Journal of Asian Scientific Research
ISSN(e): 2223-1331
ISSN(p): 2226-5724
DOI: 10.55493/5003.v16i1.5812
Vol. 16, No. 1, 41-56.

URL: www.aessweb.com

Mapping the future of cyberbullying research: Interdisciplinary connections, global perspectives and emerging issues

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Article History
Received: 5 August 2025
Revised: 27 November 2025
Accepted: 18 December 2025
Published: 16 January 2026

Keywords
Adolescents
Bullying
Commiseration
Digital bullying
Mapping
Solidarity.

ABSTRACT

This study explores global and interdisciplinary trends in cyberbullying research, with a focus on how empathy and solidarity are addressed as key components in prevention and intervention strategies. Through a systematic review and bibliometric mapping, the study examines the evolution of research on cyberbullying and its links with empathy, compassion, commiseration, and solidarity. The study uses 1,096 records from the WOS database, analyzed with VOSviewer to map term co-occurrence, co-authorship, thematic clusters, and co-citation links. This bibliometric approach uncovers the field's structure and identifies key authors, institutions, and emerging trends. The analysis focuses on adolescence, emphasizing school, family, and digital environments as key arenas of interaction and risk. Findings highlight a strong relationship between low levels of empathy and higher rates of moral disengagement among adolescents involved in bullying and cyberbullying behaviors. Moreover, empathy appears as a critical protective factor that can be cultivated through comprehensive, interdisciplinary interventions. In conclusion, the study underscores the importance of fostering empathy and solidarity as fundamental pillars in the fight against cyberbullying. By mapping the scientific landscape, it identifies influential contributions and collaboration networks while suggesting future directions for interdisciplinary research that promote socially responsible and ethically grounded responses to digital peer aggression.

Contribution/ Originality: This study justifies its relevance by addressing global and interdisciplinary trends in cyberbullying research, emphasizing empathy and solidarity as protective factors. Through bibliometric analysis, it maps scientific production, highlights intellectual structures, and identifies emerging directions, offering evidence-based foundations for preventive, ethical, and socially responsive interventions in educational and digital contexts.

1. INTRODUCTION

In this study, we aim to highlight the importance of understanding and raising awareness about the consequences of bullying and cyberbullying as emerging threats, from identifying the issues among adolescents to emphasizing the importance of promoting resilience and empathy to prevent and mitigate peer bullying.

Bullying and cyberbullying have an impact on the social, educational, and family well-being of the people who suffer from them. High victimization over time and across different contexts can lead to severe depression and suicide [1].

This aggressive behavior is persistent and prevalent over time, representing a serious problem in educational centers [2-4] and has moved to the digital realm as a widespread problem that has its continuity in social networks.

In these cases, bullying victimization is significantly associated with greater negative social comparison and the additive consequences of problematic social network use, in addition to other factors such as loneliness [5].

By focusing on the experiences of cybervictimization, we find the need for positive interventions and the promotion of resilience and empathy in the digital age to analyze the competence of being and behaving in the participating adolescents affected by this issue.

The different studies analyzed show that empathy is an important factor related to bullying and cyberbullying, regardless of gender and age. Low empathy contributes to the perpetration of bullying by stimulating pro-bullying attitudes [6]. Empathy as stated by Garandeau et al. [7], can be an important predictor of both bullying and behavioral advocacy. Therefore, increasing peer empathy would be a key strategy to minimize bullying and cyberbullying.

In Van Ryzin and Roseth [8] study relates how bystander perception of bullying under the five fundamental steps, which are: detecting bullying events, interpreting them as events that require intervention, accepting responsibility to intervene, knowing how to intervene, and acting, are related to affective empathy and the act of intervention itself.

The lack of moral commitment in adolescents is another key element to consider as a mediating factor in this problem. Some adolescents perceive bullying as wrong and recognize its consequences, but moral and collective disconnection leads to a higher prevalence of pro-bullying behaviors in the classroom [9]. Hence, the importance of highlighting personal and social factors in bullying behavior [10] and analyzing how the effect that moral disengagement has on bullying is interrelated with school climate [11].

Therefore, we highlight the immediate need to work on positive interventions and the promotion of resilience and empathy in the digital age for the prevention of cyberbullying.

Our aim is to conduct a systematic review and bibliometric analysis to explore and analyze the connections between the issue of bullying and cyberbullying and the importance of developing resilience and empathy for the prevention of bullying and cyberbullying manifestations. Our concern emerges because neither the agents involved in bullying and cyberbullying nor education professionals are prepared to effectively manage situations and implement effective coping strategies for bullying, showing the need for holistic, interdisciplinary, and preventive approaches to minimize and prevent these situations.

2. MATERIALS AND METHODS

2.1. Methodology and Objectives

The primary purpose of this study is to carry out a systematic review [12] and a bibliometric analysis [13] of the scientific production through exploration and examination in the highly recognized database worldwide and among the scientific community, Web of Science. Bibliometric analysis is used to map a network, resulting in an overview of the network and a representation of the connections between its components (such as co-authorship, topics, and co-citations). Indicators such as co-authorship and co-citation will be used in the research to analyze the evolution of publications in the field of study to be investigated, thus revealing the network of leading practitioners and experts in the topic. Within this research, the review of the scientific literature focuses on the concept of cyberbullying, linked to the concepts of empathy, commiseration, compassion, and/or solidarity, in the context of adolescence and in school, family, and social network environments. To identify the most relevant articles, we classified the extracted entries into three categories and/or perspectives to identify three historical phases related to cyberbullying, associated with the aforementioned concepts. The references extracted during the search were exported from the Web of Science database, including information on authorship and co-authorship, organization, source and title, year of publication, producing countries, keywords, and references. These data were entered into the

specialized software VOSviewer, a tool for constructing and visualizing bibliometric networks. The networks, which in this case included journal articles and book chapters, were constructed based on citation, bibliographic linkage, co-citation, and co-authorship. In addition, the software offers a text mining function to construct a co-occurrence network of all the selected scientific literature. The search equation used is presented in Table 1. The query covered document topics, titles, abstracts, and keywords.

2.2. Sample

The search equation detailed in Table 1 was applied for this research, obtaining a total of 1,096 records from the Web of Science database. This procedure included articles from a variety of sources, regardless of the database of origin or language, to provide a complete picture of the field of study and a more inclusive academic production in terms. This research was conducted with the specialized software VOSviewer, for content analysis by data mining and scientific mapping of network structure by normalization.

Table 1. Search and criteria.

Search equation	**Database**	**Total records**
(**TOPIC=**("Cyberbullying" **OR** "Cyberbullying" **OR** "Cyberbullying" **OR** "Bullying")	Web of Science	1.096
Search categories Empathy (Should - Search within topic) and Compassion (Should - Search within topic) and Commiseration (Should - Search within topic) and Solidarity (Should - Search within topic) and Article (Types of documents) and Education Educational Research or Communication (Research areas) and Article or Book (Types of documents) and Article or Book (Types of documents) and Web of Science Main Collection (Database).		
Time period: 2006 - 2023		
Type of document: AND dt==("article" **OR** "book chapter" **OR** "book"))		

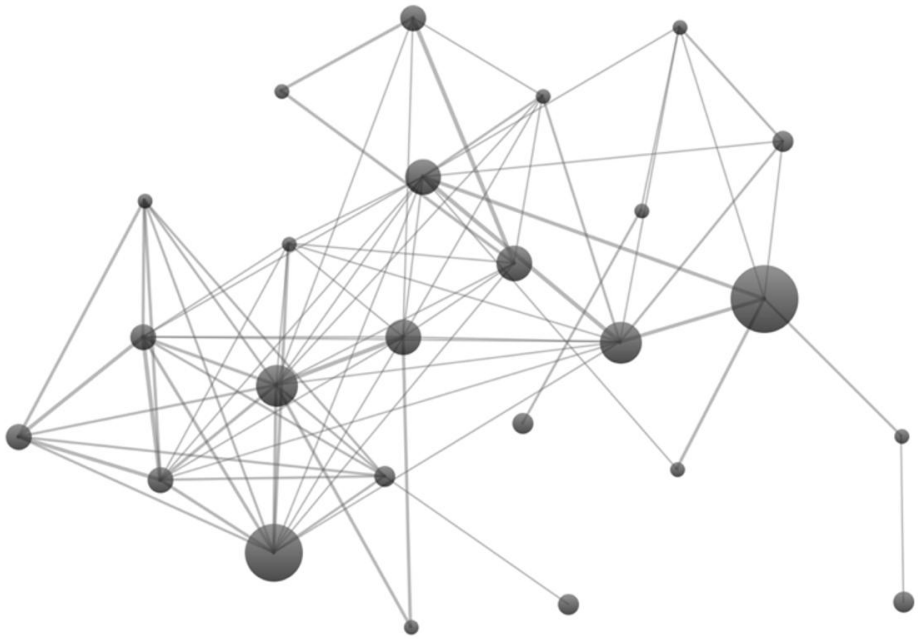

Figure 1. Extraction of the network. Documents and records obtained.

Figure 1 shows the visual representation of the final network, which is made up of 1,096 nodes (documents/references) after the application of the established search filters. This study has carried out the construction of this network using the VOSviewer tool, thus allowing content analysis by data mining and mapping the structure of scientific networks through the normalization technique. This technique is based on the strength of association indicator, which is interpreted as a measure of similarity between the units of analysis. The equation

expresses the strength of association between nodes by relating the weight of the number of links of a node a,i,j to the expected number of links of all the nodes in the network e,i,j.

$$\text{Strength of association } (i,j) = Sij = \frac{a\,i\,j}{e\,i\,j}$$

Graph 1 shows the mapping of nodes that symbolize scientific production and the connections (edges) that exist between them. The proximity of two nodes in the documents indicates a stronger association, reflected in their closeness on the map. The intensity of the association between nodes is also represented by their thickness. A greater thickness indicates a stronger association, derived from a greater number of both incoming and outgoing connections. Of the 1,096 documents collected in this research, 1,054 correspond to journal articles, while 42 are book chapters or books. The graph or diagram in this context visualizes the relationships and connections between the extracted documents. This graph helps us identify patterns within the bibliometric dataset, providing a clearer understanding of the structure and dynamics of scientific information.

3. RESULTS

This section presents bibliometric elements on cyberbullying and in relation to the adolescent stage, in contexts such as school, family, and social networks, associated with the concepts of empathy, commiseration, compassion, and solidarity; categories and disciplines from which the documents originate; network of organizations and/or institutions; growth and general scientific production; production by country; authors with the greatest production and number of citations; co-authorship network; co-occurrences of the most used words; main sources from which the scientific production originates, and scientific documents with the greatest impact. In addition, a tree diagram of the authorship of the scientific papers with the greatest impact is presented for each of the historical perspectives to which they belong.

3.1. Research Areas and/or Web of Science Categories

In relation to the 1,096 documents extracted in the search for this research, the areas and/or categories of the Web of Science database can be seen reflected in Table 2. The records extracted come from the research areas of Education and Educational Research, and Communication; however, they are associated with other research areas. In the table, we appreciate the importance and linkage of the 1,096 records with other research areas, as determined by the percentages. It can be observed that the obtained records have a very high relationship with research areas such as Psychology, Behavioral Sciences, Pediatrics, Criminology, and Penology.

Table 2. Research areas and/or Web of Science categories.

Id	Research area	Documents	% Total
1	Education and educational research	1.096	100
2	Psychology	564	51.5
3	Behavioral sciences	519	47.4
4	Pediatrics	438	40.0
5	Criminology and Penology	366	33.4
6	Computer Science	265	24.2
7	Public environmental and occupational health	227	20.7
8	Care and Health Sciences Service	223	20.3
9	Sociology	130	11.9
10	Social problems	105	9.6
11	Psychiatry	101	9.2
12	Ecology and environmental sciences	91	8.3
13	Family studies	81	7.4
14	Communication	80	7.3
15	Demographics	72	6.6

3.2. Network of Institutions and Organizations

The main search algorithm provides a total of 1,287 institutions/organizations that have published on the topic selected for this research between 2006 and 2023. The network of institutions is shown in Figure 2, and those that have published 5 or more documents have been selected. In this search, 79 appear, of which 66 have connections between them, and are grouped into 2 clusters, with 328 connections and a total strength of 136.

The organizations with the highest co-authorship link strength and the highest production of records are the University of Cordoba (Spain), with 26 documents and 8 connections; among these connections, the University of Seville (20 documents), and the University of Granada (10 documents). The second institution with the highest scientific production is the University of Seville, with 20 documents, 19 connections, and a link strength of 19. The main connections are with the University of Cordoba, the University of Lisbon (9 documents), the University of London (8 documents), the University of Berlin (7 documents), and the University of Turku (Finland), also with 7 documents. The third institution with the highest production is the Queensland University of Technology (Australia), with 19 papers. Other universities to highlight in terms of scientific production are the University of Murcia (16 documents), the University of Wisconsin (15 documents), the University of Castilla-La Mancha (13 documents), and the Universities of Alicante and Valencia, each with 12 documents. Regarding the most cited universities and/or institutions, the top three belong to the USA: University of Wisconsin (1,740 citations), Clemson University (1,678 citations), and Florida Atlantic University (1,582 citations). Following these are two Spanish universities: the University of Cordoba (907 citations) and the University of Seville (787 citations).

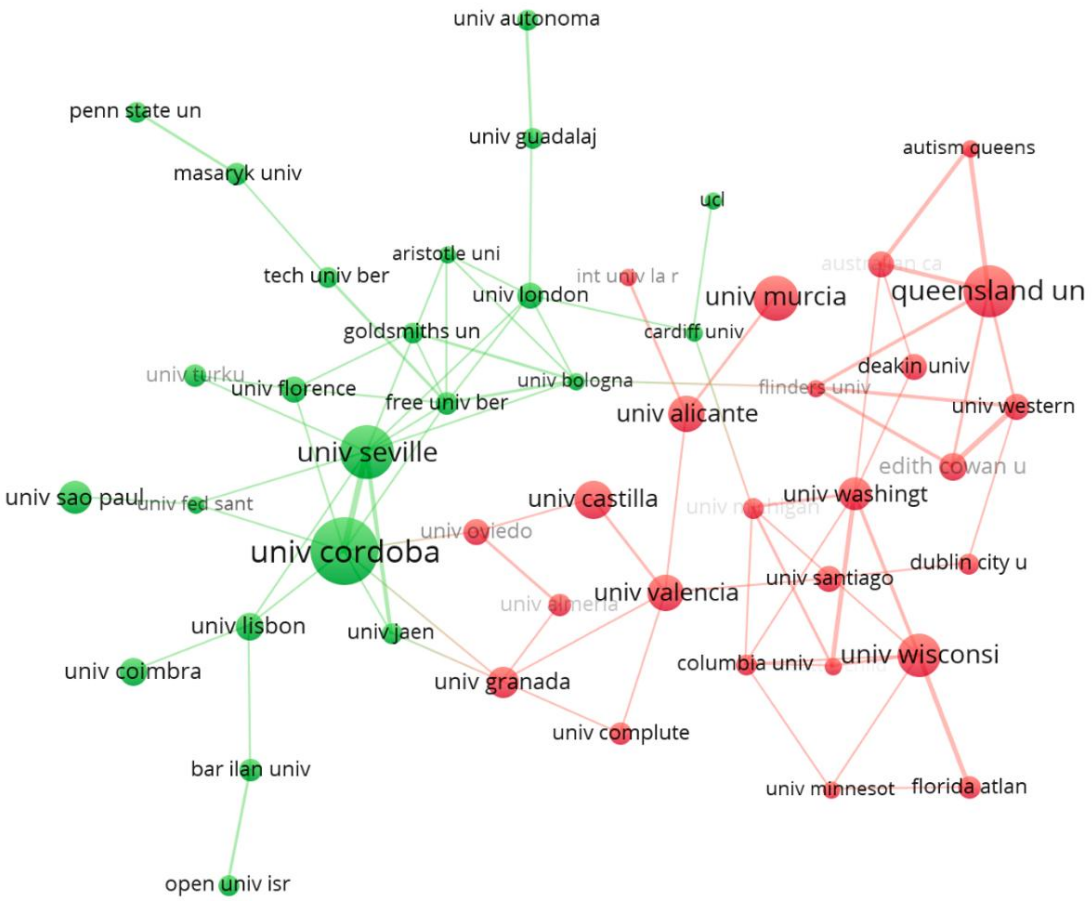

Figure 2. Institutional and organizational network by co-authorship.

3.3. Scientific Production 2006-2023 and Growth

In this section, Figure 3 shows the scientific articles published in the Web of Science database, associated with cyberbullying, adolescence, and school, family, and social network contexts, associated with the concepts of empathy,

solidarity, commiseration, and compassion. The first publications appeared in 2006, and until 2023, a total of 1,096 documents were extracted (1,054 journal articles and 42 books and/or book chapters). It is from the year 2019 when the production in this thematic shoots up to 121 documents, and increases every year until reaching the most productive year to date, 2021, with 148 documents. From this point on, cyberbullying becomes a main topic in scientific publications due to its growing prevalence and the significant impact it has on the mental health and well-being of people, especially in adolescence.

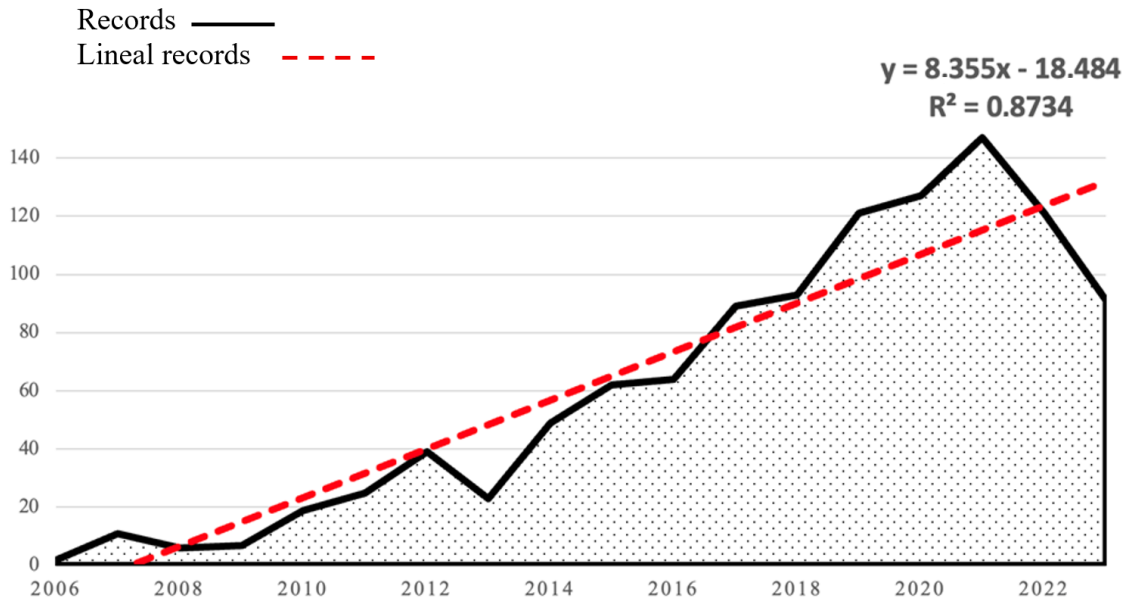

Figure 3. Growth of scientific production in the period 2006-2023.

The data provide the trend line equation y=8.355x - 18.484 with the coefficient of determination R^2 = 0.8734. This coefficient assesses the strength of the linear relationship between the two variables and provides information on how much variability in the data is explained by the regression model. In this case, the result indicates that approximately 87.3% of the variability in the data can be explained by the equation of the provided trend line. This suggests that the linear regression model fits the data well, although there is still 12.7% of variability that is not explained by the equation of the trend line.

3.4. Document Production and Connections by Country

There are 87 countries that have produced scientific literature related to the selected topic for this research. However, only those with 15 or more published documents have been selected, resulting in a total of 18 countries in this selection (Table 3).

The USA is the country with the highest scientific production and citations. It has a total of 239 documents and 10,810 citations. This means that the USA is the producer of 21.8% of all the documents. In addition, it is the group with the highest number of connections with other countries in its productions, 19 in total, among which Spain, China, England, and Australia, among others, stand out. These data imply that this node has a greater strength with respect to the rest, quantified at 50, according to the calculations and algorithm of the software used to process the data. Spain is the second producer country with 211 documents (19.25%) and 3,805 citations. Spain has a total of 16 connections with other countries, with the USA, Brazil, England, Portugal, and Germany standing out, and a total strength of the link with respect to the rest of the 33. Other producing countries to be highlighted from these would be: China (83; 7.57%), Australia (72; 6.57%), England (68; 6.20%), Brazil (56; 5.11%), and Canada (53; 4.83%).

Table 3. Production of articles, citations, and strength of the link, by countries with 15 or more documents.

Id	Country	Documents	Quotations	Link strength
1	USA	239	10.810	50
2	Spain	211	3.805	36
3	P.R. China	83	1.130	23
4	Australia	72	1.416	15
5	England	68	2.560	29
6	Brazil	56	347	15
7	Canada	53	1.819	11
8	Turkey	45	704	2
9	Italy	38	1413	21
10	Germany	31	800	20
11	Portugal	30	344	13
12	Mexico	26	153	8
13	Chile	22	164	16
14	Israel	22	511	5
15	Taiwan	20	561	5
16	Sweden	17	266	4
17	R. Czech	16	249	10
18	France	16	257	12

3.5. Outstanding Authors in the Production of Documents

The search algorithm in the Web of Science database, in relation to the concepts related to this research, offers a total of 3,170 authors in 1,096 documents. Table 4 details the authorships that have produced at least 8 or more documents, resulting in a total of 8 authors. Professor Marilyn Campbell of the Queensland University of Technology (Australia), with 15 documents and 197 citations, stands out as the greatest producer. This author's research experience focuses on anxiety disorders in children and adolescents, and on bullying, especially cyberbullying. Another author to highlight is Professor of Psychology Rosario Ortega Ruíz, with 13 papers and 496 citations from the University of Córdoba (Spain), specializing in research on bullying and cyberbullying. In third place, with 11 papers and the most cited author of all with 1,200 citations, is Emeritus Professor Peter K. Smith from Goldsmiths, University of London, specializing in research focused on the social development of children and adolescents, and violence prevention. Table 4 is closely related to Figure 3, which details the co-authorship network in relation to the papers extracted in this research.

Table 4. Authors with the highest scientific production.

Id	Author	Documents	Quotations	Connections
1	Campbell, Marilyn	15	197	1
2	Ortega Ruíz, Rosario	13	496	4
3	Smith, Peter K.	11	1.200	3
4	Cross, Donna	10	403	1
5	Del Rey, Rosario	8	522	5
6	Navarro Raul	8	120	8
7	Scheithauer, Herbert	8	361	3
8	Yubero, Santiago	8	120	8

3.6. Co-Authorship Network in Scientific Production

Through this data analysis, we visualize in Figure 3 the coauthorship networks in the scientific literature, that is, the graph of the collaborative relationships between different authors in the set of scientific documents extracted in the research search. The nodes represent the authors and the connections between them, i.e., the existence of collaborations between them. The strength and/or thickness of the connections indicate the frequency or intensity of collaboration between two specific authors. This type of analysis will help us understand the dynamics of collaboration in a scientific community and identify possible trends and areas of focus within a specific field.

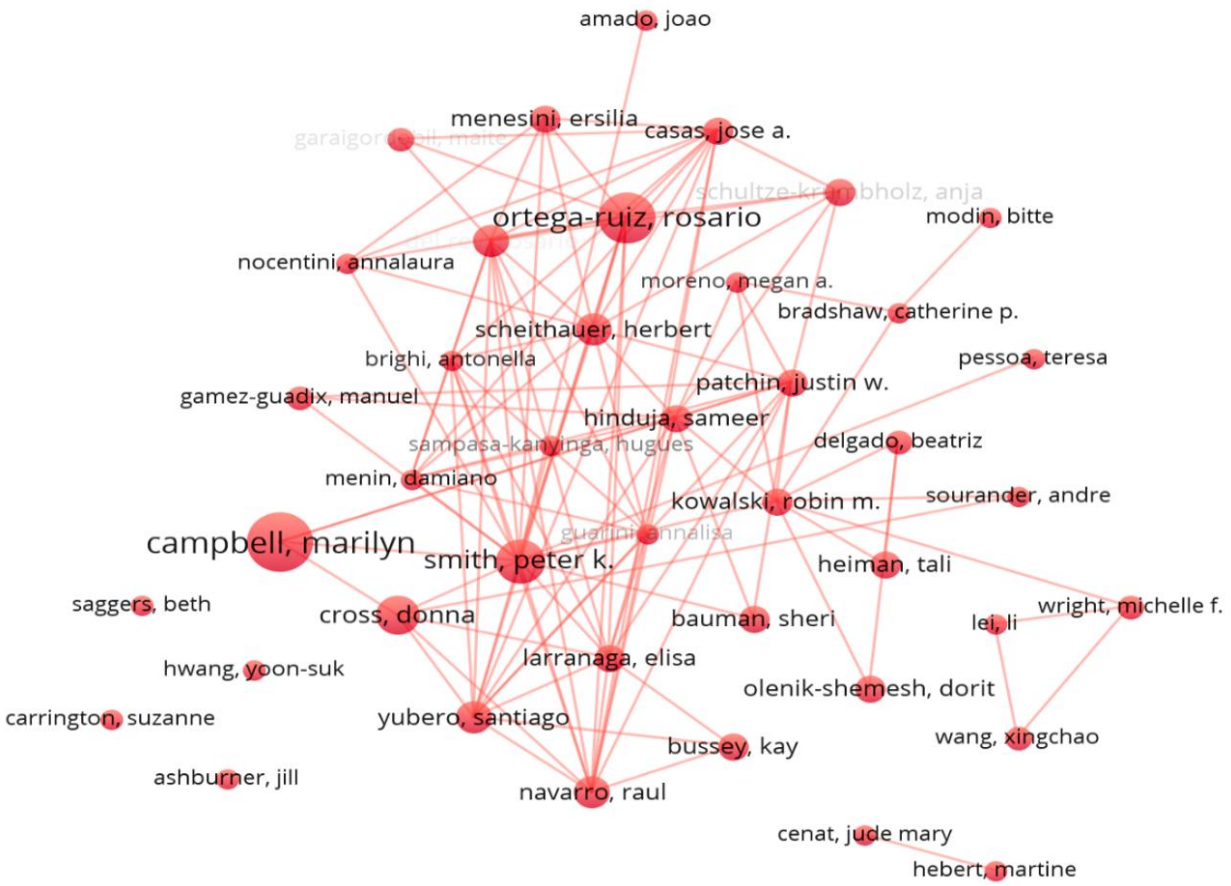

Figure 4. Authorship and co-authorship network in scientific production and connections.

After analyzing Figure 4, the following patterns of collaboration and groups of authors who frequently work together were identified, which will allow us to understand the general structure of the co-authorship network in the field of adolescence in the post-digital society, in school, family, and social network contexts, in relation to concepts such as empathy, solidarity, commiseration, and compassion. It is worth highlighting author Marilyn Campbell, with 15 documents, who has a total of 19 connections with other authors and a node strength of 34. Among her connections to highlight are Ortega Ruíz Rosario, Smith Peter K., and Cross Donna. Figure 4 represents those authors who have at least 5 documents but also have connections with other authors, establishing a network of a total of 43 people as the general structure of co-authorship in this field of study, since the existing connections are created among the named authors.

3.7. Scientific Papers and Records with the Greatest Impact

The most cited article (286 citations) is entitled: "Adolescent bullying and life skills: a systematic review of recent literature." The article was published in the journal Violence and Victims (USA), in 2021. Its authors are: Potard et al. [14]. The text reviews the relationship between bullying in adolescents and their life skills, analyzing 71 studies. Consensus was found on skills such as empathy and coping strategies. It highlights the lack of methodological consistency and measurement problems in the studies on bullying, making it difficult to interpret the results. Recommendations are offered for researchers and health professionals, stressing the importance of considering socio-cognitive development in bullying prevention.

The second most cited record with 202 citations is entitled, "Prevalence of bullying and cyberbullying as a form of violence in education." It was published as a book chapter in 2018, and its authors are Nickerson et al. [15]. The book is titled Wiley Handbook on Violence in Education: Forms, Factors, and Prevention. This chapter addresses bullying and cyberbullying, highlighting their significant attention legislatively, in research, and in national

initiatives. It defines both terms, providing prevalence rates and reviewing the impact on victims, perpetrators, victims of bullies, and bystanders in various aspects. It examines risk and protective factors at the individual, family, peer, and school levels. It focuses on challenges such as accurately measuring bullying and understanding the intersection with racial discrimination. For cyberbullying it addresses issues of conceptualization, technological advances, and legal considerations. It concludes by highlighting the need for effective approaches, such as social-emotional skills development and positive behavioral interventions, as well as social ecology interventions, such as peer groups [15].

Also noteworthy is the article in the Journal of School Psychology (U.K.) with 181 citations entitled: "What Works in Anti-Bullying Programs? Analysis of Components of Effective Intervention. It was published in 2021 and its authors are Gaffney et al. [16]. This study is based on a previous meta-analysis that demonstrated the effectiveness of school-based anti-bullying programs. Using this data, they examined the relationship between the effectiveness of these programs and specific elements. The results indicated that the presence of certain components, such as a comprehensive school approach, anti-bullying policies, classroom rules, information for parents, informal peer involvement, and working with victims, was significantly associated with greater effectiveness in reducing bullying perpetration and victimization. The study contributes to understanding what aspects work to reduce bullying and highlights the importance of these findings in future research [16].

3.8. Keywords Most Used by the Authors

Figure 5 shows the relationship map of the most frequently used keywords in the documents and the connections between them. The graph shows the words that have at least 5 or more occurrences in each document; a total of 317 with 11,300 connections and an overall strength of 30,676. It should be noted that of the 1,096 records extracted for this research, a total of 3,019 terms were obtained.

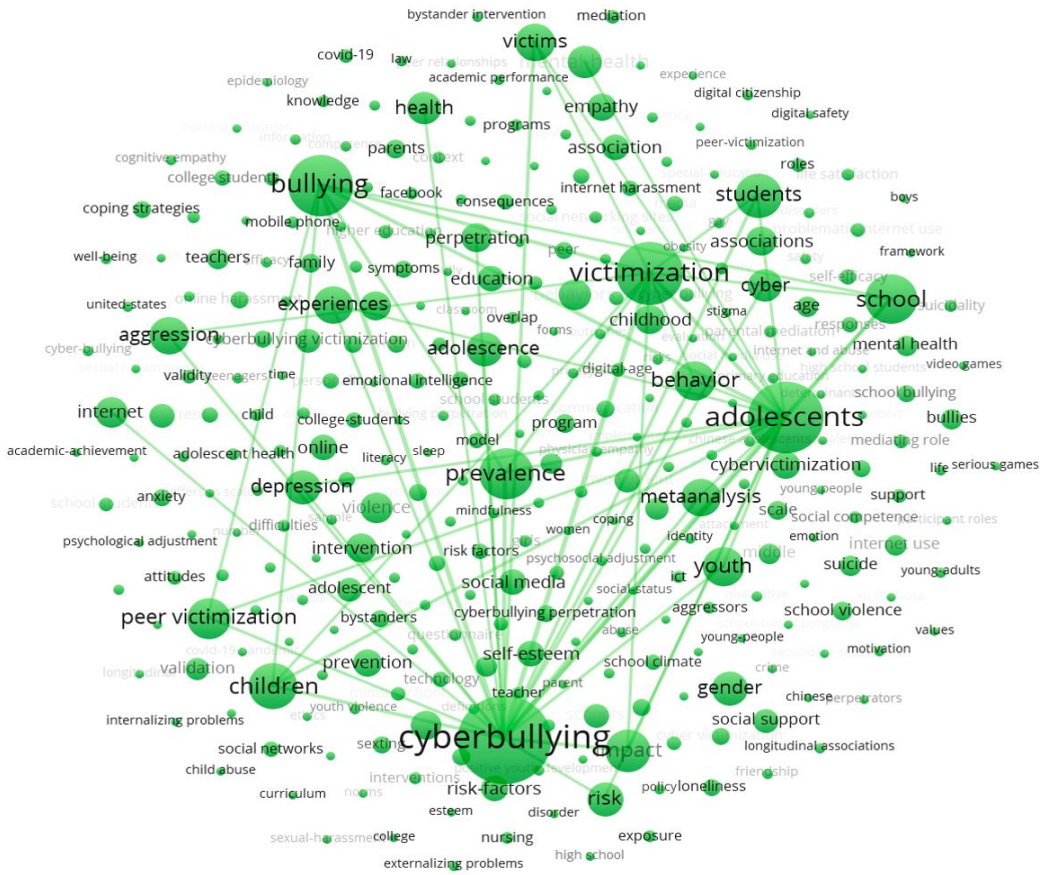

Figure 5. Most used keywords in the documents and connections between them.

A thesaurus has been created to group occurrences of similar terms. The words to highlight with the most occurrences are: cyberbullying (532 occurrences, 304 connections with other terms, and a total node strength of 3,787); adolescents (347 occurrences, 291 connections with other terms, and a total node strength of 2,885); victimization (271 occurrences, 292 connections with other terms, and a total node strength of 2,283); bullying (256 occurrences, 274 connections to other terms, and a total node strength of 1,911); dominance (179 occurrences, 256 connections to other terms, and a total node strength of 1,545); school (165 occurrences, 234 connections to other terms, and a total node strength of 1,313); children (146 occurrences, 238 connections to other terms, and a total node strength of 1,228). This extensive set of keywords (317) reflects the diversity and complexity of studies in this field, underscoring the importance of comprehensively addressing issues related to abuse, coping, addiction, anxiety, and aggression, as well as the influence of social networks, technology, and bullying in both traditional and cyberspace. Determinants such as empathy, self-esteem, and resilience have been identified, while prevention interventions and programs seek to address risks and promote positive youth development. The scientific literature has also explored areas such as identity, discrimination, mental health, problematic internet use, intimate partner violence, and quality of education, providing a solid foundation for understanding and addressing the challenges faced by individuals at different stages of life.

3.9. Sources with More Production of Scientific Documents and Origin

Table 5 details the sources with the highest scientific production, from the Web of Science database, which have at least 15 published documents; a total of 9 sources are extracted, from a total of 418 of the 1,096 records. The table also identifies the citations of each source, as well as its Quartile ranking, h-index, and the country of registration of the source. Of these first 9 sources, 6 are from the USA, and although none of them is the one with the highest production, this makes it the first scientific producer country in this subject, together with the strong contribution it makes in terms of producing sources.

Table 5. Sources with the highest production of scientific articles.

Source	Registrations	Quotations	Clas.	h-Index	Country
I.J. of Environmental Research & Public Health	83	1.206	Q2	167	Switzerland
Journal of School Violence	43	1.107	Q1	47	USA
Journal of Interpersonal Violence	26	504	Q1	119	USA
Cyberpsychology, behavior & soc. networking	23	675	Q1	169	USA
Journal of School Health	18	1.487	Q1	93	USA
Communicate	17	641	Q1	51	Spain
Pastoral care in education	17	166	Q2	25	USA
Computers and education	15	458	Q1	215	U. Kingdom
Journal of Adolescence	15	710	Q1	130	USA

The source with the highest production, from Switzerland, is the specialized journal, International Journal of Environmental Research & Public Health, with 83 papers and 1,206 citations. This journal, although classified in Q2, has a considerable h-index of 167 and specializes in the interdisciplinary publication of environmental health sciences and public health. The Journal of School Violence stands out with 43 papers and 1,107 citations. Ranked Q1 and with an h-index of 47, this US journal publishes empirical studies related to school violence and victimization. The third journal, also from the USA, the Journal of Interpersonal Violence, with a total of 26 papers and 504 citations, ranked Q1 and with an h-index of 119, is devoted to the study and treatment of victims and perpetrators of interpersonal violence. It also provides a forum for discussion of the concerns and activities of practitioners and researchers working on domestic violence, child sexual abuse, rape and sexual assault, child physical abuse, and violent crime. Of note is the scientific journal with the most citations, 1,487, Journal of School Health. This journal, although contributing 18 entries, is classified as Q1 and has an h-index of 93. It is dedicated to the study and treatment of victims and

perpetrators of interpersonal violence. Also noteworthy is the Spanish journal, Comunicar, Q1, with 17 records, 641 citations, and an h-index of 51, in sixth position, specializing in the field of media education, media and educational resources, educational technology, computer and electronic resources, etc. Finally, the UK journal Computers & Education, with 15 records and 458 citations, ranked Q1 and with an h-index of 215, aims to increase knowledge and understanding of the ways in which digital technology can improve education.

3.10. Scientific Evolution Networks from a Historical Perspective

The scientific production is divided into three perspectives for a more exhaustive and precise analysis of a total of 1,096 records obtained in the research. An initial phase, categorized as identification of the problem and the concept, includes a total of 70 documents published, representing 6.3%, between 2006 and 2011. The second perspective examines the relationship of cyberbullying with resilience and empathy, accounting for 29.7% of the production, with 325 documents published between 2012 and 2017. The third perspective, covering the period from 2018 to the present, comprises 64.0% of the total, with 701 documents. The graph in Figure 6 identifies the documents belonging to each historical perspective and their relationship between them, which will determine the trend in scientific production throughout the history of the subject under investigation.

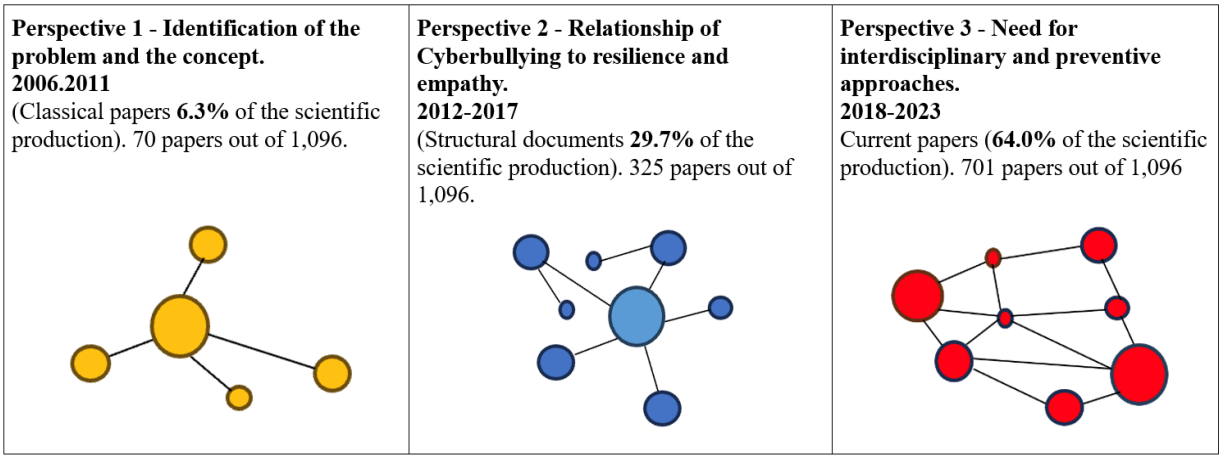

Figure 6. Perspectives on the evolution of the concept of Cyberbullying related to empathy.

3.11. Perspective 1. Identification of the Problem and Concept (2006-2011)

The first perspective (2006-2011) is characterized by a series of research that has shed light on the phenomenon of cyberbullying and traditional bullying, highlighting its significant consequences, especially among adolescents and university students. Since 2006, the growing threat of cyberbullying has been highlighted, a phenomenon that educators and parents admit to facing with insufficient preparation. This type of peer-to-peer bullying, based on electronic forms, has revealed its increasing frequency, often extending beyond the legal realm of schools [17]. The concern begins to extend to issues of aesthetics and audiovisual production, analyzing educational videos, beginning to predominate television aesthetics and a journalistic approach, which, instead of encouraging critical reflection on the issue, propagates trivialized and stigmatized representations [18]. Analyses are conducted in the school setting that address the relevance and varying interpretations of rules on the use of electronic devices, such as cell phones and personal music players, by students, teachers, and administrators [19]. Studies are beginning to be conducted in the university setting, exploring connections between psychiatric symptoms and cyberbullying, and identifying significant predictive factors. Research often reveals significant differences between victims and aggressors, as well as the predictive capacity of current cyberbullying for future instances. In addition, the relevance of anonymity and gender involvement in cyberbullying is highlighted [20]. It is at the end of the first decade of the 21st century that the relationship between cyberbullying and suicidal thoughts among adolescents begins to deepen, demonstrating

that those who experience forms of bullying, whether traditional or cyberbullying, are more likely to experience suicidal thoughts and make suicide attempts. These findings emphasize the need to take peer aggression seriously and to implement comprehensive prevention and intervention programs in schools [21]. Research is evolving toward intervention strategies, recognizing the importance of systematic approaches and empirical evidence in combating all forms of bullying, including cyberbullying. The revision of guidelines and identification of strategies to address cyberbullying reflect a shift toward a more comprehensive understanding of this phenomenon, as well as the need to strengthen school capacities to implement evidence-based measures. Taken together, this research reflects an evolution in the perception of and response to bullying and cyberbullying, addressing aspects ranging from aesthetics in health education to comprehensive intervention strategies in school settings [22]. In summary, this viewpoint emphasizes research on bullying and cyberbullying, which has shifted from recognizing an emerging threat to gaining a deeper understanding of its consequences. It has evolved to embrace comprehensive and evidence-based approaches aimed at tackling these issues within educational environments.

3.12. Perspective 2. Relationship of Cyberbullying to Resilience and Empathy (2012-2017)

Between 2012 and 2017, several studies addressed the relationship between interdependent relational self-construal and cyberbullying, as well as its psychological impacts on adolescents, highlighting the urgency of positive interventions and the promotion of resilience and empathy in the digital age. In this phase, structural equation modeling began to be used, highlighting that interdependent relational self-construal negatively predicts participation in cyberbullying, and, reciprocally, the latter is positively related to psychological disharmony in adolescents. The rapid evolution of technology in the last two decades and its impact on the worrisome growth of cyberbullying in educational settings and among adolescents are evidenced and reflected upon. Comprehensive reviews highlighting the health implications of modern technological advances are evident at this stage, emphasizing concerns such as exposure to explicit content and the association of cyberbullying with morbidity, including increases in suicides [23]. Following this line, preferences for anti-cyberbullying programs in college students are analyzed, revealing that more than 60% are involved in different cyberbullying roles, with preferences for comprehensive approaches and consequences for perpetrators. Studies and analyses on happiness and depression in adolescent students, victims of traditional bullying, and cyberbullying appear, evidencing an association with an evident decrease in psychological well-being. At the conclusion of this stage, we highlight the significance of nurturing resilience among youth as a crucial protective measure against bullying and cyberbullying. This underscores the urgent requirement for interventions within schools and communities that prioritize positive youth development in today's constantly evolving digital landscape.

3.13. Need for Interdisciplinary and Preventive Approaches (2018-2023)

This perspective covering 2018 to 2023 provides a comprehensive view of the dimensions, consequences, and strategies related to bullying and cyberbullying in educational settings, highlighting the complexity of these problems and the need for interdisciplinary and preventive approaches. It details bullying and cyberbullying, providing prevalence rates and reviewing their physical, psychological, academic, and social impacts. Risk and protective factors are explored, focusing on the use of social networks in collaborative learning, highlighting the positive relationship between perceived usefulness and student achievement, while cyberbullying acts as a moderator [24]. The socioeconomic implications of cyberbullying are beginning to be studied, using bibliometric analyses to identify thematic trends and predominant research areas. Systematic reviews of various studies on the life skills of adolescents involved in bullying highlight the need for more research in areas such as executive function and theory of mind. Research at this stage indicates that more than 25% of prospective teachers are not prepared to effectively manage situations and develop effective coping strategies for cyberbullying. Finally, the analysis in this phase delves into the

impact of victim silence and the influence of family and school environments on the suicidal thoughts of adolescent bullying victims. This underscores the significance of open communication and support systems in preventing suicide.

4. DISCUSSION

The analysis shows the evolution of publications on bullying and cyberbullying, highlighting the importance of research on the subject to raise awareness and prevent bullying among peers.

An evolution of publications (2006-2011) can be seen from the negative consequences of bullying manifestations and the impact of bullying on the well-being of schools, students, and families. Bullying and cyberbullying have emotional, physical, and health effects and affect the academic performance of the victim [25] and have a negative impact of prolonged bullying victimization on brain morphometry and cognition [26], which has its long-term repercussions and must be considered an important risk factor and a protective issue [27].

The studies analyzed between 2012 and 2017 addressed the relationship between interdependent relational self-construction and cyberbullying, as well as the psychological impacts on adolescents, highlighting the need for positive intervention and the development of empathy as a protective factor. Studies such as those of Garaigordobil and Oñederra [28] supported the analysis of antisocial behaviors with low levels of emotional intelligence and the need to implement programs to promote emotional intelligence to prevent bullying. In this line, the importance of examining emotional, cognitive, and social factors to stop bullying, increase defense, and support victims or those at risk of victimization is emphasized [29] or in those vulnerable groups that suffer bullying because of their gender, as described by the studies of Eisenberg et al. [30].

Finally, the studies conducted between 2018 and 2023 reveal a comprehensive approach to addressing bullying and cyberbullying in an interdisciplinary and preventive manner. They underscore the necessity of developing programs that consider various dimensions, consequences, and strategies related to bullying, encompassing social competencies, peer bullying behavior [31], and professional competencies in front of the phenomenon, job satisfaction, and self-efficacy, and the school level of bullying/victimization was mediated by the attitude of the teacher [32]. In this sense, we highlight the importance of moral competence in identifying prosocial and defensive behaviors and in avoiding pro-bullying behaviors [33].

Therefore, the necessity for additional research on the subject is evident for several reasons. First, it aims to reduce the repercussions of this social, educational, and familial issue, as it profoundly impacts the mental health and academic performance of adolescents, with long-term ramifications. Secondly, there is a need for preventative measures to mitigate these detrimental behaviors and foster awareness and civic engagement to safeguard the well-being of adolescents. Moreover, research also serves to observe the trends and evolution of the topic and gather insights from current studies.

5. CONCLUSIONS

The research, focused on the areas of Education and Educational Research and Communication, reveals a close connection of cyberbullying with disciplines such as Psychology, Behavioral Sciences, Pediatrics, and Criminology. The network of institutions highlights the University of Cordoba and the University of Seville, showing significant collaborations between universities both nationally and internationally. Scientific production on cyberbullying has experienced a significant increase since 2019, peaking in 2021. This increase reflects the growing interest in the problem of cyberbullying and its impact on adolescence. The linear relationship identified in the scientific production suggests a good fit of the linear regression model, explaining approximately 87.3% of the variability in the data, underlining the strength of the relationship between the variables studied. The research reveals scientific production on cyberbullying and related topics in 87 countries, highlighting the United States as the leader with 239 papers and 10,810 citations, followed by Spain with 211 papers and 3,805 citations. The co-authorship network shows patterns of collaboration, led by Professor Marilyn Campbell, highlighting connections with authors such as Rosario Ortega

Ruíz and Peter K. Smith. Among the most cited papers, "Adolescent bullying and life skills" (286 citations) highlights the relationship between bullying and skills, pointing out the lack of methodological consistency in the studies. "Prevalence of bullying and cyberbullying as a form of violence in education" (202 citations) addresses definitions and prevalence rates, highlighting challenges and the importance of effective approaches. In addition, the article What works in antibullying programs? Analysis of components of effective intervention (181 citations) highlights the effectiveness of school-based programs and the importance of specific elements in reducing bullying. These findings provide a comprehensive overview of cyberbullying research, its global connections, and the significant contributions of prominent authors in the field. Analysis of the text reveals several significant findings in the field of cyberbullying. The thesaurus elaborated highlights keywords such as cyberbullying, adolescents, and victimization, evidencing the diversity and complexity of the field, underlining the importance of comprehensively addressing issues ranging from abuse and adaptation to the influence of social networks and technology. In addition, the scientific production reflects that the United States is a leader in the subject, with journals such as the Journal of School Violence and Journal of School Health standing out in the production. The historical analysis reveals a progression from merely identifying the issue to recognizing the pressing need for interdisciplinary and preventive approaches, with a focus on the significance of resilience and empathy. Finally, emerging research themes encompass exploring the socioeconomic repercussions of cyberbullying, preparing future educators, and examining the impact of victim silence and the family and school environment on suicidal ideation among adolescent bullying victims. Emphasizing the necessity of disclosure and support in suicide prevention. Collectively, this research offers a comprehensive and current perspective on the state of cyberbullying research, tackling various dimensions and challenges within this ever-evolving domain.

Funding: This work is supported by the Ministry of Science, Innovation and Universities-MCIN (Grant number: /AEI /10.13039/501100011033) and by the European Union Next Generation EU/ PRTR. Spain (Grant number: TED2021-129132B-I00).
Institutional Review Board Statement: Not applicable.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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