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Bibliometric Review of Factors Influencing University Dropout (2018-2022): An Analysis of Scientific Literature

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Abstract: University dropout is a multidimensional and multicausal problem that affects every university around the world. The aim of this article is to conduct a bibliometric review of the scientific literature on the main factors that influence university dropouts in scientific publications between 2018 and 2022. The methodology is based on systematic searches using the Web of Science (WoS) and Scopus databases. We analysed 417 and 498 articles, respectively, applying inclusion/exclusion criteria. The main factors of university dropout were identified: problems in the academic and social world of students, student stress, health reasons, the role of teachers, and changes in the education system. Among the countries with the highest scientific output, Spain stands out, along with the United States, the United Kingdom, Australia, and China. This would provide a more complete view of the historical evolution and multifactorial causes of this educational phenomenon.

Keywords: *Bibliometric review, conceptual structure, content analysis, dropout in university studies.*

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Introduction

Finishing a stage and starting a new cycle is undoubtedly the trigger for feelings that could be categorised as negative: uncertainty, nervousness, fear... but, on the other hand, it also causes very positive feelings such as the illusion of starting in a new place, meeting new people, having to get by in another context bringing with it new learning. The stage that could be the most influential in adult life is the fact of entering university.

Higher education is a decisive stage of change and personal development for anyone who decides to pursue further studies. However, it is in this area that the highest drop-out rate is to be found. Before starting to analyse the data, we need to define what is a drop-out/attrition from university. There are several types or forms in which drop-out can occur. One of the visions in which university dropout can be observed is that of an administrative nature. Lizarte Simon (2017), citing Corominas Rovira (2001) and Elías (2008), or more recent articles like Álvarez Ferrándiz et al. (2022) or Pustilnik and Ndukanma (2023) states that university drop-out occurs when a student from a new cohort does not enroll for two consecutive academic years. Likewise, Elías (2008) clarifies that within the concept of university dropout, there are two different types: definitive, i.e., the student does not re-enroll after two consecutive years, and transitory, which consists of the subject re-enrolling in the same study that he or she had started or in a different one.

Continuing along the previous lines, in the literature, there are different scholars who have worked on this part and have given their own classification of the types of university dropouts. We will highlight Magallón et al. (2006) who structure the classification of the types of dropouts as follows:

1. Time variable:

a) Initial: students in a new cohort interrupt their university studies in the first semester of the first academic year.

b) Early: those leaving university are in the second/fifth semester of their studies.

c) Late: students who drop out do so in the sixth semester or more of their academic career.

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2. Space variable:

a) Internal: those who leave a degree because they decide to study another one more in line with their personal interests within the same institution (University).

b) Institutional: refers to students who do not persist in their studies definitively and do not return to the educational institution.

c) Systemic: this is the situation that arises when former students do not re-enroll in any academic studies.

Drivers of University Drop-Outs

University dropout has a multidimensional and multi-causal nature. These conditioning factors may be linked to the student's personality; reasons related to integration within the new peer group; causes related to the investment of time and effort that the student must invest in order to complete their studies; the influence of institutional reception and support mechanisms, as well as the effectiveness and efficiency that the learning model offers students; and vocational causes (López-Cózar-Navarro et al., 2020).

In the following, we will look at some examples of factors that condition the subject to make the decision to drop out of the university community. There are already analyses such as those carried out in EaD that highlight the reasons why university dropout occurs (Bennett & Monds, 2008; Blumen et al., 2011; Park & Choi, 2009; Parker, 1999; Rivera Montalvo, 2022; Tejedor Tejedor & Muñoz-Repiso, 2007).

The factors can be classified in the following structure:

a) Academic. Factors stemming from the centre's own educational proposal:

- Technological and teaching support.
- Influence of technical problems in order to give quick and quality feedback to students.
- Little organisational support.

b) Contextual. These are those that are outside the subject and do not depend directly on him/her, but nevertheless have a direct influence on the learner:

- Little family involvement.
- Lack of flexible working hours.
- Incompatibility of timetables.
- Shortage of self-employment.

c) University experience:

- Lack of organisation at the time of a personal study.
- Breakdown of expectations prior to entering university.
- Difficulty in adapting to university life.
- Underachievement, leading to poor academic results.

d) Personal:

- Low motivation.
- Lack of maturity to cope with the various barriers that arise at this stage.

University Drop-Out Patterns

High impact and dropout rates have been the focus of numerous studies. Some of the most notable are those by Aguilera de Fretes and Jiménez Chaves (2012), Bäulke et al. (2022), Bethencourt Benítez et al. (2008), Cabrera et al. (2006), de Oliveira et al. (2021), and Perchinunno et al. (2021), among others.

Furthermore, in this article, we will see which are the most current publications on this subject.

The aim of these mentioned articles, and even those that we find in this research, is to study the factors that intervene in the decision of the subject who ends up leaving Higher Education. Some of these variables are: the personal context of the student body and the academic and social environment (Bethencourt Benítez et al., 2008; González-Ramírez & Pedraza-Navarro, 2017; Tejedor Tejedor & Muñoz-Repiso, 2007).

Within the classification of the causes that favour university dropouts, we can find different classifications. In 2006, Cabrera et al. established four theoretical approaches, known as models, which encompass the determining reasons for university dropout:

1. Adaptation model. Attrition is conceived at the moment when there is a lack of adaptation on the part of the subject to the world of Higher Education. Within this model, the following research stands out: Pascarella (2005).

2. Structural model. This model states that dropout is the sum of each and every one of the contradictions of the different subsystems that directly influence the subject (political, economic and social); limiting the fact of university dropout to a social phenomenon, which is why there is complexity when determining the specific causes that provoke dropout.

3. Economistic model. This theory is based on human capital theory. It states that new cohorts entering university have to invest their time, energy, and resources in order to give them more benefits relative to costs. We note the study by Thurow (1973).

4. Psychopedagogical model. It finds the reasons for university dropout in the idiosyncrasies of the individual, psychological and personal, and links them with variables of a psycho-pedagogical nature such as learning strategies and ability to face obstacles and achieve goals. Works such as those of Kirton (2003) or Ryan and Glenn (2003) provide some answers to this model.

According to the literature review we have carried out for the purpose of writing these lines, we have found that the research can be classified according to different lines of research, depending on the variables they analyse. There are three of them: firstly, the personal reasons why a student decides to drop out of university. Within this category of study, the fact of abandoning a university degree is linked to those students whose age is around 18 years old, that is, at an early age, due to a lack of information and influenced by the mark they have obtained in the University Entrance Exam (PAU) (González-Ramírez & Pedraza-Navarro, 2017). University dropout is due to the fact that the degree that new students have enrolled in does not correspond to their first choice (Elías, 2008). Another reason for early dropout is the mode of access. Students' motivation is essential to face certain negative thoughts and to face new challenges (Cabrera et al., 2006; Bethencourt Benítez et al., 2008).

The second line of research is that which studies the interconnections between personal and institutional variables. Tejedor Tejedor and Muñoz-Repiso (2007) listed a series of fundamental reasons:

1. Organisational aspects of the university.

2. Related to the teacher due to the lack of demands or types of exams, way of teaching the class, etc.

3. Intra-subject factors. Mainly the student's lack of knowledge of good study techniques, lack of responsibility, inadequate classroom climate... among others.

Finally, the link between psycho-educational and socio-political variables should be emphasized. We stress once again the importance of age in the dropout process, as well as other factors such as the size of the family, whether it is large or not, the socio-economic level, whether it belongs to a lower social stratum and the classroom climate (Adrogué & García de Fanelli 2018; González-Ramírez & Pedraza-Navarro, 2017; García de Fanelli & Adrogué de Deane, 2016).

Methodology

For this research, a quantitative-bibliometric methodology was used to carry out the search strategies on the Web (Donthu et al., 2021; Zupic & Čater, 2015). Based on the scientific literature consulted in relation to the topic of university dropout, a list of keywords was prepared. The keywords considered are classified into a series of factors that influence university dropout, such as psychological, economic, social, and pedagogical factors. These keywords are *stress, lack adaptation, lack maturity, adaptive deficiency, low rent, lack scholarship, simultaneous work/studies, family context, peer group, belonging to communities, lack adaptation, new student, not using active learning methodology, teacher-student distance, excess academicism* and *excess theory versus practice.*

According to the scientific literature that we had read previously related to the most common factors of university dropout we had made this list of keywords.

Inclusion criteria for scientific papers are considered as follows:

- Original studies on university dropout.
- Quantitative, qualitative or mixed studies.
- Studies published in English and/or Spanish.
- Studies published between 2018 and 2022.

The exclusion criteria for scientific papers are as follows:

- Other types of studies such as reviews, conference papers, posters, editorials, commentaries, policy papers, etc.

- Studies in any language other than English or Spanish.

Once all the documents had been retrieved and the different inclusion and exclusion criteria had been applied, a final sample of 915 scientific articles was obtained, of which 417 were obtained from WoS and 498 from the Scopus database.

The Biblioshiny interface of RStudio v.4.0.4 (Aria & Cuccurullo, 2017) and the *Microsoft Office Excel* program were used to analyze the data from the scientific articles and to visualize the various graphs.

Temporal Relevance

We included empirical studies published between 2018 and 2022 in English and Spanish, as this period reflects key transformations, such as the impact of the pandemic. We considered psychological, social, economic, and pedagogical factors due to their multidimensional relevance in previous literature.

Avoiding Historical Biases

Broader time periods may include articles that are no longer representative due to changes in technology, methodological approaches, or paradigms in the field. Focusing on the last five years helps mitigate this risk.

Results

The analyses are based mainly on an exploration of the conceptual, intellectual and social structures of the topic investigated. Throughout this work, the samples will be worked on and analyzed independently in order to establish a comparison between the results of the two databases studied. Table 1 below shows the main information relating to both samples, while Figure 1 shows the annual production of each of the databases.

Table 1. Main Results Information From WoS and Scopus Databases

Description	WoS Database Results	Scopus Database Results
Documents	417	498
Sources	229	31
References	19840	22471
Authors' keywords	1318	1466
Keywords plus	781	1128
Authors	1271	2091
Collaboration index	3.37	4.40

Source: Own Elaboration.

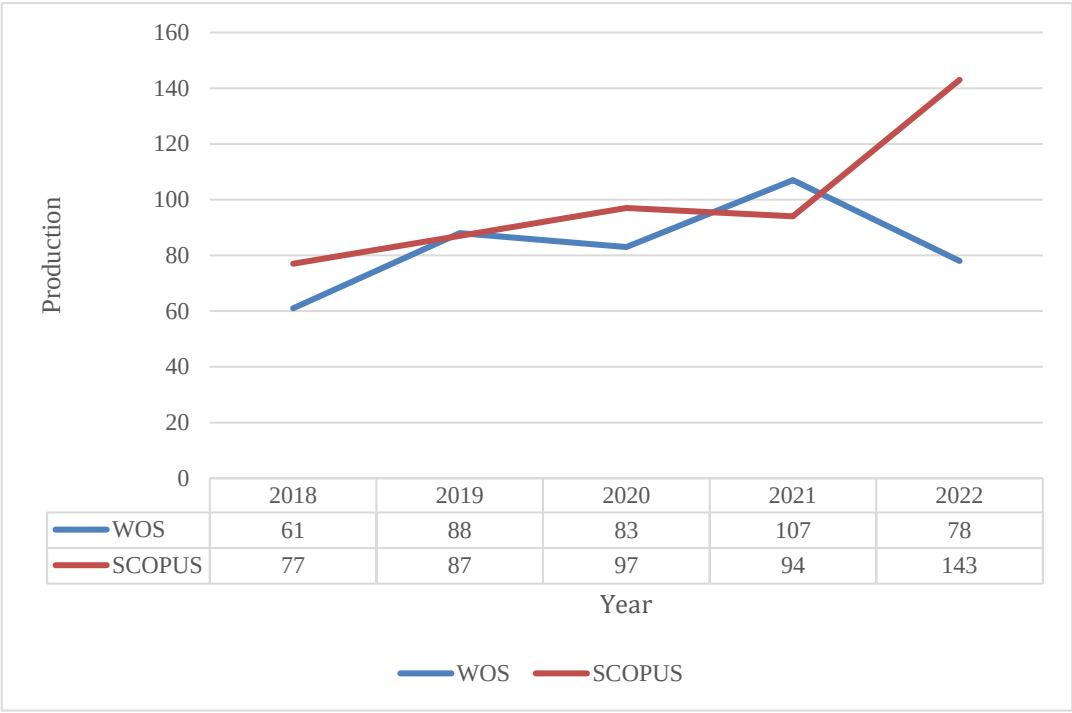

Figure 1. Annual Scientific Output From WoS and Scopus Databases
Source: Own Elaboration

Table 2 below identifies and analyses the main sources of information from which the scientific papers originate. All sources are academic journals.

Table 2. The 10 Most Relevant Sources

WoS Sources	No. of articles	Scopus Sources	No. of articles
Journal of International Students	24	BMC Medical Education	85
Journal of Further and Higher Education	10	Nurse Education Today	49
BMC Medical Education	9	Journal of Education and Health Promotion	32
Assessment & Evaluation in Higher Education	8	Frontiers in Education	29
Education Sciences	8	Education Sciences	22
Higher Education	8	Journal of Surgical Education	20
Studies in Higher Education	8	Nurse Education in Practice	19
Journal of Applied Research in Higher Education	7	Medical Education Online	17
Education and Information Technologies	5	Studies in Higher Education	17
Education Policy Analysis Archives	5	International Journal of Higher Education	16

Source: Own Elaboration.

In view of the data obtained, we can see that of the ten most relevant sources, three of them coincide between the two databases: *BMC Medical Education, Education Sciences, and Studies in Higher Education*. According to the titles of the journals in the WoS database and their editorial lines, the main subject matter focuses on studies in Higher Education of a diverse nature, where topics related to medical education, information and technology, evaluation and educational policy can be highlighted. For their part, by the titles of the most relevant journals in the Scopus database, the most important topics, beyond higher education studies, are those that stand out in health and medical education.

The 10 most relevant authors in terms of scientific production are now displayed and, taking into account the two databases, the authors with the greatest scientific production add up to a total of four scientific works. The following table compares the two databases, including information on the number of publications, citations, h-index, and g-index for each of the most relevant authors.

Table 3. Most Relevant Authors From the WoS and Scopus Databases According to Scientific Production and Citation Data

Wos					Scopus				
Authors	**Pub.**	**Citations**	**h-index**	**g-index**	**Authors**	**Pub.**	**Citations**	**h-index**	**g-index**
Brunsting, NC	4	33	3	3	Herrmann-Werner, A	4	54	3	4
Richards, KAR	4	59	2	4	Junne, F	4	62	3	4
Baik, C	3	77	3	3	Lee, M	4	17	2	4
Coutts, R	3	11	2	3	Loda, T	4	54	3	4
Fielden, J	3	11	2	3	Maeno, T	4	130	2	4
Hutchinston, M	3	11	2	3	Nikendei, C	4	59	3	4
Kim, J	3	6	1	2	Zipfel, S	4	54	3	4
Lakeman, R	3	11	2	3	Coutts, R	3	14	1	3
Lee, M	3	11	2	3	Erschens, R	3	51	2	3
Massey, D	3	11	2	3	Fielden, J	3	14	1	3

Source: Own Elaboration.

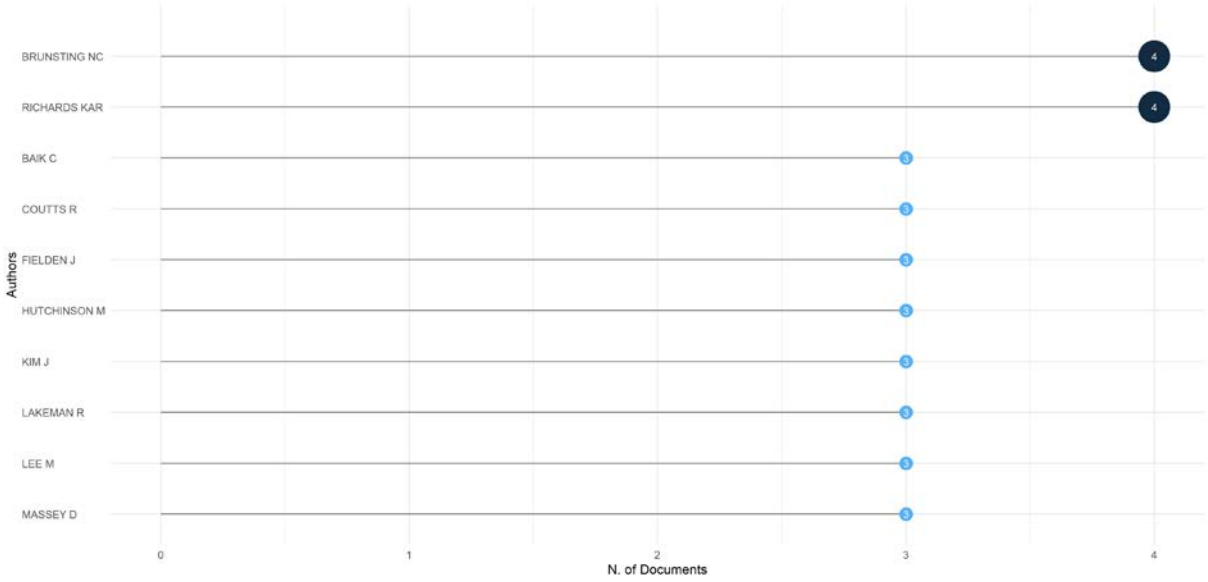

Figure 2. The 10 Most Relevant Authors of the WoS

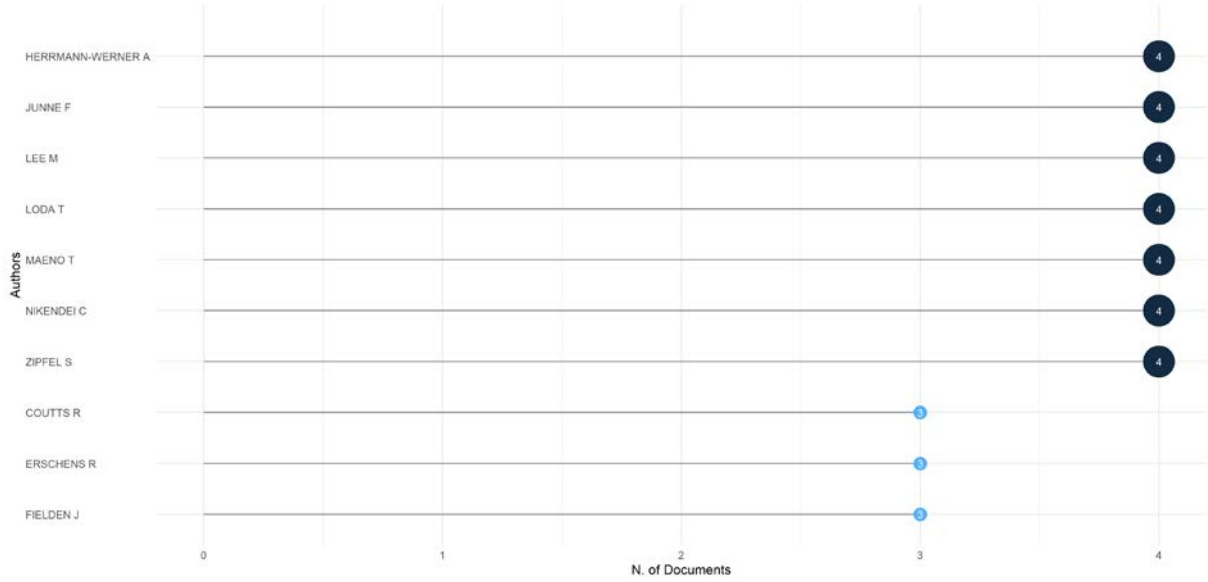

Figure 3. The 10 Most Relevant Authors of the Scopus

Social Structure Analysis

The social structure of the topic is analysed below. The analyses focus on the collaboration between countries as well as the scientific production of each country and the total citations received.

Table 4. Top 10 Countries with the Highest Scientific Output

WoS Countries	No. of Articles	Citations	Scopus Countries	No. of Articles	Citations
United States	256	719	United States	276	762
United Kingdom	92	291	United Kingdom	101	344
Australia	66	379	Australia	87	301
China	52	134	China	80	275
Spain	51	124	Germany	71	242
Germany	36	243	Spain	63	216
Canada	31	66	Iran	61	103
Finland	26	59	India	56	82
India	21	34	Canada	39	134
Ireland	21	21	Saudi Arabia	38	92

Source: Own Elaboration.

Of the ten countries with the highest production of scientific articles, eight appear in both databases apart from the countries of Finland and Ireland for the WoS database and the countries of Iran and Saudi Arabia for the Scopus database.

Furthermore, it should be considered that of the number of articles corresponding to each country, there is a frequency of collaboration between countries where the production values of each particular country may include articles that also belong to other countries. It can also be seen that for both databases the most productive countries (United States, United Kingdom, Australia, and China) coincide in their position in the ranking of journals.

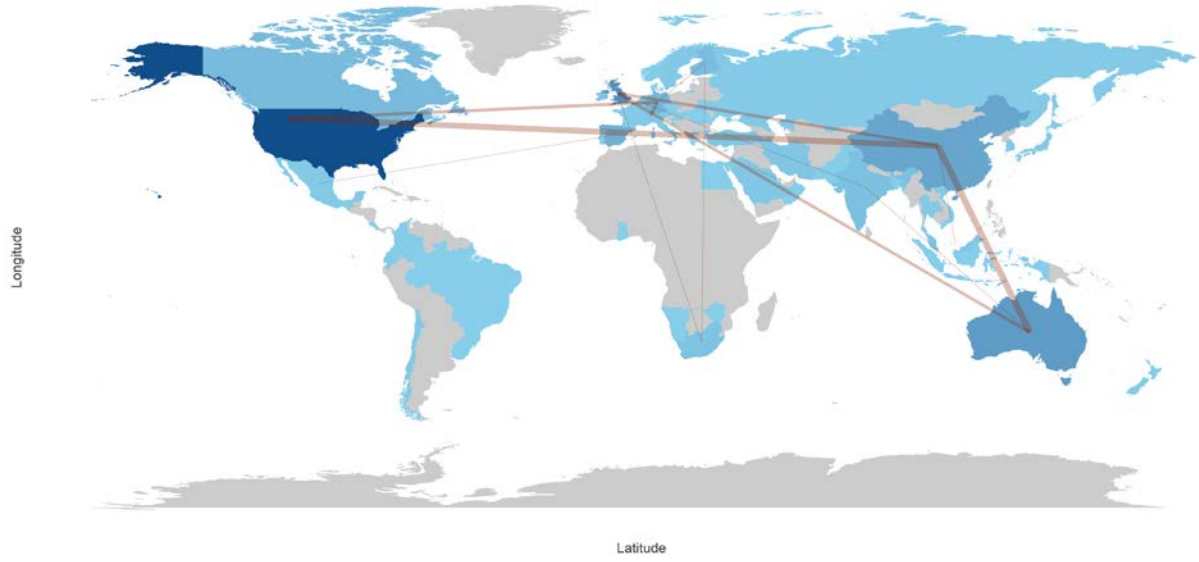

Figure 4. Web of Science Countries' Collaboration World Map

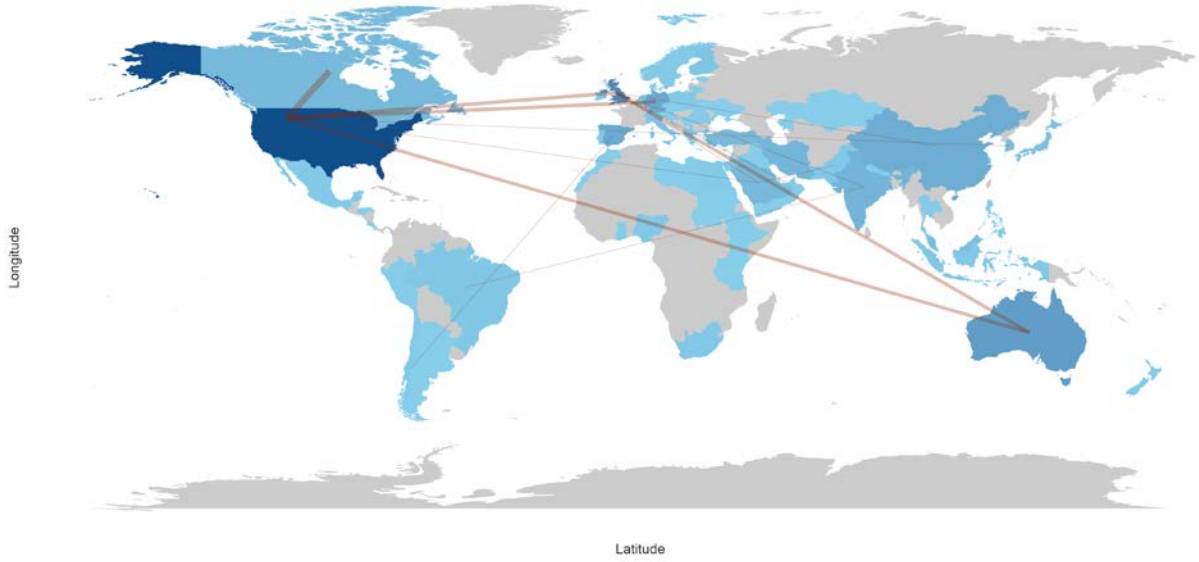

Figure 5. Scopus Countries' Collaboration World Map

Conceptual Structure Analysis

Next, we analyzed the keywords derived from the titles of the scientific articles by means of a tree map. The first tree map corresponds to Figure 6 for the article titles retrieved from the WoS database. The second tree map corresponds to Figure 7 for article titles retrieved from the Scopus database.

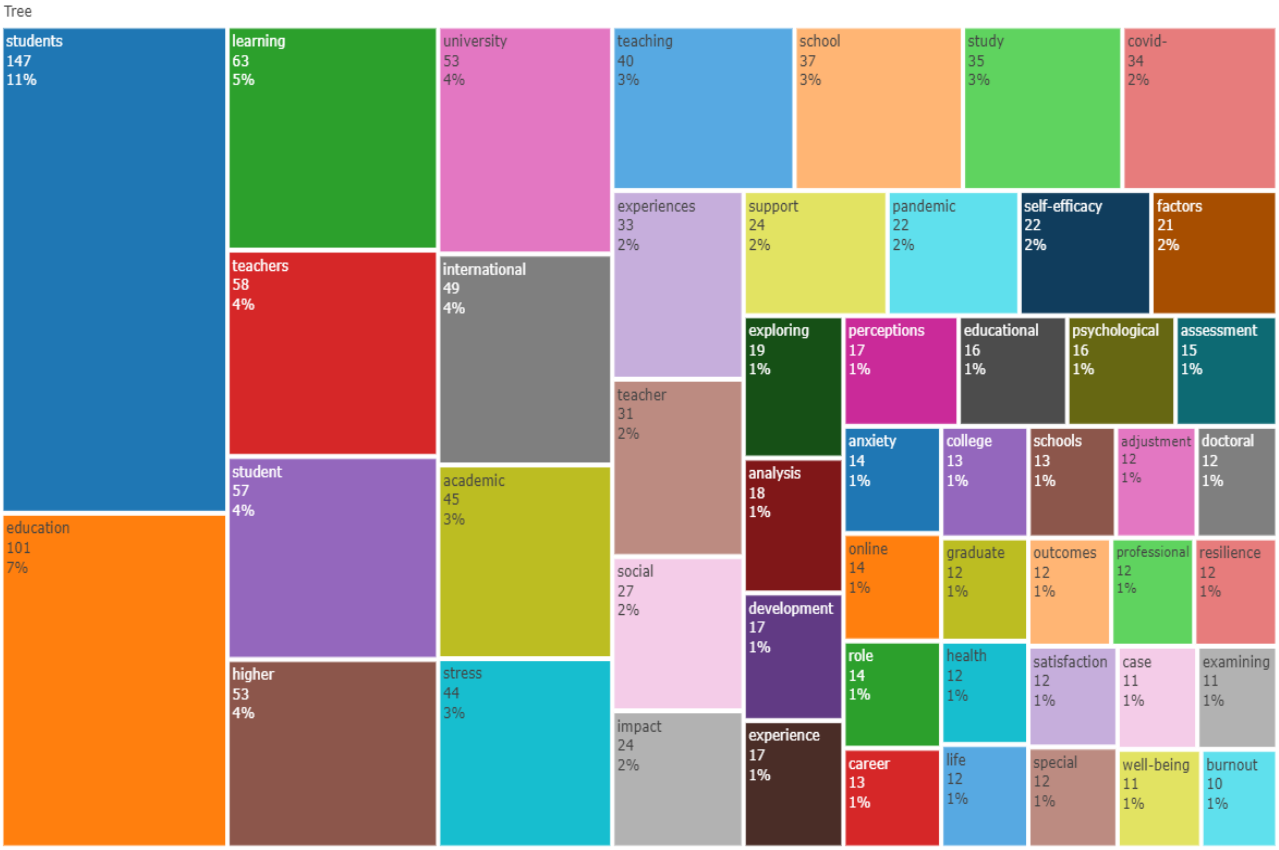

Figure 6. Tree Map of Keywords Inferred From WoS Article Titles
Source: Own Elaboration.

In the tree map above, the different keywords can be observed with the value of their frequency and the percentage that they represent of the total number of inferred keywords. It is clear that the studies focus on the figure of students as the main protagonists of the different objects of research, with the term *students* being the most frequent in both maps. In the case of Figure 6, the lines of research inferred from the titles of the articles clearly coincide with those inferred from the titles of the journals and their corresponding editorial lines. Thus, the focus is on more academic research with more universal issues related to education in general and higher education in particular, with different topics to be highlighted such as: *education, learning, teachers, university, academic, teaching, experiences, school,* etc. However, some terms can also be found that are more focused on the problem of university dropout and with which relationships can be established with some of the factors previously considered to be influential in university dropout. Thus, we could classify within the psychological factors the terms *stress, anxiety, psychological, resilience* and *burnout*, while as social factors in recent times we could consider the terms *covid, pandemic* and *perceptions*.

Figure 7. Tree Map of Keywords Inferred From Scopus Article Titles
Source: Own Elaboration

Next, the conceptual structure of university dropout will be analyzed by means of a factorial approach as an analysis resource using the field of keywords inferred from the titles of the scientific articles of both samples and independently. With this factorial approach, we will use the Multiple Correspondence Analysis method as a parameter in order to reduce the data to latent factors and to represent them in a space of lower dimensionality.

At first, a slight differentiation is observed in the formation of clusters between the two samples for a better dimensional reduction. In the case of WoS keywords (Figure 8), four clusters are formed, differentiated by the colours red, blue, green and purple, while Scopus keywords (Figure 9) are formed in three clusters corresponding to the colours blue, green and red. The location of the different clusters on the maps translates into whether their positions are more or less close to the origins of the abscissa and ordinate axes on the map. According to their location, information is obtained about the average position of all the column profiles and therefore the most important themes and trends found which, in this case, seek to answer the factors and causes behind university dropout.

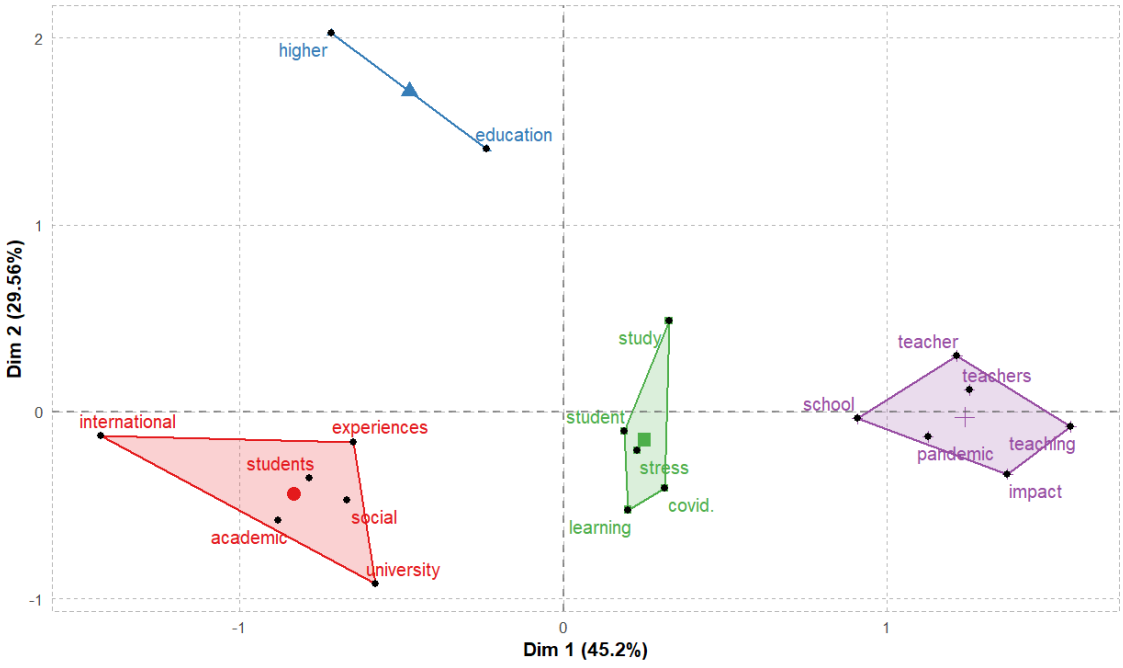

Figure 8. Map of the Conceptual Structure of the Topic University Dropout Based on the Keywords Inferred from the Titles of the Scientific Articles (WoS)
Source: Own Elaboration

Figure 8 shows that the dimension with the highest explained variance corresponds to dimension 1 with 45.2 per cent while dimension 2 reaches 29.56 per cent. In the conceptual map we find the blue cluster with only two terms that refer exclusively to the field of higher education in which student dropout is investigated (*higher, education*). In the red cluster, we can find students as the main component and related factors from the academic and social world that can be causes of university dropout (*academic, social, experiences, social, university*). As for the green cluster, the main component would be *stress*, and the research focuses on student stress derived from the casuistry of study, learning or, more recently, Covid-19 (*study, learning, covid*). Finally, in the purple cluster, there is no main component on which research has focused, but studies focus on more general causes specific to teaching that may have an impact on university dropout and which may have been accentuated during the Covid-19 pandemic and its impact on education (*teaching, impact, pandemic*).

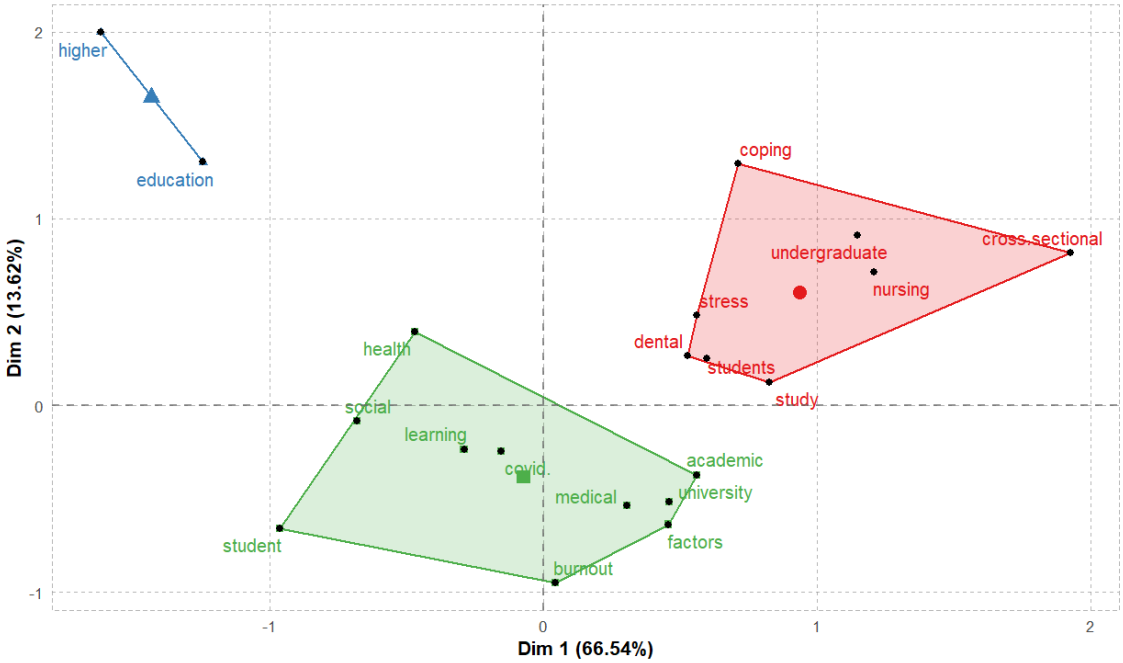

Figure 9. Map of the Conceptual Structure of the Topic University Dropout Based on the Keywords Inferred from the Titles of the Scientific Articles (Scopus)
Source: Own Elaboration

The pattern is repeated in Figure 9, where dimension 1 has the highest explained variance with 66.54 percent, while the percentage of explained variance of dimension 2 is 13.62 percent. This conceptual map repeats the pattern of the map in Figure 8 in finding the blue cluster with the terms relating to *higher, education* as the area on which research on student dropout is focused. In this sense, there is equality between the publications in both databases in terms of the formation of a higher education-only cluster among the research studied. On the other hand, in the green cluster, there is no main axis on which the main scientific production falls, but two areas related to health and university academia can be established. Medical or health factors may be behind early university dropout (*medical, health*), where the presence of Covid-19 (*covid*) and *burnout* syndrome as a symptom of a more psychological or mental health problem may be the most direct causes of university dropout during the five-year period studied. Also, although in a very general way and without finding any term that goes deeper into the problem, there are factors within the academic-university and social world that can have a negative impact on students and that can finally result in them dropping out of their university studies (*social, students, learning, academic, university, factors*). In last place we find the red cluster where there are no main components or clear factors that determine the causes of university dropout among students. However, the term *stress is found* as a possible cause of university dropout, and in the previous conceptual map in Figure 8 this term was found to be a main component of university dropout.

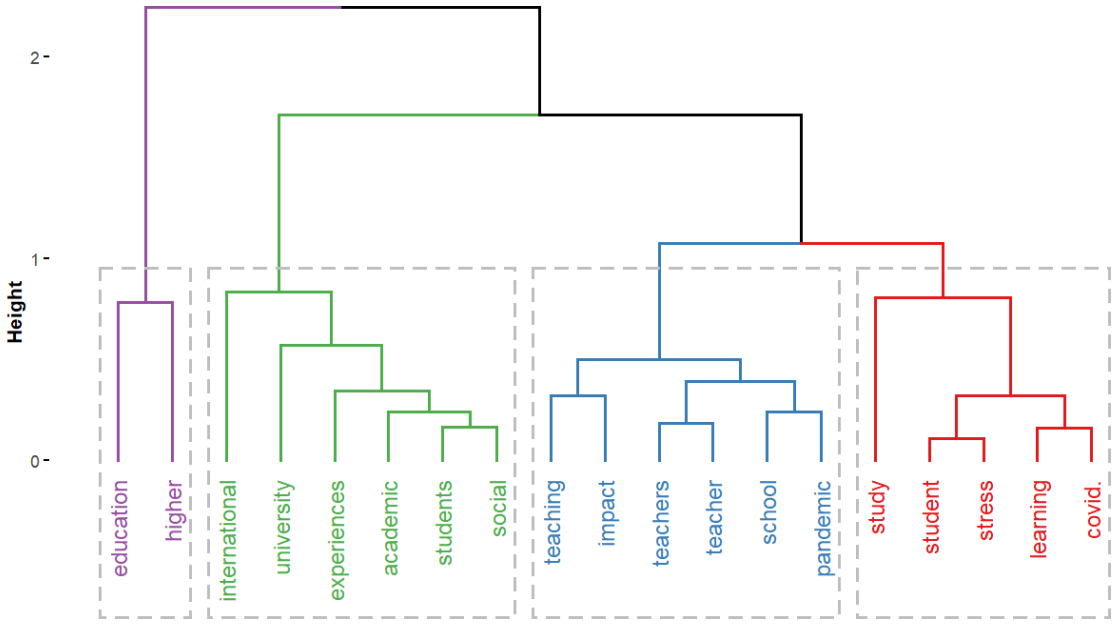

Figure 10. Dendrogram of Keywords Inferred From WoS Scientific Article Titles
Source: Own Elaboration

Finally, we delve deeper into the factors and causes of university dropout by analyzing the keywords found in each of the clusters of the concept maps, but, on this occasion, classifying and isolating the terms from one another according to their proximity in order to identify the closest relationships between keywords. Shared communality, i.e., the lesser or greater proximity between different terms, responds to the percentage of articles that include them jointly, depending on whether the number of publications that include them is also lesser or greater. This classification is expressed through the design of two dendrograms that correspond to Figures 10 and 11 below, always maintaining the same keywords that make up each of the clusters.

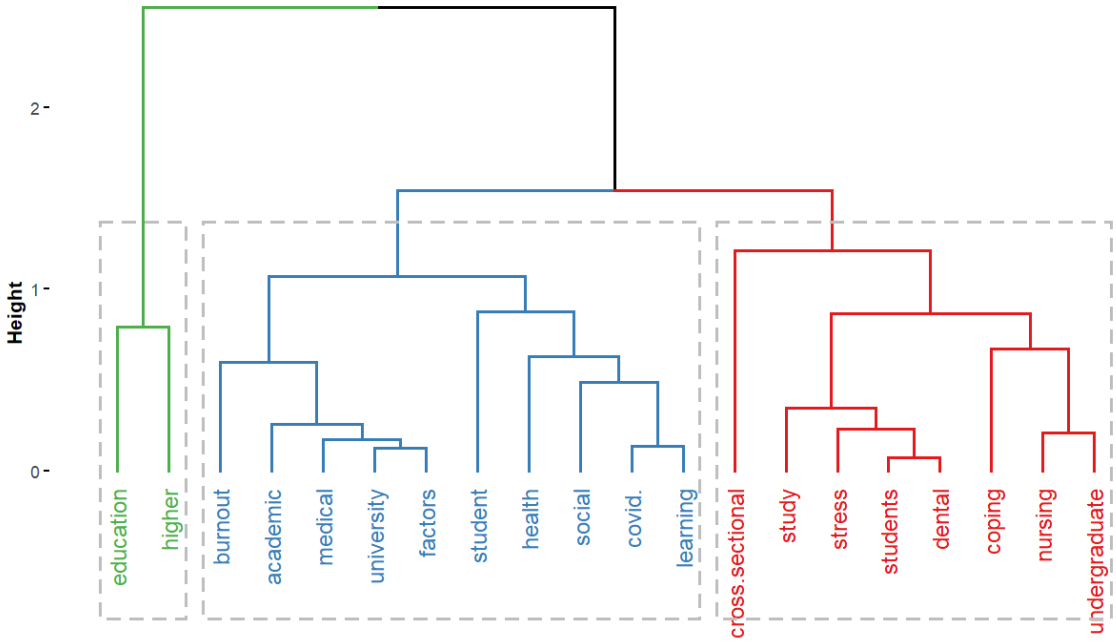

Figure 11. Dendrogram of Keywords Inferred From Scopus Scientific Article Titles
Source: Own Elaboration

With the following data obtained, we try to infer more extensive information on the main factors and causes of university dropout. From the purple cluster in Figure 10, no data to be highlighted from those already obtained in the concept maps can be seen due to the scarcity of the key words that make it up. From the green cluster, it can be seen how the key word *international* is more prominent than the rest of the terms that focus the interest of their research on the academic-university world in terms of the experiences and social and relational aspects of the students. The third cluster, the blue one, clearly shows the distribution of terms in keyword pairs such as: *teaching-impact, teachers-teacher* and *school-*

pandemic. From this it is possible to deduce different factors about university dropout. The first of these may refer to the impact that teaching has on many students in any of the areas of knowledge in which we position ourselves, i.e., from not meeting the expected expectations at the curricular level to making a sacrifice in terms of time, effort and interest which, on many occasions, is not compatible with other personal, social, work or economic aspects that students have to face. The second factor, although very generic and universal, refers directly to the role of the teaching staff as a cause or factor to be taken into account in university dropout. From this point, only hypotheses can be inferred that could be studied in the future, such as types of teaching methodology, continuing education, assessment styles, etc. Thirdly, due to the timing of data collection in this study, covering the period of the Covid-19 pandemic, the pandemic itself has caused many students to drop out of university. As for the fourth and last cluster, the red one, we again find two pairs of key words encompassed by the term that is most neglected: study. This cluster directly points to Covid-19 as the main cause affecting learning, overturning the entire education system in terms of teaching methods, participation, and assessment—a change that occurred very rapidly and drastically in a short period of time, leaving many unable to adapt and continue their studies. Additionally, though not exclusively related to the above, symptoms of stress among students are evident, which, within the academic context, can ultimately result in prematurely abandoning higher education due to medical or psychological problems. Finally, we turn to Figure 11 corresponding to the dendrogram of the keywords in the titles of the articles in the Scopus database. As in the previous dendrogram in Figure 8, the first green cluster is the result of the field of action of the research addressed, alluding to higher education. In the blue cluster, a sub-classification could well be made within it, although by the nature of its terms, it can be observed that the research focuses on medical and health aspects as the main factors of university dropout. In this sub-classification, we first find the terms *burnout, academic, medical, university, and factors*. The most important keyword would be *burnout* and, around it, those other factors of academic-university life that may have a bearing on the development of this syndrome of "being burnt out" and which directly influences the normal development of the teaching-learning process of the student body. Moreover, in addition to being a health and/or psychological problem, there are other medical causes that may aggravate this situation, although they are not specified on this occasion. Secondly, we have the terms *student, health, social, covid, and learning*. Here, all the main factors revolve around the figure of the students, focusing on the one hand on aspects related to *health* and, on the other hand, on the social *sphere* surrounding the student, and the research attempts to investigate the possible causes that may exist there and lead to the student dropping out of his or her studies. We also find the pair of keywords composed of *covid-learning*, clearly alluding to the difficulties presented in the teaching-learning process during the pandemic stage by Covid-19 and the great changes suffered and forced in education at a general level which, for many students, has meant abandoning the university institution. Finally, the red cluster is made up of a series of terms which, in a more isolated way, make it difficult to interpret when inferring the possible causes of university dropout. Such keywords could be: *cross-sectional, dental, coping, or nursing*. However, a recurring theme is that of stress among the student population (*study, stress, students*) and how this can alter the whole teaching-learning process to such an extent that it can lead to students dropping out of university.

The following analysis focuses on the co-occurrence network taking the titles of the scientific articles. This analysis is carried out on both databases and the different clusters generated can be differentiated by colors and highlighting the importance of the terms according to the size of the labels and nodes.

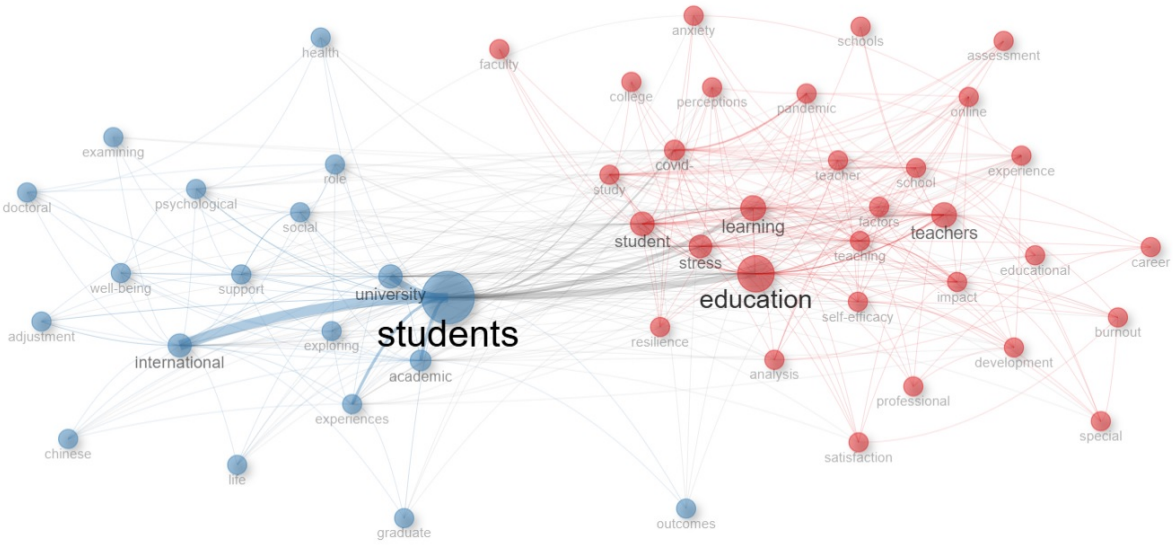

Figure 12. Co-occurrence Network Map of WoS Scientific Article Titles

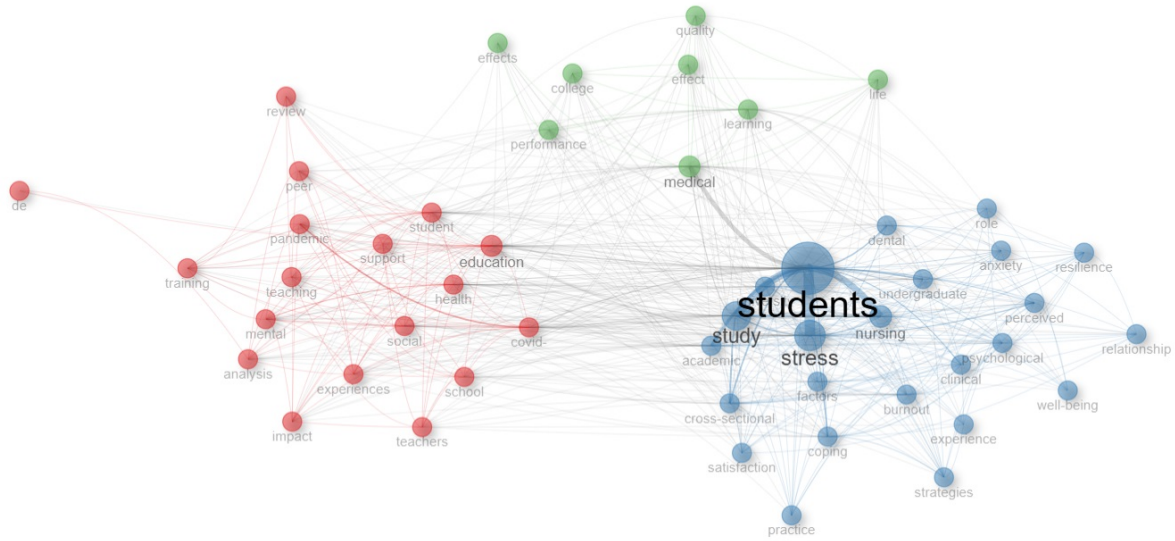

Figure 13. Co-occurrence Network Map of Scopus Scientific Article Titles

Intellectual Structure Analysis

By analysing the social structure in the context of collaboration between authors, we have focused on examining the interactions, collaborations and relationships within the scientific community of the topic under investigation. With this analysis we can observe how authors work together and how collaboration networks are formed where collaborations between peers are the most common. Therefore, the key authors and the main collaborative groups (clusters) are identified, as well as the intensity of the collaborations.

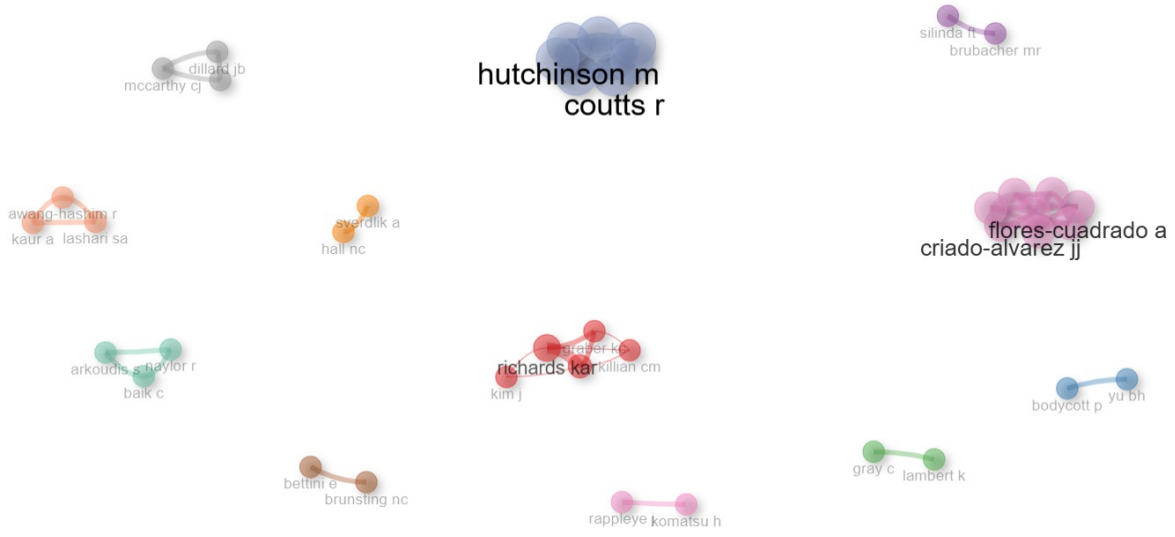

Figure 14. Analysis of the Collaboration Network between Authors in WoS

Figure 15. Analysis of the Collaboration Network between Authors in Scopus

Conclusion

The aim of this study was to carry out a review of the scientific literature on the problem of university dropout and the possible factors that may influence this decision. To this end, an analysis was carried out using two samples retrieved from the WoS and Scopus databases. The most productive countries in this area have been identified in order to find out who is behind the main studies in this line of research. In this sense, for both WoS and Scopus databases, the most productive countries in this area are the following countries: the United States, the United Kingdom, Australia, and China.

The main sources of information have also been identified, all of which are scientific journals. This has allowed us to specify a little more about the different lines of research within the general front of university dropouts and which are the sources most frequently used by authors to publish their scientific work.

At a more analytical level, tree maps were generated using keywords inferred from the titles of the scientific articles. This has been done independently for each of the samples retrieved from the databases. In each of the tree maps, we were able to identify different terms about university dropout that can be mainly related to psychological and social factors (Garrido Silva & Pajuelo-Diaz, 2023; Lorenzo-Quiles et al., 2023). However, of the other factors initially considered, such as economic and pedagogical factors, no terms were found that could be more closely related to the general front studied. In this regard, Hillmert et al. (2017) highlighted the importance of informational environments, including media-related competency, perceptions of fairness, and social integration, in predicting dropout intentions. Androulakis et al. (2022) focused on factors affecting students' coping with university studies and found that frustration, absence from academic duties, and dissatisfaction with subjects increased the tendency to drop out, while a sense of effectiveness, perceived value from studying, and positive relationships decreased the tendency.

Moreover, in view of the results obtained, one of the factors that could be included as influencing university dropout would be those related to health. For example, Stăiculescu and Elena Ramona (2018) identified social, psycho-pedagogical, and personal factors as contributors to university dropout and emphasized the need for prevention and intervention services. Md Yusof et al. (2019) found that social, academic, and environmental factors contribute to stress among university students. Bias et al. (2019) identified cognitive and affective dimensions, such as anxiety and anger, as predictive factors for academic failure and dropout. Hillmert et al. (2017) highlighted the importance of informational environments, including media-related competency, perceptions of fairness, and social integration, in influencing dropout intentions. In summary, the papers indicate that factors such as social, academic, and environmental stressors, cognitive and affective dimensions, informational environments, and personal characteristics can influence university dropout-related stress.

Other investigations of this topic claim that socioeconomic variables, such as family support and students' economic conditions (Álvarez Ferrándiz, 2021), and psychological factors, such as social integration and a sense of belonging to the institution (Cervero et al., 2021). Studies like Adrogué and García de Fanelli (2018) have also pointed out that public policy challenges, particularly in Latin America, are crucial for mitigating dropout. For instance, implementing academic leveling programs and strengthening institutional support could significantly impact student retention.

The latter has been confirmed by subsequent analyses, such as conceptual structure maps and cluster analyses reflected in dendrograms. This was done using a factorial approach, and by using dendrograms to observe and analyze the proximity between the different keywords. From these analyses, some broad general research fronts can be deduced as

the main causes of university dropout. These would be academic-university and social world, stress, health, teaching staff and (forced) changes in the education system. In short, the research concludes that, from a bibliometric point of view, university dropout has multiple causes and a multifactorial etiology (Aina et al., 2021; Ibáñez-Cubillas et al., 2023).

The results of our bibliometric analysis highlight the impact of psychopedagogical and social factors, such as academic stress and lack of integration in the peer group, on the decision to drop out of university studies. These findings are closely related to the psychopedagogical model, which emphasizes individual characteristics and learning strategies as key determinants of academic success (Kirton, 2003; Ryan & Glenn, 2003). Furthermore, the influence of structural variables, such as lack of economic resources and incompatibility between work and academic schedules, confirms the principles of the structural model, which considers dropout as a result of tensions between economic and social subsystems that affect students.

On the other hand, the effects derived from rapid and abrupt changes in the educational system, such as those caused by the COVID-19 pandemic, suggest an expansion of existing theoretical frameworks. In particular, a contextual dimension could be integrated that addresses the resilience of the education system to global crises, as proposed by recent studies on teaching in times of emergency (Hillmert et al., 2017). These findings not only strengthen the theoretical understanding of college dropout, but also offer an opportunity to refine existing models with current data.

One of the limitations of this research is the lack of consistency in keyword indexing. This includes differences in how author keywords and plus keywords are categorized. Despite having optimized the search using truncation techniques, problems arose related to spelling discrepancies (for example, the use of hyphens) or inconsistencies in the use of singular and plural words. These variations can lead to considering terms as different concepts, when in fact they represent the same.

As the main conclusions of this research, we will focus on the possibilities for improvement and complementation with a view to future studies that continue to investigate along the same lines. This study can be extended by considering other types of bibliometric variables that broaden the range of possibilities when it comes to delving deeper into this subject and investigating the different knowledge structures, namely: conceptual, intellectual and social. In the same way, the time spectrum can be broadened to allow for a more complete analysis of the evolution of the problem to be investigated over time. The type of document to be retrieved can also be extended beyond what would be considered empirical literature per se.

In addition, in a more specific and direct way to what was found in this study, some isolated terms were found which, due to the nature of this research and its scope of interest, provided more ambiguous information that left room for a more complicated and overly general interpretation. Thus, one resource may be to identify these publications in order to infer more clearly the reasons for students dropping out of university through a more exhaustive reading. In addition, other fields of analysis can be considered beyond the keywords inferred from the titles of the articles, such as the keywords inferred from the abstracts or the keywords of the documents themselves, namely: author's keywords and keywords plus.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Authors contribution statement

Alvarez-Ferrándiz: Conceptualization, writing. Michelle Vazquez: Reviewing and writing. Rodriguez Sabiote: Data Analysis, reviewing. Úbeda Sanchez: Data Analysis, reviewing.

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