LEARNING AND ACADEMIC ACHIEVEMENT IN HIGHER EDUCATION

APRENDIZAGEM E RENDIMENTO ACADÊMICO NO ENSINO SUPERIOR

APRENDIZAJE Y REALIZACIÓN ACADÉMICA EN LA ENSEÑANZA SUPERIOR

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ABSTRACT: This article presents a review of the scientific production regarding the academic abilities and methods of study of university students related to the academic achievement. We searched the online databases with descriptors in Portuguese and English, academic performance/academic achievement, learning, university or college students and higher education, published among 2008 and 2018. There were found 90 articles predominating the English language (55.6%), and in 2017 there were the largest number of publications (31.1%), also the American continent represents half of the publications. Qualitatively it is pointed out that several factors influence the academic achievement. In this study, 21 skills were categorized into cognitive and metacognitive, as well psychosocial management, with emphasis on motivation and self-regulation as the most studied. Considering these results, a discussion is done about the teaching-learning processes to be promoted in Higher Education.

KEYWORDS: Learning. Academic achievement. Higher education.

RESUMO: *Este artigo apresenta uma revisão da produção científica a respeito das habilidades acadêmicas e dos métodos de estudo de estudantes universitários relacionados à sua aprendizagem e ao seu rendimento acadêmico. Realizou-se consulta às bases de dados on-line com os seguintes descritores em português e inglês: rendimento/desempenho acadêmico, aprendizagem, estudantes universitários ou estudantes do ensino superior. A revisão reportou a artigos publicados entre 2008 e 2018. Foram selecionados 90 artigos, predominando o idioma inglês (55,6%), sendo que em 2017 houve o maior número de publicações (31,1%), e o continente americano deteve metade das publicações. A análise dos resultados presentes em tais artigos mostra que diversos fatores descrevem a qualidade da aprendizagem e influenciam o rendimento acadêmico dos universitários. Neste estudo, 21 habilidades foram categorizadas em cognitivas e metacognitivas, com destaque para a motivação e a autorregulação como as mais estudadas. Tomando esses resultados, identificam-se dimensões a considerar em instrumentos de avaliação das estratégias de aprendizagem e métodos de estudo dos universitários, privilegiando-se as dimensões que mais impactam o sucesso acadêmico no Ensino Superior.*

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***PALAVRAS-CHAVE**: Aprendizagem. Desempenho acadêmico. Ensino superior.*

***RESUMEN**: Este artículo presenta una revisión de la producción científica acerca de las habilidades académicas y métodos de estudio de estudiantes universitarios relacionados al rendimiento académico. Se realizó consulta en las bases de datos en línea con descriptores en portugués e inglés, rendimiento/desempeño académico, aprendizaje, estudiantes universitarios o estudiantes de la enseñanza superior, publicados entre 2008 a 2018. Resultaron 90 artículos predominando el idioma inglés (55,6%), siendo que en 2017 hubo el mayor número de publicaciones (31,1%) y el continente Americano detuvo mitad de las publicaciones. Cualitativamente se apunta que diversos factores influencian el rendimiento académico. En este estudio, 21 habilidades fueron categorizadas en cognitivas y metacognitivas, así como de manejo psicosocial con destaque para la motivación y la autorregulación como las más estudiadas. Tomando estos resultados se discuten los procesos de enseñanza-aprendizaje a fomentar en la Enseñanza Superior.*
***PALABRAS CLAVE**: Aprendizaje. Desempeño académico. Enseñanza superior.*

Introduction

Research in educational psychology studies academic performance or performance in Higher Education (HE) considering multiple intervening variables - institutional and teaching practices - but highlights the way in which students approach their learning and study methods (LOURENÇO; PAIVA, 2015). In this article, the student's role in learning and academic success are privileged, seeking to identify the relevant variables in such processes, with a view to their inclusion in an evaluation questionnaire in the construction and validation process.

Research in the area of learning and academic performance in HE highlights some personal variables of the student. A significant volume of studies refers to self-regulatory capacities: self-directed processes that allow the student to transform mental skills into competences, combining capacities, motivations, beliefs, and behaviors to regulate their learning (ZIMMERMAN, 1989). Bandura (1977; 1993) adds that self-regulation is relevant in the classroom and in spaces outside of it, associating cognitive and metacognitive processes that translate into learning, motivation, and self-efficacy strategies. Even due to the scope of personal dimensions included, self-regulation of learning has been assumed as a relevant variable in explaining the quality of learning, academic performance, and autonomous and efficient study practices (ALEGRE, 2014; SERRANO; SOTO; TAMAYO, 2013; WILLIAMS *et al*., 2017). These studies highlight that a good knowledge of their skills and motivations - an adequate analysis of the requirements of academic tasks or an assessment of environmental conditions - can influence learning and performance, leading the self-regulated student to

manage, with sufficient maturity and autonomy, students' challenges posed in terms of curricular and extracurricular competences for HE students.

A second well-researched construct - regarding students' learning and academic success in HE - has to do with approaches to learning. Phenomenological analyzes of the description of learning through questionnaires show that students in HE diverge in their approaches to learning (BIGGS, 2003; ENTWISTLE, 2000; LOURENÇO; PAIVA, 2015). The authors of the area typify three types of approaches as most present in students: deep, superficial, and high-performance approaches (the latter less present in research). This typology describes the ways in which students mobilize their skills and motivations in favor of learning and academic performance. In the deep approaches, the capacities and goals of learning are directed towards the knowledge and the development of competences based on an effort of analysis, apprehension, and structuring of the contents by the students. In superficial approaches, this effort to appropriate meaning and its personal restructuring emerge through appropriation procedures centered on memorization and associated with more extrinsically motivated learning. In the high-performance approach, the student's effort is to mobilize his cognitive and motivational resources for good *performances* in situations of evaluation and obtaining good levels of performance, which can - in some cases - come close in superficial approaches, as it can make no sense for the student to deepen his understanding of the subjects or assume competences, relating new knowledge to previous knowledge, for example (BIGGS, 2003; ENTWISTLE, 2000; ROSÁRIO *et al*., 2014).

In addition to these two variables, the investigations mention others that influence learning and academic performance. The perceived competence or the perception of academic self-efficacy, as well as the learning goals, appear isolated in some studies. However - for some authors - both variables are present in the analysis of students' self-regulation or approaches to learning (LOURENÇO; PAIVA, 2015). In this sense, leaving the areas more related to capacity and motivation, some studies value dimensions of personality and temperament, values, socio-cultural origins, or socio-emotional experiences of students. There is a great consensus among the authors to affirm that these factors are an important condition for the adaptation or adjustment of the student to the university context, with perceptions of well-being and satisfaction equally indispensable for good learning and good academic performance (MONTEIRO; TAVARES; PEREIRA, 2008; TEMBO; BURNS; KALEMBO, 2017).

It is possible that university professors - for the most part - feel prepared to teach academic content, of which they are specialists, to their students; however, they are not sure that students will have good academic performance expressed by grades and concepts in regular

tests and assessments, nor will they perform well in the application of the knowledge acquired in the disciplines and courses (CARBONERO; ROMÁN; FERRER, 2013). Knowing variables involved in the academic learning process of students at the university, whether the student deals with learning content and materials or - even - with the factors that influence studies and learning, can help teachers reflect on curricular projects, teaching practices and institutional conditions in which teaching-learning-assessment processes take place, favoring their improvement or the training of teachers.

The literature review by Matta, Lebrão and Heleno (2017) verified articles published between 2005 and 2015 regarding academic experiences in engineering courses and concluded that the quality of adaptation and interpersonal relationships impacts on academic performance and student evasion. Other authors value the student's academic adaptation in explaining his involvement in studies, analyzing this adaptation regarding feelings of well-being, satisfaction with academic activities and future career projects; also, identification with the institution and the course (COSTA; ARAÚJO; ALMEIDA, 2014; GUIDRY *et al*., 2017; LANGAME *et al*., 2016). At the same time, investigations show the interference of other variables such as gender, age and scientific area of the course attended (SILVA *et al*., 2017).

In addition to the variables most related to students, several contextual factors were identified as significant for good learning - or not - such as the pedagogical resources available, the working conditions of the teachers and the organizational aspects of the course impact on the students' learning and academic success in HE (ENCINAS *et al*., 2009; TEIXEIRA *et al*., 2016). In such a way that happens that it is recognized that academic performance or achievement stems from the quality of teaching-learning processes (ITURRA *et al*., 2012; MATTA; LEBRÃO; HELENO, 2017; TEIXEIRA *et al*., 2016). Even though it is not a central concern of this article, it is not possible to disconnect student learning from the teaching methods of teachers and from the methodologies used in the assessment of students' knowledge. Even considering the role and responsibility of the student in successful learning, academic contexts, equipment and laboratories, the formation and teaching skills of teachers - among others - also make a difference (CHEN *et al*., 2017; KASSARNIG *et al*., 2017; GUPTA; SINGH; MARWAHA, 2013).

Finally, an important issue concerns the concept of academic performance. Kassarnig *et al*. (2017) consider that academic performance has multiple facets and cannot be considered in isolation at the risk of simplifying the student's achievements and performances. Even so, most pragmatic investigations take the score achieved in tests prepared by teachers or continuous forms of assessment as revealing of the students' mastery of knowledge and skills related to the

curricular structure of their courses. This structure progressively explains the expected learning results, as well as the contents and activities programmed and worked on in class. In the present review of articles in the area, studies that include explicit assessments of students' knowledge and skills in academic achievement measures are considered.

In view of the above, this article aims to survey and analyze scientific production about academic skills and study methods implemented by HE students in their learning and with an impact on their academic performance. Taking the articles published in this research area, it is intended to identify the psychological dimensions of students that most influence the quality of their learning and success. This identification aims at the construction of a new questionnaire to evaluate the ways to study, learn and perform - in academic terms - by students who attend HE.

Method

Firstly, a protocol was defined for the systematization of the search for research articles, analysis, and communication of the review of scientific production in the area of Educational Psychology and Education, through the prior determination of databases, descriptors and languages and the election of the decade of research. In addition, the central problem was determined according to the research objective of raising factors, such as - for example - skills and study methods of university students related to their learning and academic performance, in research published in scientific articles. This protocol designated inclusion and exclusion items for the initial selection of the articles found, as described below. The readings of the pre-selected articles were initiated by the title, summary and developed by the objectives, method, and results of the research.

The investigation took place in the databases: Open Access Scientific Repository of Portugal (RCAAP); base Educational Resources Information Center (ERIC); base Latin American and Caribbean Literature in Health Sciences (LILACS) and Virtual Health Library (VHL), which includes repositories such as Scielo and Medline. The descriptors applied in the advanced search were: *rendimento* / *desempenho acadêmico* / academic performance / academic achievement; *aprendizagem*/learning, combined with the term, *estudantes universitários* its English translation, higher education/college Students. The period chosen for data collection was from 2008 to 2018, considering a decade of publications.

The inclusion criteria were articles that resulted from the descriptors in their titles, abstracts and/or results and publication in Portuguese, English, and Spanish. Articles whose

abstracts did not meet the inclusion criteria and did not meet the objectives of the present study were not selected for analysis. Likewise, articles that did not present the full version available for free download were not counted, as verified in some platforms that provide full texts only under payment. This survey took place in July 2018.

The first result suggested 109 articles that met the descriptors' criteria. By reading their abstracts, 19 articles were discarded because they did not meet the objective determined for the present investigation. Of the 90 articles selected, a qualitative analysis was carried out to verify the objectives, methods, and results, which required an attentive and complete reading of the articles. Ultimately, the quantitative and qualitative description presented in the following results was possible.

Results

Based on the number of 90 articles, the context in which the research was conducted was analyzed, considering the language and location of the publications. It was found that the majority (56%) of the articles are published in English, 23% in Portuguese and 19% in Spanish. The research was carried out in 33 countries covering a variety of student samples, including one made up of Brazilian and Portuguese students, and was therefore not computed. Table 1 shows the number of articles by continent, with the American divided into North, Center and South.

Table 1 - Number of searches by continent

Continent		n	%
European		24	26,6
Asian		12	13,3
African		05	5,5
American	North	11	12,2
	Central	04	4,4
	South	30	33,3
Australian		03	3,3
Total		89	98,4

Source: Devised by the authors

According to table 1, a work that was developed with participants from Portugal and Brazil was not counted. Among the five continents, the American holds half of the publications (50%), with North America standing out with 11 articles (nine of which in the United States). In Central America, there have been four published surveys from a single country, Cuba. In South America, half of the survey's research was found, with Brazil standing out with 17 articles. In Europe, a greater number of articles refer to Portugal (n = 7), a fact explained by the databases consulted.

In search of an analytical categorization of the research, it was verified - in the objectives - which variables were to be studied. In addition, the verbs used denoted the evaluation of various constructs and the search for a relationship between variables and academic performance/student performance. Table 1 shows the frequency of articles per year and shows the interest of researchers expressed by the variables pointed out in the objectives of the studies.

Chart 1 - Frequency of articles per year

	N	**Variables**
2008	02	Well-being (optimism); anxiety behaviors, self-concept.
2009	02	Types of locus of control; academic path.
2010	03	Distance learning; traditional full time; clicker feedback, seeking help, self-regulatory behavior, learning strategies, foreign students, preference of methods.
2011	06	Difficulties of students in computer courses; learning styles; self-evaluation; interpersonal skills; Academic Motivation; unfavorable attitudes in learning; motivation for learning; sex, age, and course
2012	07	Levels of drowsiness; sleep quality; personality trait of conscious state; social skills; differentiating and predictive factors of excellent academic performance; Burnout Syndrome, a tool for evaluating the evolution of performance; cognitive style, learning strategies.
2013	12	Teaching strategies; class participation; cognitive strategies; social media tools (Facebook, Blogs, Google groups, SkyDrive and Twitter); web-based learning and traditional e-learning approaches; supplementary instruction program; cognitive and non-cognitive factors; most used tools online; cognitive and non-cognitive variables; learning style; self-regulated learning, academic goals; personality; mathematical model (FUZZY).
2014	12	Academic self-efficacy, self-regulation of learning; study habits; skills; college entrance performance, sociodemographic characteristics; learning styles, study habits and performance in an online course; online tools; academic involvement; self-efficacy and engagement; study habits; class schedule, calendar and class size, instructional strategies; students' intention or not to continue their studies at the university; formative online assessment.
2015	06	University access route; methodology; Kolb's learning styles; emotional intelligence; approaches to learning (Student Approaches to Learning).
2016	08	Participation in online courses; online work habits; HE procedures; quality of life; stress; to live or not to live with the family; learning styles of Morphophysiology; use of technology; social media, number of online courses, study program, satisfaction.

2017	28	Predictive factors; mental and reproductive health; sleep disorders, fatigue and vitality, health and oral hygiene habits; assessment preference; mental health care; quality of life and health; self-managing online strategic resources; psychosocial aspects; perception of academic procrastination; self-regulation, effect of task time; insomnia; clinical teaching in outpatient settings; involvement and method of presenting the task; autonomous and controlled motivations, hybrid methodology; class attendance; perceived stress; type of school; just-in-time exercises, engagement; use of class time; adaptation experiences; emotional intelligence; consumption of psychoactive substances; emotional maladjustment; university admission tests; autonomy; positive emotions; commitment; self-efficacy, ability to predict academic success; positioning in the face of academic and family experiences, alcohol consumption and mental health problems; Emotional Intelligence, self-directed teaching methodology; psychosocial factors.
2018	04	Scholarships or not (PIBID); classroom and non-classroom graduation; sociodemographic factors, general and mental health behaviors; temperature, illumination and noise when learning perception, memory, problem solving and attention tasks.

Source: devised by the authors

It can be seen - from chart 1 - that publications on income were modest in the late 2000s (2% in 2008 and 2009), increasing from 2010 and reaching a significant increase in 2017 (31 %). Considering the research objectives, a categorization of the constructs/variables addressed by the studies surveyed was sought. Three categories of analysis emerged: *cognitive/metacognitive variables, psychosocial management skills and study methods*.

Cognitive and metacognitive constructs and variables mean, in this categorization, the propositions, attitudes and strategies used by the student to achieve learning goals. Regarding the first, it is the practical, concrete and subject to representation to carry out the learning. For example, Carbonero; Román and Ferrer (2013) promoted - in their research - the teaching of learning strategies involving cognitive processes and worked with the variables of learning strategies of the types organization, elaboration and expansion. The constructs and variables, considered metacognitive, found related to academic performance relate to the knowledge of one's knowledge, the judgment or evaluation of one's own strategies and goals, the regulation of one's own actions and the organization of one's cognitive processes. These constructs are exemplified by the work of Williams (2017), which addressed the planning of activities to achieve the students' effort in variables such as achieving consciously planned goals.

In the first category, 14 *cognitive and metacognitive variables* were found: asking for help (DAWSON; MEADOWS; HAFFIE, 2010), problem solving (AMBRÓSIO *et al.,* 2011), cognitive intervention programs (CARBONERO; ROMÁN; FERRER, 2013), previous and vocational knowledge (AGUILAR et al., 2017), working memory and attention (MUSSO *et al.,* 2013), motivation (ISIK *et al.,* 2017; JOLY; PRATES, 2011; MONTEIRO; ALMEIDA; VASCONCELOS, 2012; SANTOS *et al.,* 2011), emotional intelligence (CALA; CASTRILLÓN, 2015; MERCHÁN-CLAVELLINO; ROMERO-MORENO; ALAMEDA-BAILÉN, 2017; WIJEKOON *et al.,* 2017), locus of control (ENCINAS *et al*., 2009), cognitive

and learning style (BRECKLER, TEOH; ROLE, 2011; PÉREZ *et al.,* 2016; TINAJERO *et al.,* 2012), learning strategies (DAWSON; MEADOWS; HAFFIE, 2010; MARTÍN; MONTERO, 2017; TINAJERO *et al.,* 2012), learning styles (ÇAKIROĞLU, 2014; PELLÓN, NOME; ARÁN, 2013, BORRACCI; ARRIBALZAGA, 2015, JIRAPORNCHAROEN *et al.,* 2015), self-regulated learning and academic goals (ALEGRE; 2014; DAWSON; MEADOWS; HAFFIE, 2010; MONTEIRO *et al.,* 2009; SERRANO; SOTO; TAMAYO, 2013, WILLIAMS *et al.,* 2017), learning approaches (LOURENÇO; PAIVA, 2015, MONTEIRO; ALMEIDA; VASCONCELOS, 2012) and self-efficacy (ALEGRE; 2014; ORIOL-GRANADOA *et al.,* 2017; COSTA; ARAÚJO; ALMEIDA, 2014b).

Regarding *psychosocial management skills*, seven articles are listed that relate to social skills (ITURRA *et al.,* 2012), interpersonal skills (CARBONELL, FERNÁNDEZ; IMBERT, 2011; JUNG-JOON IHM *et al.,* 2013), psychosocial skills and sociodemographic characteristics (GASCÓN *et al.,* 2017; MUSSO *et al.,* 2013; YIGERMAL, 2017), academic involvement (SILVA *et al.,* 2017; CÁRDENAS; REDONDO; TEHERÁN, 2017; COSTA; ARAÚJO; ALMEIDA, 2014a,b), intention to continue studies (ROSÁRIO *et al.,* 2014), academic procrastination (GEARA; TEIXEIRA, 2017) and self-esteem (JUNG-JOON IHM, *et al.,* 2013).

There were 12 studies that linked *study methods* to university performance and highlighted study habits (ÇAKIROĞLU, 2014; MASHAYEKHI *et al.,* 2014), teaching strategies (ALVES *et al.,* 2013), new teaching practices (GARCIA; OROZCO; MARTIN, 2016; HASSAN; ELFAKI; KHAN, 2017; JONES, 2013; JOVANOVIC *et al.,* 2017; LIBERATORE; MORRISH; VESTAL, 2017; VARUGHESE; FEHRING, 2010; ONWEH; AKPAN, 2014), use of social media and online activities (CAVANAUGH; HARGIS; MAYBERRY, 2016; CHEN *et al.,* 2017; COLLAZO *et al.,* 2014; GUPTA; SINGH; MARWAHA, 2013; JAAMA; AHMAD; RAMBELY, 2013; LEITE *et al.,* 2013; MEJIA *et al.,* 2017; YEBOAH; SMITH, 2016), intensity of online work (DVORAK; JIA, 2016; GUIDRY, 2017), types of evaluation (CAKIROGLU *et al.,* 2017; PEREIRA *et al.,* 2012; YEO; KE; CHATTERJEE, 2014), college entrance performance (BACCARO; SHINYASHIKI, 2014), course admission scores (MIGLIARETTI *et al.,* 2017; YIGERMAL, 2017), type of public or private university (KUMWENDA *et al.,* 2017), course transfer (ACAI; NEWTON, 2015), early and consistent class attendance (KASSARNIG, *et al.,* 2017) and classroom and non-classroom teaching (ADEWARA *et al.,* 2010; LEVSHANKOVA *et al.,* 2018; YILDIZ; BAL; GULSECEN, 2013).

Other constructs related to students 'personal variables take up the habits related to students' health, with eight articles relating performance to anxiety (POZO *et al.,* 2008), depression (AGUILAR *et al.,* 2017), stress (KÖTTER *et al.,* 2017; LIMA *et al.,* 2016), personality traits (CONRAD; PATRY, 2012; TEQUES; SILVA, 2013), well-being and healthy habits (ASAWA *et al.,* 2017; CÁRDENAS; REDONDO; TEHERÁN, 2017; MONTEIRO; TAVARES; PEREIRA, 2008; REHMAN *et al.,* 2018; YIGERMAL, 2017), mental health (ALEMU; HABTEWOLD; HAILE, 2017; CAMPOS *et al.,* 2017, REHMAN *et al.,* 2018; TEMBO; BURNS; KALEMBO, 2017), sleep quality and insomnia (ARAÚJO; ALMONDES, 2012; HAILE; ALEMU; HABTEWOLD, 2017), burnout syndrome (MORI; VALENTE; NASCIMENTO, 2012) and quality of life (LANGAME *et al.,* 2016).

Finally, three articles report the impact of environmental factors on academic performance. Morris and Scott's article (2014) points out the impact of class time, calendar, and class size; the article by Xiong *et al.* (2018), the authors analyze the impact of physical conditions - such as temperature, noise, and illuminance - on academic performance; finally, we point out the differentiated performance of scholarship students and non-scholarship students, with performance levels on the part of scholarship students (ARAUJO; ANDRIOLA; COELHO, 2018).

Discussion

The analysis of the 90 articles from all continents shows that researchers have a wide concern and interest in understanding the phenomenon of learning and academic performance in HE, given that educational research must collaborate to transform knowledge into teaching practices. and new ways of teaching and learning, in addition to contributing to the understanding of the factors that lead to the permanence and completion of courses by students. The interest in improving the use and performance of academic content at the university concerns the entire educational area as an objective to be pursued by the institutions and is therefore considered as a decisive indicator of quality in the teaching and learning process.

Previous literature surveys (MATTA; LEBRÃO; HELENO, 2017; TEIXEIRA *et al*., 2016;) already pointed to a wide variety of conditions influencing income, but the present investigation showed a greater range of variables. The increase in investigations to verify factors or variables related to academic performance reflects the interest of researchers in evaluating and predicting the reasons for students' performances at the university over the past decade. This fact is accentuated by the increasing distribution of papers over the years,

culminating in 28 papers in 2017, it should be remembered that in 2018 only researches were made until half a semester, and it is not possible to estimate the total value of publications for that year.

Part of the performance-conditioned variables were categorized into cognitive and metacognitive skills and psychosocial management skills, which point to 21 students' psycho-cognitive-educational variables. In this first category, motivation was studied in relation to performance in four studies (ISIK *et al*., 2017; JOLY; PRATES, 2011; MONTEIRO; ALMEIDA; VASCONCELOS, 2012; SANTOS *et al*., 2011), corroborating Teixeira's survey *et al*. (2016) who pointed out: "intrinsic motivation is responsible for 50% of the factors that can help university students to have a satisfactory academic performance" (p. 196, our translation).

Self-regulated learning (ALEGRE, 2014; DAWSON; MEADOWS; HAFFIE, 2010; MONTEIRO *et al*., 2009; SERRANO; SOTO; TAMAYO, 2013; WILLIAMS *et al*., 2017) also stood out in four of the studies surveyed, followed by self-efficacy (ALEGRE, 2014; ORIOL-GRANADOA *et al*., 2017; COSTA; ARAÚJO; ALMEIDA, 2014b) and academic involvement (SILVA *et al*., 2017; CÁRDENAS; REDONDO; TEHERÁN, 2017; COSTA; ARAÚJO; ALMEIDA, 2014b). Regarding the highlighting of these variables, Serrano (2013) mentions that the research in educational psychology highlights the cognitive and motivational factors for understanding academic performance; for this, the theory of self-regulation and academic goals has been addressed in investigations and learning assessments. The theory of self-regulation has been strongly suggested to examine and explain learning processes that guarantee the development of useful and practical knowledge and how learners deal with their demands for study at the university.

Another category of analysis chose variables that address the methods of study and performance at the university because of the present study; with this, 12 stood out in which the use of social media and online activities, including checking the intensity of online work and its evaluation, were highlighted in the approach of the methods. This occurs in current research due to the expansion of distance learning and hybrid courses that bring together online disciplines or, still, the increase of virtual teaching-learning environments. In this regard, Leite (2013) concluded that the advancement of society towards information technology can produce knowledge and lead everyone involved in discoveries and new learning, benefiting educational actions, modifying ineffective habits, expanding world views, through access to information that is unlimited. On the other hand, Mejia (2017) warns that the same technology allows difficulties in the order of interpersonal relationships and can become a distractor for

concentration in studies, reflecting as a problem for income. All the arguments create a scenario of ample possibilities for investigations related to performance.

Other constructs intrinsic to the subject, the health and well-being of students were listed in eight items (anxiety, depression, stress, personality traits, well-being and healthy habits, mental health, quality of sleep and insomnia, burnout syndrome and quality of life), in addition to six other items (effects of class schedule, calendar and class size, temperature, noise and illumination) that correlated environmental factors to academic performance, confirming that variables extrinsic to the student may also have decisive influences on your academic performance.

Considering the last objective of the present study, more specifically to obtain subsidies for the construction of a new questionnaire to evaluate the ways of studying, learning, and performing well by HE students, motivation emerges as a very present and valued psychological dimension in the research consulted. (ISIK *et al.,* 2017; JOLY; PRATES, 2011; MONTEIRO; ALMEIDA; VASCONCELOS, 2012; SANTOS *et al.,* 2011). It emerges in the sense of intrinsic motivation, perseverance in tasks and motives or learning goals, which can be understood as underlying all study and learning behaviors, marking the quality of the processes and results achieved. Second, self-regulatory skills are worth noting (ALEGRE; 2014; DAWSON; MEADOWS; HAFFIE, 2010; SERRANO; SOTO; TAMAYO, 2013, WILLIAMS *et al.,* 2017). The quality of learning and the best performance occur with the most self-directed and determined students in their learning, associating these skills with deeper approaches to learning and self-efficacy (ALEGRE; 2014; ORIOL-GRANADOA *et al.,* 2017; COSTA; ARAÚJO; ALMEIDA, 2014b; LOURENÇO; PAIVA, 2015).

Final considerations

From the categorization adopted in the present study, evidence was found that most of the relevant factors for understanding the phenomenon of learning, performance, or achievement at the university, relate to students' cognitive, metacognitive and motivational variables. Such variables converge to broader constructs, namely self-regulation skills and approaches to student learning. In this sense, the questionnaire to be constructed should favor behaviors of planning and organizing studies and academic activities (self-regulation) and academic motivation, including here the perceptions of self-efficacy and the goals or reasons for learning.

The realization of this study - in addition to providing grounds for the development of questionnaires or scales of assessment - indicates a current positioning of scientific research production in the area of learning performance or achievement. It also conjectures to collaborate with the practice developed in universities, through a profile and characteristics of students, pointing out how students can be helped to become motivated and self-regulated learners. Internationally, higher education institutions are challenged to create opportunities for the development of their students in scientific and technological areas, as well as in social and cultural areas, challenging them to assume more proactive and responsible attitudes as future professionals.

Finally, it is important to mention some limitations to the study presented, it should be noted, on the one hand, that the databases consulted are far from representing international scientific production in the area. On the other hand, the analysis now conducted focused on the identification of variables assumed to have an impact on students 'learning and academic performance, with less attention being paid to the proposed theoretical models or to other dimensions of students' academic life in Higher Education.

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