021). These comprehensive programs aim to provide students with a broader array of employability opportunities (Boboccea, 2023). However, recent research suggests that students within these expansive fields often remain uncertain and face difficulties in decision-making when it comes to shaping their future career paths (Jagielska, 2023). They encounter challenges in transitioning to professional life and express lower satisfaction with their jobs (Fényes et al., 2021; Tuononen et al., 2019).

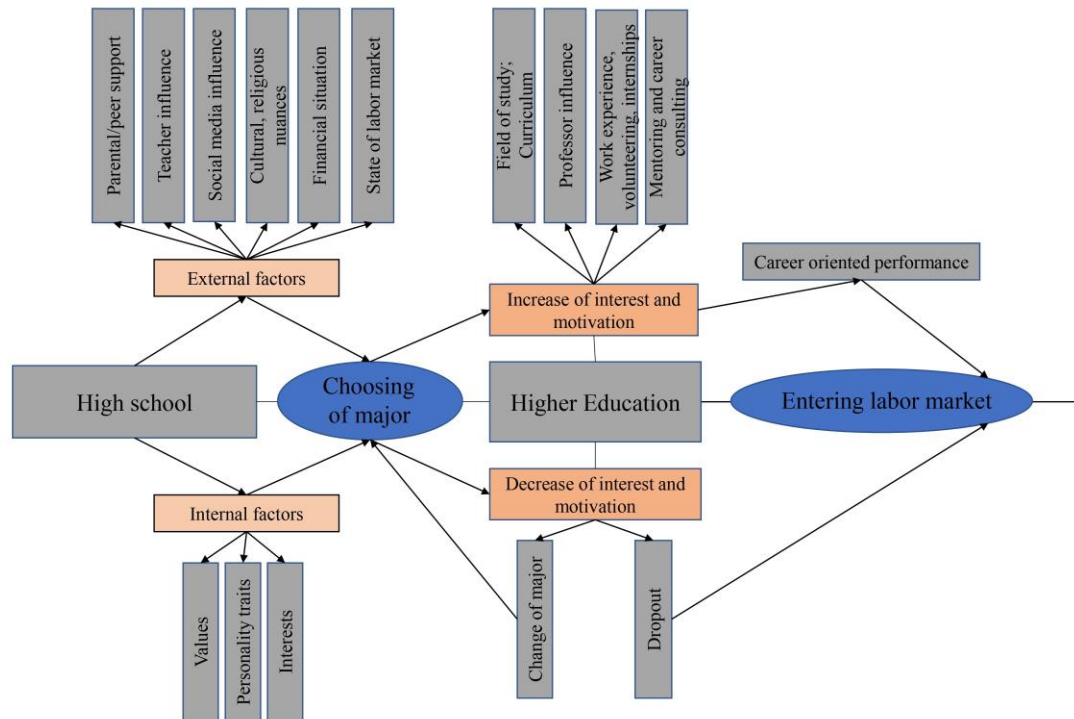
However, the role of higher education in terms of employability is a subject of debate among modern scholars. Some view higher education institutions as "factories producing skilled human resources" (Siddiky & Akter, 2021) and anticipate their contribution to enhancing national economic and social well-being by offering both short and long-term employment opportunities (Jackson & Wilton, 2017). On the other hand, others support a more balanced approach that leaves room for education driven by pure interest and passion for learning (Lima, 2007). They argue that education should not merely serve economic productivity but should embrace a broader, more democratic, and holistic purpose (Biesta, 2006; Harari, 2019; Lima, 2007).

Given this complex backdrop of employability challenges in higher education, the current research primarily focused on understanding the dynamics of career motivation, delving into how students' professional choices are shaped by various motivational factors.

1.1.Career choice during education

Choosing a career is a pivotal life decision that profoundly impacts an individual's well-being, lifestyle, work-life balance, and overall satisfaction (Ebeh et al., 2023). Opting for a well-suited career path leads to enhanced general well-being, improved academic and work performance, and the potential for a stable career trajectory (Jackson & Wilton, 2017). Conversely, an ill-fitted career path can result in feelings of failure, disappointment, depression, lower self-esteem, and diminished performance in academic and vocational realms (Kazi & Akhlaq, 2017).

Figure 1: Career motivation during high school and higher education



Source: T. Masliyenko, C.Reis

The career decision-making process is a journey unfolding across different stages of education, starting with selecting a major after secondary education and continuing through higher education. Along this educational journey, individuals may experience varying outcomes, with some seeing their initial interest and motivation grow, while others contemplate changing their major or even dropping out (Quinlan & Corbin, 2023). This journey culminates in the transition to the workforce after graduation.

Career motivation is influenced by multiple factors, categorized as internal and external. Internal factors involve personal and intrinsic elements, including motivations, values, interests, and personality traits like self-determination, self-efficacy, and self-knowledge. External factors are shaped by the surrounding environment, encompassing elements such as the labor market's state, geographical location, cultural nuances, financial situation, and support from family, teachers, and peers (Sharif et al., 2019). (See Fig. 1.)

Career motivation significantly shapes an individual's path, with intrinsic motivation driven by personal goals and devoid of external rewards (Jagielska, 2023). Extrinsic motivation is influenced by external factors, seeking rewards like grades, wealth, or prestige. Achievement motivation focuses on overcoming challenges and achieving specific goals, emphasizing task-oriented achievement (Jagielska, 2023). Motivation also influences one's commitment to work and its significance, guided by factors like career maturity, knowledge, goals, interests, and values (Kovach, 2018; Steiner et al., 2019).

Personal values, intrinsic and extrinsic, significantly impact career choices, fostering a strong person-job fit (Jackson & Tomlinson, 2019). Self-knowledge is crucial for career development, involving self-exploration to understand vocational interests, strengths, values, and abilities (Steiner et al., 2019). Personal authenticity, aligned with self-realization, guides individuals

toward career paths resonating with their sense of self (James et al., 2021). This journey leads to professional self-determination, influencing the perceived significance of one's chosen profession, professional self-esteem, and the ability to seize opportunities (Bodrova et al., 2023).

Interest in one's field of study is crucial for career decisiveness (Quinlan & Renninger, 2022). Academic interest supports the development of career interest, enhancing academic performance and fueling the desire to extend that passion into one's future career. Educators play a pivotal role in shaping students' career perspectives and decisiveness by nurturing their interest in specific subjects (Quinlan & Corbin, 2023). Interest not only predicts an individual's career choice but also foretells future career performance and success (Su, 2020).

External influences also significantly shape career decisions, with family members playing varied and crucial roles. Mothers often guide career choices by nurturing specific fields and interests (Kazi & Akhlaq, 2017), whereas fathers typically influence decisions related to abilities and skills development (Sharif et al., 2019). Overall, parental support is multifaceted, providing both psychosocial backing and career guidance (Steiner et al., 2019). Families also underscore the value of financial stability and consistent employment, offering various forms of support, including financial, moral, and emotional (Ebeh et al., 2023).

In the academic sphere, tutors, especially in STEM fields, significantly affect students' career decisiveness and the cultivation of academic interests (Sharif et al., 2019; Quinlan & Corbin, 2023). Peers also play a vital role; for example, some students may select a major to remain with their friends (Kazi & Akhlaq, 2017). The influence of social media on career choices is profound; it can democratize access to career information, provide inspirational figures, and offer support from online communities. However, it also has drawbacks, such as promoting the pursuit of quick wealth, dissatisfaction with traditional careers, and encouraging risky behaviors (Ebeh et al., 2023).

These external factors can act as both enablers and obstacles in career development. Challenges like familial pressures, lack of support, job conditions not aligning with personal preferences, and cultural beliefs can all form significant barriers (Siddiky & Akter, 2021).

1.2. Self-determination, academic motivation and career decidedness

After thoroughly examining the landscape of career motivation, the current research narrowed its focus to career decidedness as a key indicator, with a particular emphasis on the role of self-determination. Career decidedness, encompassing the ability to make informed vocational choices and the confidence in one's chosen path, is intricately linked to individual levels of self-determination and self-regulation (Guay et al., 2003; Li et al., 2019). Positive influences on career decidedness include rational decision-making, self-efficacy beliefs, and professional identity, while factors like perfectionism, anxiety, and fear of commitment have negative impacts (Guay et al., 2003). Higher career decidedness is associated with improved well-being, increased propensity to seize career opportunities, and elevated levels of job and life satisfaction (Li et al., 2019).

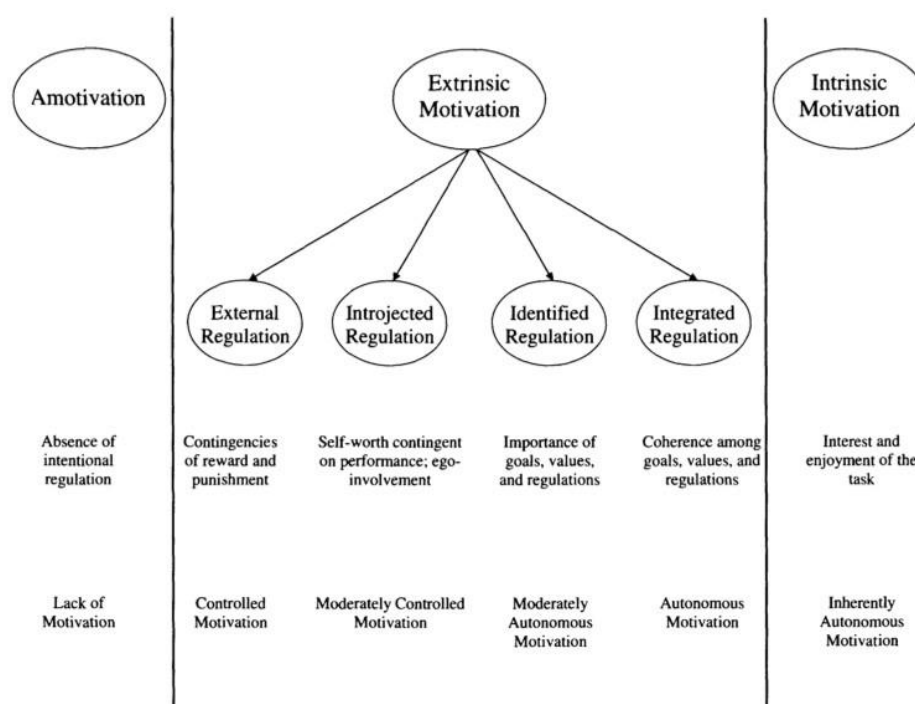
Several studies have established a robust connection between career decidedness and self-determination (Deci et al., 1991; Guay et al., 2003; Paixão & Gamboa, 2017). Drawing from Deci and Ryan's Self-Determination Theory (SDT), which identifies autonomy, competence, and relatedness as fundamental human needs, this research focuses on autonomy. Autonomy, operationalized through motivational processes and self-regulation styles, influences career decidedness, with high autonomy linked to positive traits like persistence and creativity and low autonomy associated with tendencies like depression and procrastination in job-seeking (Guay et al., 2003). According to SDT, an individual's autonomy level is determined by their

type of motivation. Intrinsic motivation provides the highest autonomy, while the impact of extrinsic motivation varies based on the type of regulation. (See Fig. 2.)

In addition to career decidedness, academic motivation is another crucial variable within the higher education framework. It reflects an individual's desire for academic subjects and influences various outcomes, including academic achievement, engagement, stress-coping abilities, study skills, self-regulated learning strategies, and persistence (Koyuncuoglu, 2020). The Self-Determination Theory (SDT) has been applied in education, highlighting the importance of fulfilling psychological needs for competence, autonomy, and relatedness (Deci et al., 1991). Academic motivation is influenced by an individual's broader motivational orientation, with intrinsic motivation positively impacting basic psychological needs and academic outcomes (Koludrović & Ercegovac, 2015).

As both career decidedness and academic motivation are positively linked to self-determination, especially intrinsic motivation and autonomous forms of extrinsic motivation (Deci et al., 1991), this research aims to explore the interplay between academic motivation and career decidedness among higher education students. Koyuncuoglu's study in 2020 demonstrated a positive effect of academic motivation on career decidedness, and the current research seeks to replicate and expand on these findings among Portuguese higher education students, considering various factors such as gender, age, field of study, and educational level within the framework of the Self-Determination Theory (Deci & Ryan, 1985).

Figure 2: Autonomy level continuum in Self-Determination Theory



Source: Gangé & Deci, 2005, p. 336

2. Research method and design

The main aim of this research is to investigate the connections between dominant types of academic motivation and the level of career decidedness among university students, while also examining correlations based on independent variables such as participants' age, gender, field of study, and educational level. The research design adopts a quantitative approach to assess

these variables. Initially, a comprehensive demographic questionnaire will be administered to capture essential demographic information, including students' age, gender, educational level, field of study, and prior education.

To assess students' academic motivation, the study will utilize the Academic Motivation Scale (AMS), originally developed by Vallerand in 1992 and later adapted for Portuguese higher education by Guimarães and Bzuneck (2008). This version, validated by Ribeiro et al. (2019), comprises 29 Likert-type items categorized into various motivational dimensions, representing Intrinsic Motivation, Extrinsic Motivation by Integrated Regulation, Extrinsic Motivation by Identified Regulation, Extrinsic Motivation by Introjected Regulation, Extrinsic Motivation by External Regulation, and Demotivation. Following the approach used by Koyuncuoglu (2020) and insights from Lopes et al.'s (2018) work, a 5-category Likert scale will be applied, allowing for a nuanced assessment of academic motivation within this context.

For the measurement of career decidedness, the Career Decision Scale (CDS) by Osipow et al. (1976), as adapted for Portuguese higher education by Maria Taveira (1997), will be used. This adapted version of the CDS includes 15 items in a 4-category Likert scale format, focusing on evaluating the levels of vocational certainty and indecision among students. The decision to streamline the scale by omitting certain items aims to enhance its reliability and alignment with the study's quantitative focus, ensuring a more structured and precise analysis of career decisiveness factors.

2.1. Sampling strategy

The sampling strategy for this study is designed to provide a comprehensive representation of the diverse student population at the University of Coimbra, Portugal, encompassing various academic disciplines and levels of study. The study will encompass students from all faculties of the University of Coimbra. This includes students from the faculties of Arts and Humanities, Law, Medicine, Science and Technology, Pharmacy, Economics, Psychology and Educational Sciences, Sports Science and Physical Education, Arts College, Interdisciplinary Research Institute, and the Institute of Nuclear Sciences Applied to Health.

Reflecting the global nature of higher education, the sample will also include mobility and international students enrolled at the University of Coimbra. The inclusion criterion for these students is a sufficient understanding of Portuguese, ensuring all participants can fully comprehend and respond to the survey questions.

In this study, a convenience sampling method will be used. The survey will be digitally distributed to all the students of the University across various faculties and educational levels. Participation in the survey will be voluntary, and responses will be collected from those who choose to participate.

While the convenience sampling method employed in this study offers practicality and the possibility for broad participation, it is limited by the potential for self-selection bias and the consequent challenges in ensuring the representativeness and generalizability of the findings to the entire student body. Participation in this study will be entirely voluntary, with informed consent required from all participants. The study will adhere to strict ethical guidelines to ensure confidentiality and the respectful handling of participant data.

2.2. Data analysis plan

The data analysis in this study will focus on understanding the relationships between types of academic motivation, career decidedness, and demographic variables among students at the University of Coimbra, Portugal.

Using the Academic Motivation Scale (AMS), responses will be analyzed to identify dominant types of motivation among students. Statistical methods, including correlation and regression analysis, will be utilized to explore the association between various forms of academic motivation and demographic factors like age, gender, field of study, and educational level.

Data from the Career Decision Scale (CDS) will be examined to assess the levels of career decidedness. The study will employ statistical tests to investigate how career decidedness correlates with academic motivation types and different demographic characteristics of the student sample.

The analysis will primarily use descriptive statistical techniques such as correlation analysis, t-tests, and regression analysis to understand the relationships and differences within the data. These methods will help in testing the hypotheses and drawing conclusions about the factors influencing academic motivation and career decidedness.

3. Conclusion

This research embarks on a critical journey to explore the intricate relationship between academic motivation and career decidedness among students in Portuguese higher education. Utilizing the Self-Determination Theory as a guiding framework, this study aims to provide a comprehensive understanding of how different motivational factors, particularly level of autonomy, impact the career choices and professional development of students in different educational areas.

The implications of this research are far-reaching and multifaceted. Firstly, its results may provide valuable insights for educators and academic advisors, suggesting that fostering a learning environment that supports autonomy and self-determination can significantly influence students' career decidedness.

Secondly, the findings may have practical implications for career counseling and guidance services within universities. Understanding the role of intrinsic motivation in career decision-making empowers career counselors to develop more effective strategies and tools to assist students in navigating their vocational journeys.

Moreover, this study may contribute to the broader discourse on employability and the preparation of students for the dynamic and evolving labor market. By highlighting the crucial interplay between academic motivation and career decidedness, this research may underscore the need for higher education policies and curricula that are responsive to the changing demands of the workforce and the individual needs of students.

In conclusion, this research lays the groundwork for a deeper understanding of the factors influencing career decidedness in higher education. While focused on the Portuguese context, the insights gained might have broader relevance and applicability, offering a valuable perspective for educators, policymakers, and researchers worldwide. The current study may also inspire continued exploration and innovation in the fields of educational psychology and career development, ultimately contributing to the enrichment of students' academic experiences and their successful transition into the professional world.

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References

- Biesta, G. (2006). What's the Point of Lifelong Learning if Lifelong Learning Has No Point? On the Democratic Deficit of Policies for Lifelong Learning. In *European Educational Research Journal* (Vol. 5, Issue 3-4), pp. 169-180.
- Boboccea, D. (2023). Motivation of Students for Teaching Career. *Revista Romaneasca Pentru Educatie Multidimensionala*, 15(2), pp. 260–283.
- Bodrova, I., Chernukha, N., Vasylyeva-Khalatnykova, M., Bakulina, O., Binytska, K., Kostenko, D., & Tarnavska, T. (2023). Research of Motivation for the Development of Professional Self-Determination. *Revista Romaneasca Pentru Educatie Multidimensionala*, 15(2), pp. 229–243.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.
- Deci, E., Vallerand, R., Pelletier, L., & Ryan, R. (1991). Motivation and Education: The Self-Determination Perspective. *EDUCATIONAL PSYCHOLOGIST*, 26(3 & 4), pp. 325–346.
- Ebeh, R. E., Ohazurike, E. U., & Omaku, S. A. S. (2023). Social media modelling, mentoring and parental support as predictors of undergraduates' career choice. [Online]. *African Journal of Social and Behavioural Sciences (AJSBS)* (Vol. 13, Issue 1). Available: <https://journals.aphriapub.com/index.php/AJSBS/article/view/2018/1873>
- Fényes, H., Mohácsi, M., & Pusztai, G. (2021). Types and predictors of career consciousness among higher education students. *Journal of Economic Sociology*, 22(5), pp. 151–169.
- Fernández, D. P., Ryan, M. K., & Begeny, C. T. (2023). Gender expectations, socioeconomic inequalities and definitions of career success: A qualitative study with university students. [Online]. *PLoS ONE*, 18 (24 February). Available: <https://doi.org/10.1371/journal.pone.0281967>
- Gagné, M., & Deci, E. L. (2005). Self-Determination Theory and Work Motivation. *Journal of Organizational Behavior*, 26, pp. 331-362.
- Guay, F., Senécal, C., Gauthier, L., & Fernet, C. (2003). Predicting career indecision: A self-determination theory perspective. *Journal of Counseling Psychology*, 50(2), pp. 165–177.
- Guimarães, R., & Bzuneck, J. A. (2008). Propriedades psicométricas de um instrumento para avaliação da motivação de universitários [Psychometric properties of an instrument for assessing the motivation in university]. *Ciências & Cognição*, 13(1), pp. 101–113.
- Harari, Y. N. (2019). *21 Lessons for the 21st Century*. Vintage, U.K.:London.
- Jackson, D., & Tomlinson, M. (2019). Career values and proactive career behaviour among contemporary higher education students. *Journal of Education and Work*, 32(5), pp. 449–464.
- Jackson, D., & Wilton, N. (2017). Career choice status among undergraduates and the influence of career management competencies and perceived employability. *Journal of Education and Work*, 30(5), pp. 552–569.
- Jagielska, K. (2023). Motivation as a factor in educational and professional career planning of generation Z. *Labor et Educatio*, 10, pp. 95–111.
- James, S., Mallman, M., & Midford, S. (2021). University students, career uncertainty, and the culture of authenticity. *Journal of Youth Studies*, 24(4), pp. 466–480.

- Kazi, A. S., & Akhlaq, A. (2017). Factors Affecting Students' Career Choice. *Journal of Research and Reflections*, Vol. 2, pp. 187-196.
- Koludrović, M., & Ercegovac, I. R. (2015). Academic motivation in the context of self-determination theory in initial teacher education. *Croatian Journal of Education*, 17(1), pp. 25–36.
- Kovach, M. (2018). A Review of Classical Motivation Theories. *Journal of Interdisciplinary Studies in Education*, 7(1), pp. 34–53.
- Koyuncuoglu, O. (2020). An Investigation of Academic Motivation and Career Decidedness among University Students. *International Journal of Research in Education and Science*, 7(1), pp.125-143.
- Li, H., Ngo, H. yue, & Cheung, F. (2019). Linking protean career orientation and career decidedness: The mediating role of career decision self-efficacy. [Online]. *Journal of Vocational Behavior*, 115, 103322. Available: <https://doi.org/10.1016/j.jvb.2019.103322>
- Lima, L. C. (2007). *Educação ao longo da vida: Entre a mão direita e a mão esquerda de Miró* [Lifelong Education: Between Miró's Right Hand and Left Hand]. São Paulo: Cortez Editora.
- Lopes, P., Silva, R., Oliveira, J., Ambrósio, I., Ferreira, D., Crespo, C., Feiteira, F., & Rosa, P. J. (2018). Rasch analysis on the academic motivation scale in Portuguese University students. *NeuroQuantology*, 16(3), pp. 41–46.
- Monteiro, S., S. Almeida, L., Gómez Sanchez, T., Rebollo Quintela, N., & Peralbo Uzquiano, M. (2023). Career resources among higher education students: a mixed-method study. *Educación XX1*, 26(1), pp. 93–115.
- Osipow, S. H., Carney, C. G. and Barak, A. (1976). A Scale of Educational-vocational Undecidedness: A Typological Approach. *Journal of Vocational Behavior*, 27, pp. 233-244.
- Paixão, O., & Gamboa, V. (2017). Motivational Profiles and Career Decision Making of High School Students. *Career Development Quarterly*, 65(3), pp. 207–221.
- Quinlan, K. M., & Corbin, J. (2023). How and why do students' career interests change during higher education? *Studies in Higher Education*, 48(6), pp. 771–783.
- Quinlan, K. M., & Renninger, K. A. (2022). Rethinking employability: how students build on interest in a subject to plan a career. *Higher Education*, 84(4), pp. 863–883.
- Ribeiro, M. F., Saraiva, V., Pereira, P., & Ribeiro, C. (2019). Academic Motivation Scale: Validity in Portuguese Public Higher Education. *Revista de Administracao Contemporanea*, 23(3), pp. 288–310.
- Sharif, N., Ahmed, N., & Sarwar, S. (2019). Factors Influencing Career Choices. [Online]. *IBT Journal of Business Studies Volume*, 15(1), pp. 33-46. Available: <https://ssrn.com/abstract=3431911>
- Siddiky, Md. R., & Akter, S. (2021). The students' career choice and job preparedness strategies: A social environmental perspective. [Online]. *International Journal of Evaluation and Research in Education (IJERE)*, 10(2), 421. Available: <https://doi.org/10.11591/ijere.v10i2.21086>
- Steiner, R. S., Marciniak, J., Johnston, C. S., & Hirschi, A. (2019). Career preparedness in adolescents: an overview of empirical research and suggestions for practice. *International Handbook of Career Guidance*, 2nd Ed, pp. 305-323.

- Su, R. (2020). The three faces of interests: An integrative review of interest research in vocational, organizational, and educational psychology. *Journal of Vocational Behavior*, 116, 103240.
- Taveira, M. C. (1997). *Exploração e desenvolvimento vocacional de jovens: Estudo sobre as relações entre a exploração, a identidade e a indecisão vocacional* [Youth Vocational Exploration and Development: Study on the Relationships between Exploration, Identity, and Vocational Indecision]. (Doctoral dissertation, Institute of Education and Psychology). Braga: University of Minho.
- Tuononen, T., Parpala, A., & Lindblom-Ylänne, S. (2019). Graduates' evaluations of usefulness of university education, and early career success – a longitudinal study of the transition to working life. *Assessment & Evaluation in Higher Education*, 44(4), pp. 581–595.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The Academic Motivation Scale: A Measure of Intrinsic, Extrinsic, and Amotivation in Education. *Educational and Psychological Measurement*, 52(4), pp. 1003–1017.
- Yeung, I. (2019). The factors of career self-determination of students of higher education institutions. *Baltic Journal of Career Education and Management*, 7(1), pp. 9–20.