

## The phenomenon of cyberbullying in the children and adolescents population: A scientometric analysis

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### Abstract

Cyberbullying has become a global problem; cases of violence increase and the rate of suicide by victims has skyrocketed. The purpose of this work was to analyze the scientific production published on cyberbullying in children and adolescents from its beginning until 2018. To this end, a scientific analysis was carried out in the Scopus database, determining diachronic productivity, journals, countries, and institutions with the greatest interest in the subject and articles with greater scientific impact due to the number of citations. In addition, a network map was established to highlight keywords related to cyberbullying in both populations. Among the results, it is worth noting the increase in publications in 2018 and the configuration of certain journals, institutions, countries, and authors as references in the subject. Finally, potential explanations for the findings of the study and suggestions for future research are discussed.

*Keywords: Cyberbullying, children, adolescents, bibliometrics, scientific production*

### Introduction

Although aggression between equals is a fact that has historically existed in society, today, with the development of the Internet and Information and Communication Technologies (ICTs), this type of behavior has intensified. The Internet has increased aggressive behaviors at earlier ages due to the easy access children have to mobile devices and the lack of control to open a profile

on social networks (Hennig, Cuesta, Fernández, & Dorival, 2019). Networks have allowed bullying to extend from the school context to other personal and social environments through cyberbullying (Waasdorp & Bradshaw, 2015). Therefore, cyberbullying is defined as bullying and harassment between equals through ICTs (Cuesta, Muñoz, & Izquierdo, 2018).

Some studies directly relate that most aggressors are men and the majority of victims are women (Moreno-Ruiz, Martínez-Ferrer, & García-Bacete, 2019). Others studies state that overweight or obesity is also a condition for being a victim of cyberbullying (García-Hermoso, Oriol-Granado, Correa-Bautista, & Ramírez-Vález, 2019). However, the aggressor-victim profile is sometimes diffuse, as the electronic platform allows us to easily reverse these roles and meet victims who become aggressors (Aboujaoude, Savage, Starcevic, & Salame, 2015).

Among the main consequences of being a victim of cyberbullying is the presence of low self-esteem, feelings of loneliness, suicidal thoughts (Kopecký & Szotkowski, 2017), and anxiety (Ruíz-Martín, Bono-Cabré, & Magallón-Neri, 2019). At the same time, victimization is associated with serious psychosocial, affective, and academic problems (Tokunaga, 2010).

In the Spanish context, the average age of the aggressor is usually similar to that of the victim, 13.8 years old (Ballesteros, 2017), a period of transition from childhood to adolescence. Added to this is that the star gift in the first communion of children is a smartphone, being an aggravating factor in these cases, since the computer and mobile phone are the channels through which such actions are perpetrated.

In this scenario, the abuse of the mobile device and the time invested in the network begin to be linked to the problematic use of the Internet. Habitual and uncontrolled web surfing increases the chances of being a victim of cyberbullying (Smith et al., 2008; Tabuenca, Sánchez-Peña, & Cuetos-Revuelta, 2019). In this respect, parental controls are fundamental to avoid this type of risk situation (Chester, Magnusson, Klemes, Spencer, & Brooks, 2019; Katz, Lemish, Cohen, & Arden, 2019). At the same time, teacher training is also key to mitigating this type of aggressive online behavior (Wachs, Bilz, Niproschke, & Schubarth, 2019).

It is the responsibility of the family and the school to put the focus of attention on the children in their charge. Information and training are absolutely necessary for families and teachers to be trained in the prevention and intervention of online aggressions.

Sometimes the lack of information leads to the belief that cyberbullying is an isolated behavior, but it is usually linked to other risky behaviors such as cybergrooming (adults deceiving minors), sexting (sending images with sexual content) (Arias, Buendía, & Fernández, 2018), or cybergossip (López-Pradas, Romera, Casas, & Ortega-Ruiz, 2017). Thus, the repercussion on the minor is so great that it can generate psychological disorders and, in the worst case, death.

Additionally, cases of cyberbullying are increasing in geographically disparate territories such as the United States (Baiden, Graaf, Zaami, Acolatse, & Adeku, 2019), the United Kingdom (Przybylski, 2019), Spain (Menesini et al., 2019), China (Chu, Fan, Lian, & Zhou, 2019), and Turkey (Horzum, Ayas, Randler, & Düşünceli, 2019).

The aim of this study was to analyze the production of scientific articles regarding cyberbullying in children and adolescents.

### Research questions

Given the seriousness of this issue for the emotional well-being of children and adolescents and the increase in recent years in cases of bullying connected to ICT, it is very appropriate to analyze the scientific production that exists indexed in the database Scopus, one of the most prestigious databases, based on the following research questions:

RQ1 How many studies were published over the year?

RQ2 Which journals, countries, and institutions concentrate the greatest scientific production on cyberbullying in Scopus database?

RQ3 What are the topics of the articles with the greatest impact on cyberbullying in children and adolescents?

RQ4 What are the main terms related to cyberbullying in children and adolescents?

### Methods

In this scientometric study, a methodology of bibliometric analysis was used (Ardunuy, 2012; Hinojo, Aznar, Cáceres, & Romero, 2019). Likewise, the following search equations were established: CYBERBULLYING AND CHILDREN; CYBERBULLYING AND ADOLESCENT. These two equations were entered into the search engine of the Scopus database in order to analyze the state of the matter in these two different populations involved in cyberbullying.

### Sample

The unit of analysis was determined on the basis of the application of a number of inclusion and exclusion criteria. The inclusion criteria were: (1) scientific articles published in journals and peer-reviewed; (2) year of publication from origin until 2018; (3) appearance of descriptors in title, abstract, or keywords; (4) published in English. On the other hand, the exclusion criteria were related to: (1) documents not subject to review by experts; (2) articles published in 2019, as it was not a completed year; (3) descriptors not included in the title, abstract, or keywords; (4) the language of publication is not English.

After the application of the criteria, the sample consisted of a total of 1,097 documents: CYBERBULLYING AND CHILDREN ( $N = 417$ ) and CYBERBULLYING AND ADOLESCENT ( $N = 680$ ).

The search was carried out on all existing documents in the Scopus database, using both equations and following the sole criterion of restricting the search until 2018.

### Data analysis

The data were analyzed from Microsoft Excel and VOSviewer programs.

### Results

The diachronic productivity of cyberbullying publications in the child and adolescent population shows that most documents are concentrated from 2014 onwards (Figure 1). At the same time, 2018 is the year with the most production. Based on Price's law, literature would be in a phase of exponential growth, begun in 2014 in both populations (Price, 1986). It is therefore a subject in full expansion.

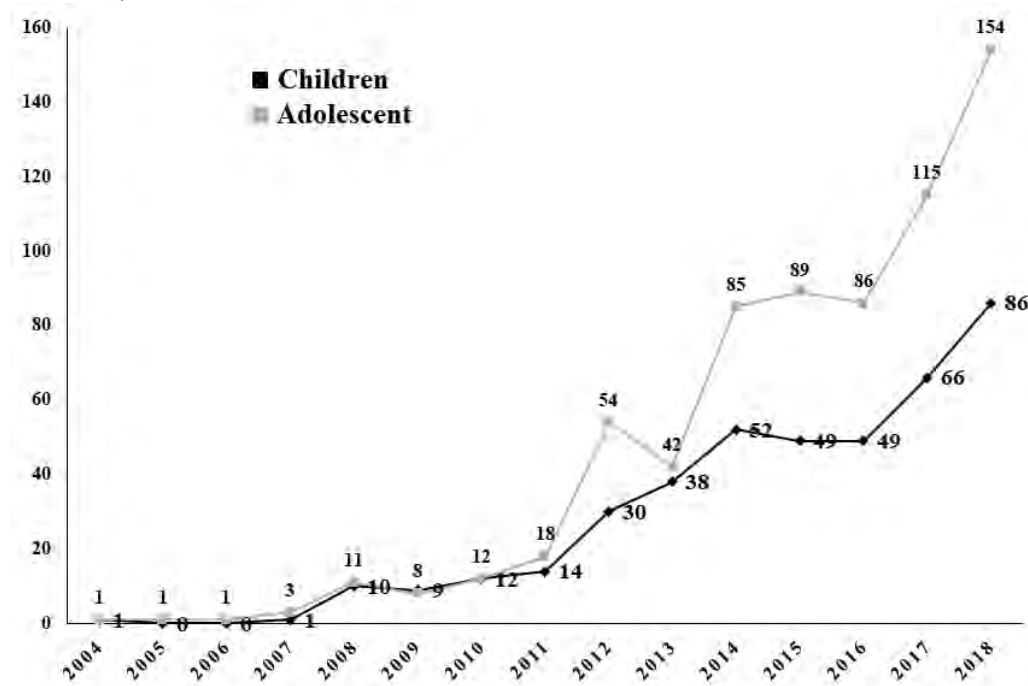


Figure 1: Diachronic output on cyberbullying in children and adolescents

These results answer the first research question about the amount of scientific production that exists in the Scopus database on cyberbullying in children and adolescents over the years.

In relation to journals on this topic, a cluster of journals specializes in the subject of cyberbullying. In both populations, there are seven journals in the top 10 with the highest production, especially *Cyberpsychology Behavior and Social Networking* and *Computers in Human Behavior* (Table 1).

**Table 1.**  
*Journals with highest scientific production*

Journal	
Children	Adolescent
Cyberpsychology Behavior and Social Networking	Computers in Human Behavior
Computers in Human Behavior	Cyberpsychology Behavior and Social Networking
Journal of Adolescent Health	International Journal of Environmental Research and Public Health
Journal of Adolescence	Journal of Adolescent Health
International Journal of Environmental Research and Public Health	Aggressive Behavior
Psicothema	Journal of Adolescence
Journal of Interpersonal Violence	Journal of Adolescent Health
Journal of Youth and Adolescence	Psicothema
Aggressive Behavior	Children and Youth Services Review
BMC Public Health	Frontiers in Psychology

Among the 10 countries with the greatest number of documents in the child and adolescent population, the United States produced the most (28.05% children; 30.44% adolescents), followed by the United Kingdom in the child population (12.70%) and Spain in adolescence (14.70%). The rest of the countries collect an amount of documents lower than 10% (Table 2).

**Table 2.**  
*Countries with highest scientific production*

Country	Children		Adolescent	
	N	%	N	%
United States	117	28.05	207	30.44
United Kingdom	53	12.70	49	7.20
Spain	49	11.75	100	14.70
Canada	34	8.15	40	5.88
Australia	24	5.75	33	4.85
Germany	24	5.75	36	5.29
Czech Republic	18	4.31	24	3.52
Israel	16	3.83	18	2.64
Belgium	15	3.59	38	5.58
Italy	15	3.59	33	4.85
Turkey	10	2.39	23	3.38

As for the institutions with the highest production (Table 3), the first three in both populations are: Universiteit Antwerpen in the Netherlands, Masaryk University in the Czech Republic, and

the University of Cordoba in Spain. These institutions collect a larger amount of documents than the rest, situating themselves as specialists in the subject matter.

**Table 3.**  
*Organizations with highest scientific production*

Organization	Children		Adolescent	
	N	%	N	%
Universiteit Antwerpen	14	3.35	35	5.14
Masaryk University	13	3.11	23	3.38
University of Cordoba	12	2.87	23	3.38
McGill University	11	2.63	9	1.32
University of Castilla-La Mancha	10	2.39	7	1.02
University of Toronto	10	2.39	7	1.02
Nanyang Technological University	8	1.91	7	1.02
Università degli Studi di Firenze	8	1.91	16	2.35
Göteborgs Universitet	7	1.67	6	0.88
Open University of Israel	7	1.67	8	1.17
University of Seville	7	1.67	17	2.5
Universiteit Gent	4	0.95	15	2.20
University of Valencia	6	1.43	13	1.91
Pennsylvania State University	4	0.95	11	1.61
University of Deusto	2	0.47	11	1.61
University of Wisconsin-Eau Claire	5	1.19	10	1.47

Tables 1, 2, and 3 provide answers to the second research question, which reflects the increased production of cyberbullying documents across journals, countries, and institutions.

The articles with the greatest impact are collected due to the high number of citations (Table 4). It was taken as a criterion that they had more than 500 citations. Based on this, five articles are collected that refer to cyberbullying in both the child and adolescent population. The first of them, with a total of 1,158 citations, is titled "Cyberbullying: Its nature and impact in secondary school pupils" (Smith et al., 2008). Secondly, "Cyberbullying: Another main type of bullying?" (Slonje & Smith, 2008) contains a total of 654 citations. Next is "Electronic bullying among middle school students" (Kowalski & Limber, 2007) with 639 citations, "Bullying, cyberbullying, and suicide" (Hinduja & Patchin, 2010) with 610 citations, and "Extending the school grounds? - Bullying experiences in cyberspace" (Juvonen & Gross, 2008) with 577 citations.

**Table 4.**

*Most cited references to cyberbullying in children and adolescents*

Authors	Year	Title	Journal	Citations
Smith et al.	2008	Cyberbullying: Its nature and impact in secondary school pupils	Journal of Child Psychology and Psychiatry	1158
Slonje, R., Smith, P. K.	2008	Cyberbullying: Another main type of bullying?	Scandinavian Journal of Psychology	654
Kowalski, R. M., Limber, S. P.	2007	Electronic bullying among middle school students	Journal of Adolescent Health	639
Hinduja, S., Patchin, J. W.	2010	Bullying, cyberbullying, and suicide	Archives of Suicide Research	610
Juvonen, J., Gross, E. F.	2008	Extending the school grounds? - Bullying experiences in cyberspace	Journal of School Health	577

Table 4 shows the most frequently cited articles on the issue being addressed in this bibliometric analysis. The topics are mainly related to school, and even suicide appears also linked to cyberbullying, thus answering the third research question posed.

Network maps between keywords reflect the relationships generated with other topics directly linked to cyberbullying. The size of the words indicates their frequency of appearance and a greater amount of connections with other descriptors. In this regard, cyberbullying in children is linked to different clusters of descriptors exemplified with different colors. Among the most prominent terms are "mental health," "social networks," "depression," "loneliness," "sexting," "cybergrooming," "suicide," and "self-esteem" (Figure 2). All of them are largely linked to the consequences and impacts of cyberbullying on victims.

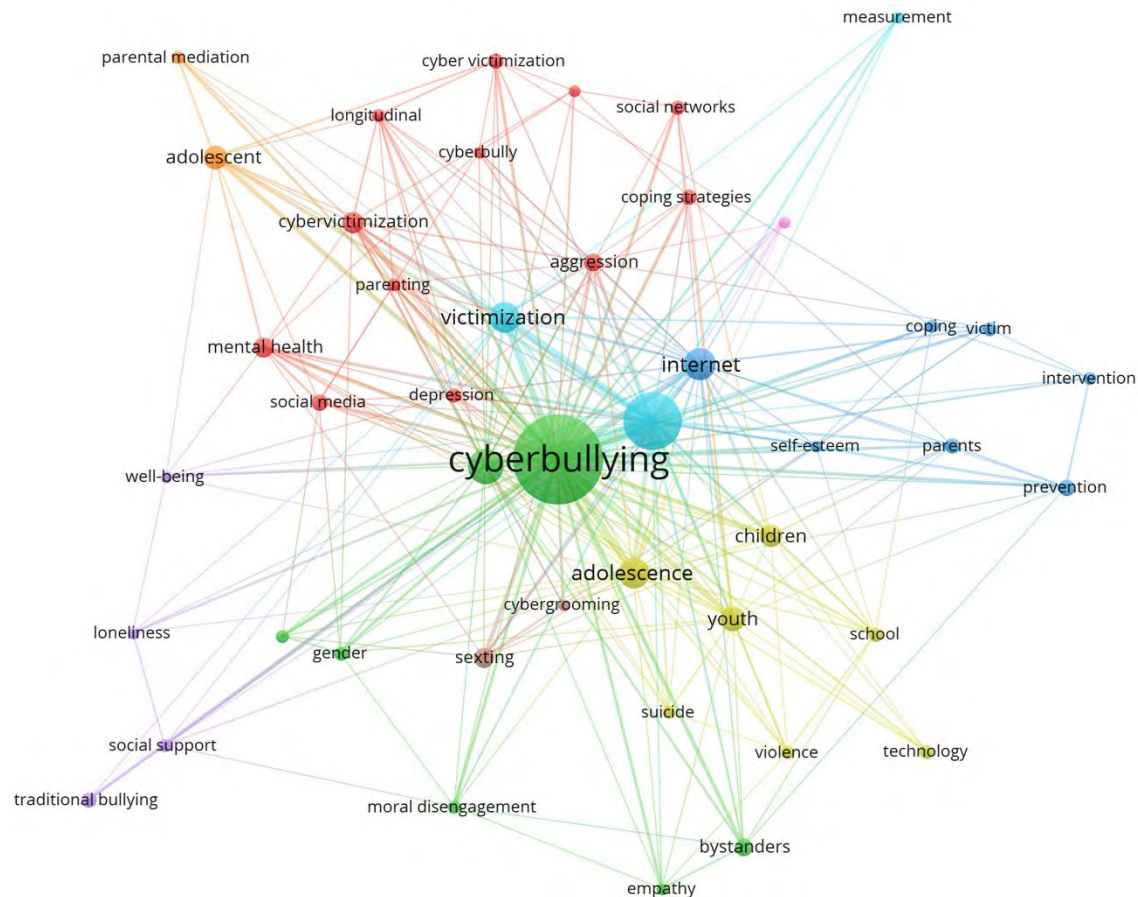


Figure 2: Network map between the keywords of articles published on cyberbullying in children

As age progresses, cyberbullying is linked to a higher number of terms and clusters that enhance greater complexity in the subject matter (Figure 3). Although some of the factors associated with cyberbullying are still repeated in children, the relationship with other concepts such as "relational aggression," "suicidal ideation," "substance use," "internet addiction," "bullying," and "Facebook" emerges.

With the analysis of these network maps (Figure 2 and 3), one sees the terms related to cyberbullying in children and adolescents, answering the fourth research question.





The United States is the country with the highest production, reflecting a great interest in the subject and associating itself with the large number of cases it presents (Baiden et al., 2019). The United Kingdom and Spain have also opted for research into cyberbullying and have a large number of documents, while cases are increasing in these two countries (Menesini et al., 2019; Przybylski, 2019). In short, the analysis of territories denotes the great diversity of countries around the globe that collect cases of cyberbullying.

In this challenge, different institutions from different countries have begun to consolidate as references, highlighting the Universiteit Antwerpen in the Netherlands, Masaryk University in the Czech Republic, and the University of Cordoba in Spain. In the top 10 of each area of population (children and adolescents), there are five Spanish institutions, as Spain is the country with the highest number of institutions dealing with cyberbullying.

The topics of the most-cited articles are the impact on students and the relationship with suicide. The psychological character of the journals influences the casuistry of reflecting the harm it causes in the victims, so it is not surprising that it addresses the consequences it presents in the person. This is verified in network maps, where the terms "mental health," "depression," "loneliness," "self-esteem," "suicide," and "suicidal ideation" are related to cyberbullying (Kopecký & Szotkowski, 2017; Ruíz-Martín, Bono-Cabré, & Magallón-Neri, 2019; Tokunaga, 2010).

For its part, the association of cyberbullying with other risky behaviors such as sexting and cybergrooming is remarked upon (Arias, Buendía, & Fernández, 2018), as are abusive use of the Internet, "internet addiction" (Smith et al., 2008; Tabuenca, Sánchez-Peña, & Cuetos-Revuelta, 2019), and the use of social networks such as Facebook and its influence in cyberbullying cases (Hennig et al., 2019).

A limitation of the study is the search engine of the Scopus database. The search is limited to a review of titles, abstracts, or keywords presented by the descriptors used (CYBERBULLYING AND CHILDREN; CYBERBULLYING AND ADOLESCENT). Therefore, any article that does not present any of these descriptors is excluded from the final results. This may cause some documents to be overlooked. However, the number of articles that can be analyzed by bibliometrics provides valuable data that represent a real vision of the current state of the subject matter.

Finally, future lines of research should be highlighted: (i) to extend the range of the population to an adult population in order to verify the interest of the topic beyond the child and adolescent population; (ii) to focus attention on the concrete consequences on the health of the victims; (iii) to establish from the review of the literature the possible predictors of cyberbullying; (iv) to analyze through empirical evidence the profile of the aggressor.

## Conclusions

The present study gathers a series of implications and findings of interest in the subject of cyberbullying in the child and adolescent population. It has also addressed the objective of analyzing the scientific production on cyberbullying in children and adolescents.

These implications and findings relate to the research questions posed: (RQ1) The state of scientific production is in full expansion and each year increases considerably, relating to the increase in cases per year; (RQ2) Certain journals, countries, and institutions have been established as references in the subject, beginning to consolidate a body of scientific knowledge on cyberbullying; (RQ3) The articles with the greatest impact on cyberbullying focus attention on the consequences for victims; (RQ4) The related terms include the association of different factors that affect human health (depression, loneliness, self-esteem, and suicidal ideation) and risk behaviors associated with cyberbullying such as sexting or cybergrooming.

The scientific production on this subject has increased in parallel with the cases of cyberbullying, and therefore the concern with preventing them, in recent years. The increase has occurred in both populations, especially in the case of adolescents, which is the critical age according to the study by Ballesteros (2017). Cyberbullying is a recent problem linked to a society characterized by the use of ICTs. It is necessary to find an effective solution to prevent this type of bullying. In this sense, research on the subject plays a fundamental role, and for this reason numerous specialized journals with great impact and countries and institutions of recognized prestige are already working on it.

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