



Mapping Global Research on Cyber Bullying in the Context of Cross-Cultural Collaborations: A Bibliometric and Network Analysis

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The increasing prevalence of communication tools also increases the negative use of the individual, which will disrupt communication with others. One consequence of this negative use is defined as cyber bullying and it can negatively affect the mental health of individuals. This study adopts a descriptive bibliometric approach to map global research on cyber bullying using metadata from the Web of Science database. Analysis of publication trends at the country level shows that cyber bullying and cross-cultural research is a growing research area in recent years. In addition, researchers conduct studies on cyberbullying and intercultural cooperation in different parts of the world. Co-authoring network analyzes revealed that we conducted the most effective research on cyber bullying in the USA, and collaborations on cyber bullying research were heterogeneous, except for some regions. The visual network map shows that there is cooperation between authors and institutions in studies on cyber bullying. All the top 5 universities that make the most publications on cyber bullying are within the member states of the European Union

Keywords: cyber bullying, cross-cultural collaborations, mapping global research, bibliometric analysis, cyber victim

INTRODUCTION

The rapid progress in information technology and the widespread use of smart phones enable more use of the internet. However, technological tools can in the form of hurting, upsetting and harming people, apart from helping to reach information, communicate, carry out banking transactions, and establish social relations. Using technological tools to harm others is conceptualized as cyber bullying. Cyber bullying is repetitive aggressive behavior using technological tools such as computers and smartphones (Chan et al., 2019; Marín-López et al., 2020). Cyber bullying includes sending hurtful and offensive messages to others, posting derogatory posts/pictures/videos and excluding them from social networking sites (Osuwan and Songkram, 2019).

Both descriptive and practical research on cyber bullying, which is an important problem worldwide, has an important place in preventing cyberbullying. Collaborations at the international level provide an important help for the solution of this problem, which has become a common phenomenon (Miller and Hufstедler, 2009). One of the best examples of these collaborations recently is the Indian-European Research Networking Program on School Bullying. In this program, in addition to India, it is seen that countries from different regions of Europe such as the United Kingdom, France, Germany and the Netherlands, as well as Australia, cooperate to examine

the phenomenon of bullying (Smith et al., 2018). In addition, this situation is an important element to create common practices in the literature and testing the experiences related to preventive studies at the cultural level.

Cross-cultural studies on cyber bullying focus more on the incidence of cyber bullying and victimization. For example, Athanasiou et al. (2018) revealed that Romania experienced more cyber victimization than other European countries, while Spain experienced less cyber victimization. The research determined that cyber victims experienced mental problems. Calmaestra et al. (2020) found that they involve one in four young people in Ecuador and one in five in Spain in cyber bullying. In addition, the study found that there is no difference between different ethnic cultural groups in terms of involvement in cyberbullying in Ecuador; In Spain, it revealed that there are differences between ethnic groups and involvement in cyber bullying. Chen and Chen (2020) found that cyber bullying is common among adolescents in Taiwan, Hong Kong and the People's Republic of China, males are more cyber bullying, and there is no gender difference in being victimized by cyberbullying. Yudes-Gómez et al. (2018) found that people aged 10–14 in Spain had slightly higher rates of cyberbullying than Colombia and Uruguay.

The Present Study

This research aims to present an overview of research on cyber bullying using bibliometric network analysis techniques and to fill the gap in this field in the literature. Previous bibliometric studies have included cyber bullying and education (González-Moreno et al., 2020), defining cyber bullying (Choi et al., 2021), identifying risk factors for cyberbullying (Song and Song, 2021), detecting cyberbullying (Ting et al., 2017) and cyberbullying research trends in Spain (Esteban et al., 2020). Despite the increase in research on cyber bullying in recent years, there is no study examining cyber bullying and intercultural collaborations using bibliometric methodologies.

This research maps existing studies on cyber bullying and explores how a group of researchers participates in the discussion and collaborates. It tries to reveal the dynamic growth of publication and citation data of studies on cyber bullying. In addition, we are trying to reveal the cooperation structure of cyber bullying at the cultural level by analyzing the most collaborative researchers, journals, and countries on cyber bullying: We expressed the purpose of this study as follows:

Which countries, researchers and institutions contribute the most to the dissemination of publications on cyber bullying, and what are the collaborations between them?

METHOD

We used the bibliometric method to scientifically map the field of equal opportunity in education. Bibliometric analyzes allow researchers in the field and their relationships to be defined, helping researchers to contribute to the field (Avelar et al., 2019). Bibliometric analyzes also provides a solid basis for detecting new lines and trends for future work (Wagner et al., 2011). In this study, we used the Web of Science database to map the literature on cyberbullying research. We used all articles in the

web of science database between 1970 and 2021 in the study. For the current study, we downloaded the metadata from Web of Sciences (WoS) on July 24, 2021, and analyzed it.

In the research, we first scanned the literature and examined the studies on cyberbullying. Then we determined the keywords to be used in the search. In the search strategy, we searched the database by entering the terms “cyberbully*” or “cyberbullying*”. We used an or connector between keywords and an asterisk with wildcards at the end of the words to reach more publications. We restricted only journal articles as document type.

In order to identify trends in cyberbullying research, we determined the number of publications and citations, influential studies and authors over the years. In the analysis, we performed co-authorship network analyzes to examine networks of scholarly collaboration between authors, institutions, and countries. Co-authorship analysis examines social networks by looking at collaborations over scientific articles (Acedo et al., 2006). Because the analysis includes information about the institutional relationships and geographic location of the authors, it allows for the examination of cooperation at the level of institutions and countries and reflects stronger social ties than other measures of relevance (Zupic and Cater, 2015). It also shows the relationship between researchers, research institutions, or countries in relation to each other depending on the number of co-authored publications (Chen et al., 2009; Van Eck and Waltman, 2014).

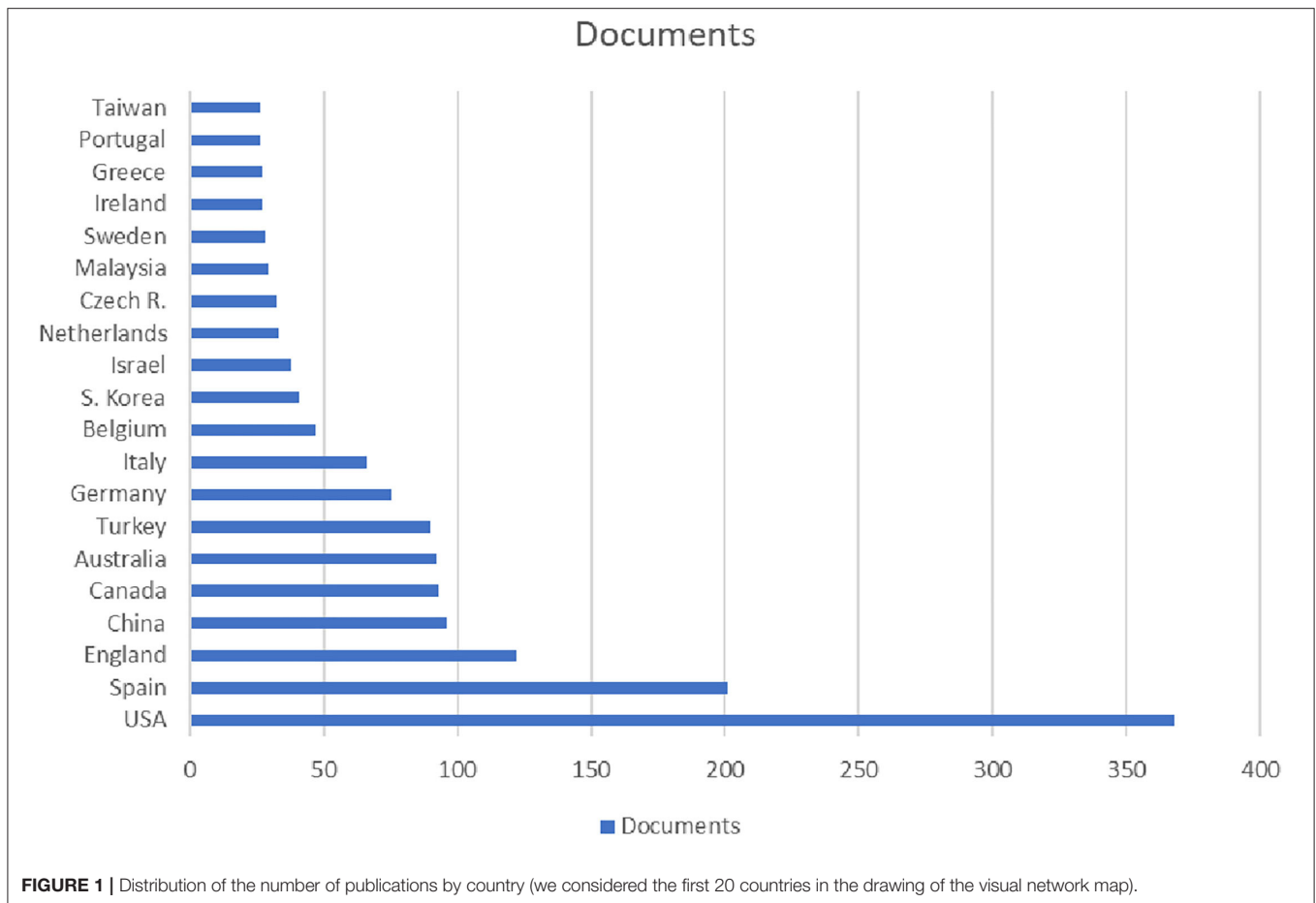
RESULTS

In the study, we showed the common network structure with the connections of researchers, institutions and countries in cyber bullying, respectively, with the data got about cyberbullying. The images in the figures presented in the findings represent networks of scientific collaboration or co-authorship in research on cyber bullying among countries, institutions and authors, respectively. Density maps have nodes and edges. In the visual network analysis presented in the figures, the color of the node represents the cluster or group to which the node is assigned. Larger nodes show countries, institutions and researchers with greater influence. The smaller the distance between the nodes, the stronger the relationship between them. There are more co-authored publications between countries, institutions or authors.

Cooperation Between Countries

In this finding, we examined a total of 2,270 articles on cyber bullying published in the WoS database. As a result of the findings, we found that 74 countries published about cyber bullying, among them, there are 50 countries that have published 5 or more about cyber bullying. **Figure 1** shows the countries that have contributed to publications on cyber bullying. In **Figure 2**, there is a visual network map of the relations of these countries with each other.

Figures 1, 2 show that 56 countries collaborate on cyberbullying through a joint publication. Considering its publication production power, the USA, the most productive and influential research producer, is in the central position, ranking



first with 368 articles. Therefore, it is the most productive region in the USA. The other four countries that follow, in order, are Spain (201 articles), the United Kingdom (122 articles), China (96 articles) and Canada (93 articles). In the analysis presented in this study, the USA is in the center of cyberbullying, taking the first place with 10,518 references. England follows it with 5,070 citations, Spain with 4,154 citations, Canada with 3,128 citations and Australia with 2,164 citations.

Among these relations, the top five countries with the highest total link strength are the USA (161), England (115), Spain (65), Germany (115) and the People's Republic of China (115). Overall, the results show that there is enough cooperation between different parts of the world. We identified 8 clusters in cooperation between countries. **Table 1** shows the 8 clusters got, and the countries included in these clusters.

Table 1 shows that there are 8 sets of relationships between countries regarding cyberbullying. The largest of these clusters is Cluster 8 with 10 countries. Cluster 8 consists of Cluster 7 (9 countries), Cluster 6 (8 countries), Cluster 5 (6 countries), Cluster 3 (6 countries), Cluster 4 (3 countries), Cluster 2 (3 countries) and finally Cluster 8 followed by 1 (3 countries). The findings in **Table 1** reveal that there is no obvious common point outside of Cluster 3. However, that the official language of all the countries in cluster 3 is Spanish is an important common junction point.

Contrary to the heterogeneous nature of other clusters within the 56 cooperating countries, all Spanish-speaking countries are in one cluster.

Cooperation Between Institutions

Because of the findings, we determined that there are 1,275 institutions in total that have published 5 or more about cyber bullying. Because of these examinations, the visual network map in **Figure 3** presents the institutions contributing to the publications on cyber bullying and the relations of these institutions with each other.

Figure 3 shows that 107 universities cooperated through a joint publication on cyber bullying. Considering the collaborative power in publication production, the most productive research university is the University of Seville (Spain), with 22 articles, 1,149 citations and 35 Total link strengths. This university is followed by Postdam University (Germany) with 35 Total link strength, University of Cordoba (Spain) with 34 Total link strength, Masaryk University (Czech Republic) with 34 Total link strength, University of Antwerp (Belgium) with 30 Total link strength. Therefore, we have determined that all the top 5 universities that publish the most are within the member states of the European Union.

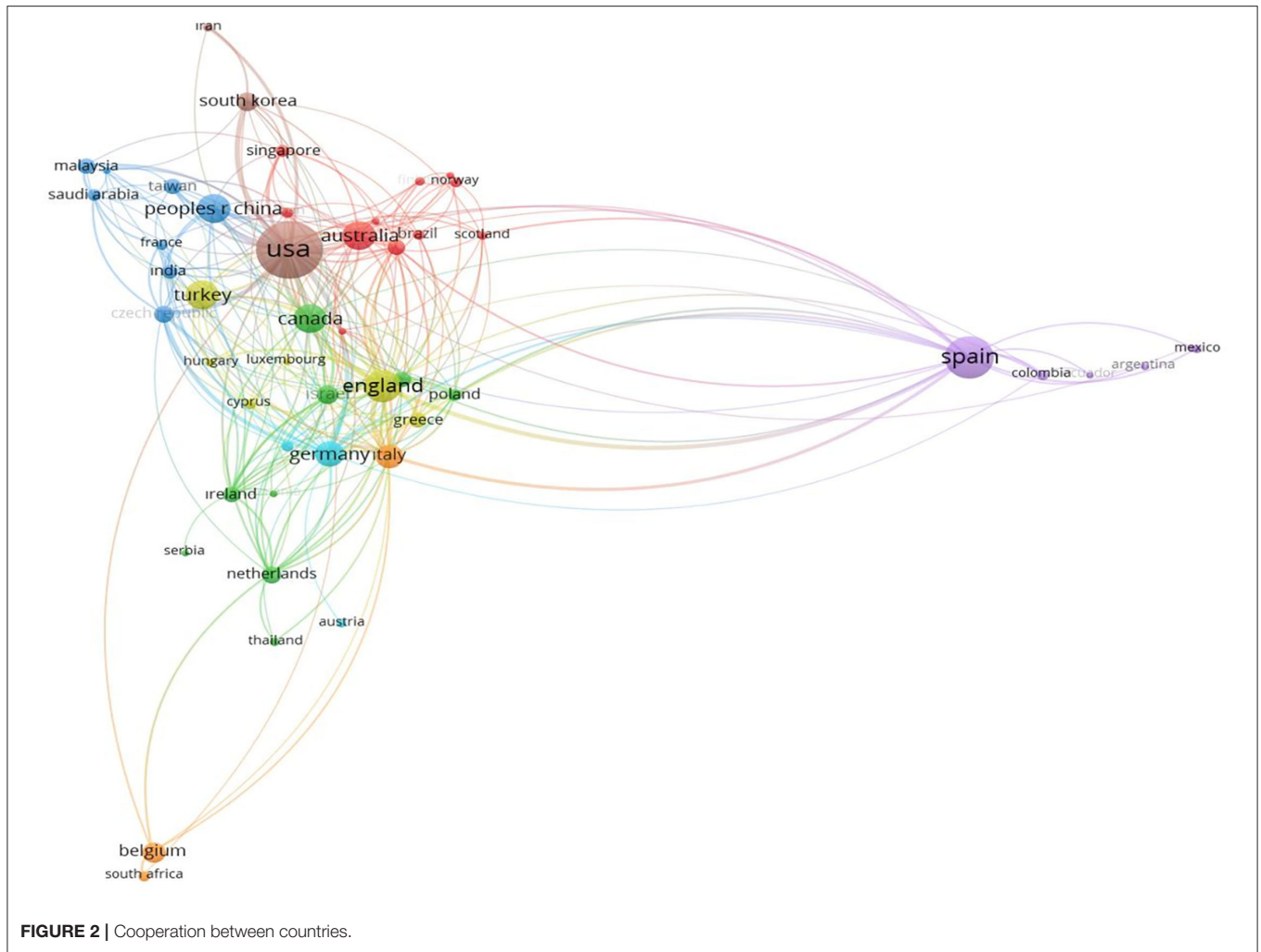


TABLE 1 | Cross-country cooperation clusters.

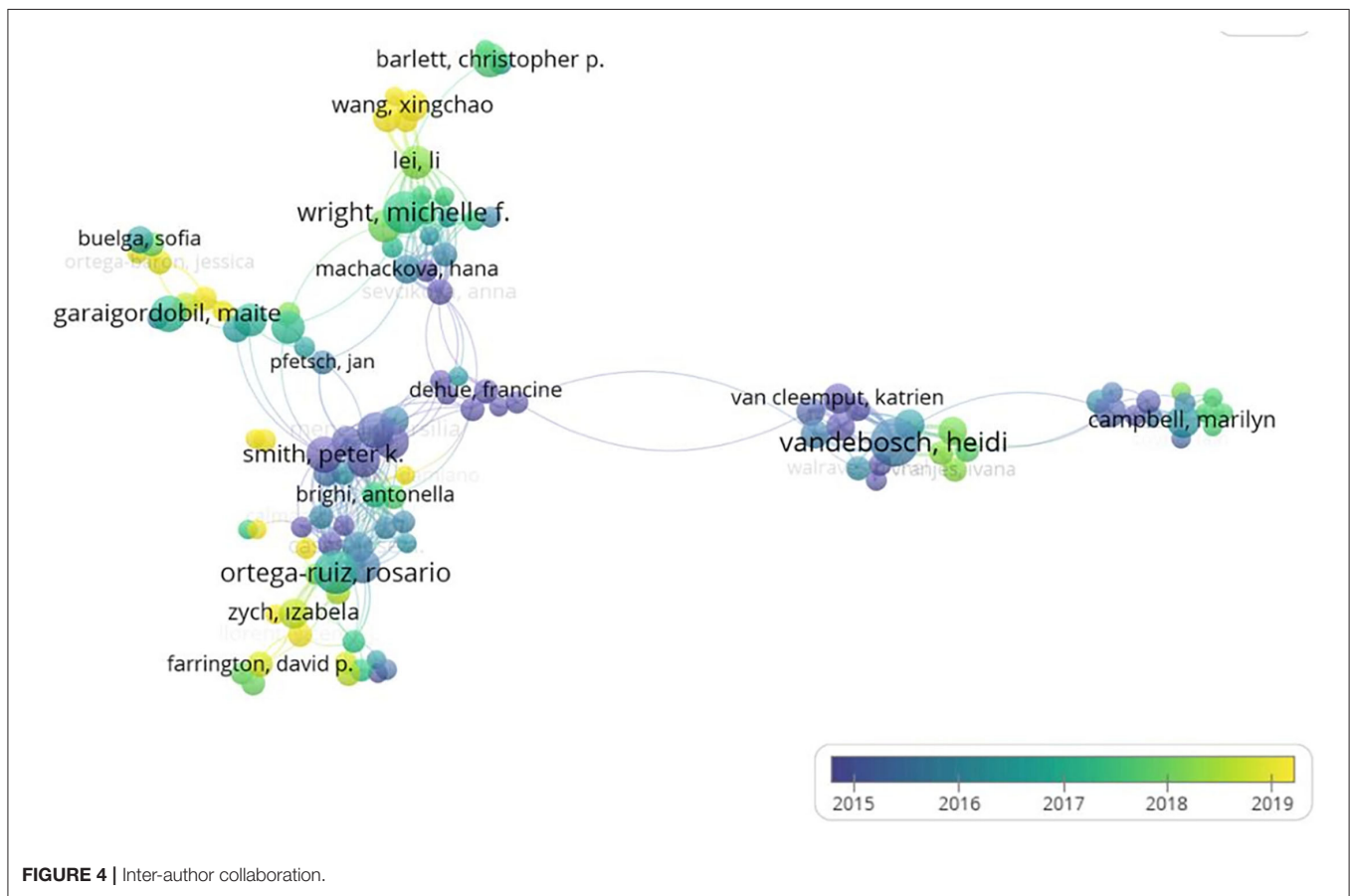
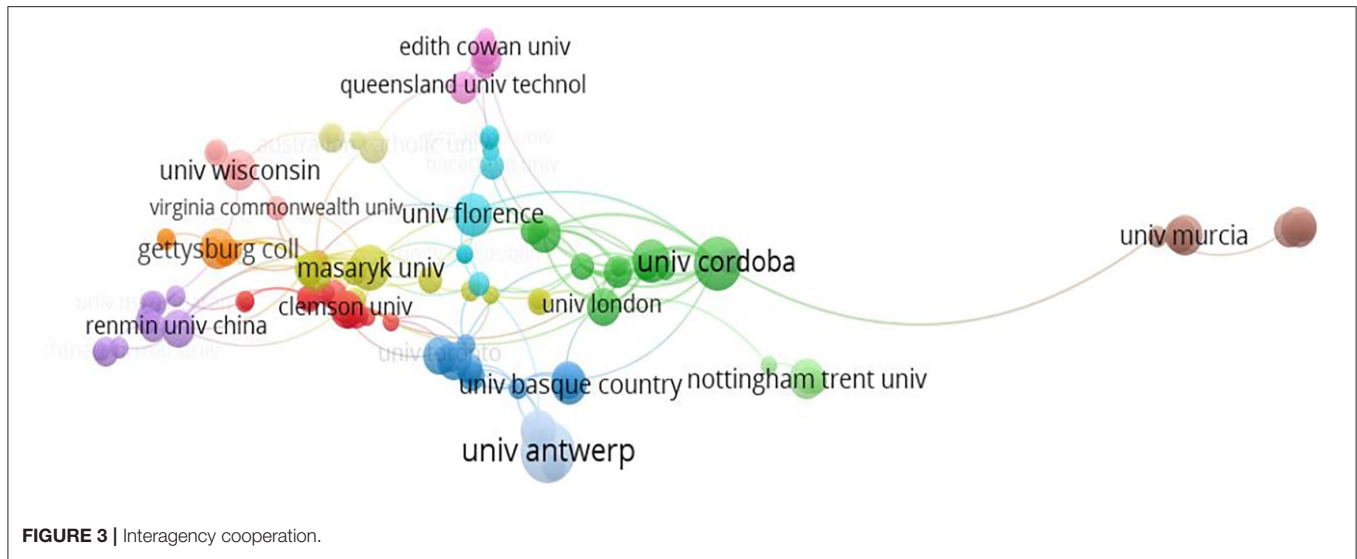
Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
USA	Belgium	Argentina	Germany	Cyprus	Czech Republic	Canada	Australia
South Korea	Italy	Chile	Switzerland	England	France	Ireland	Brazil
Iran	South Africa	Colombia	Austria	Greece	India	Israel	Denmark
		Ecuador		Hungary	Malaysia	Netherlands	Finland
		Mexico		Luxembourg	Pakistan	Poland	Japan
		Spain		Turkey	China	Portugal	New Zealand
					Saudi Arabia	Romania	Norway
					Taiwan	Serbia	Scotland
						Thailand	Singapore
							Sweden
3	3	6	3	6	8	9	10
Country	Country	Country	Country	Country	Country	Country	Country

Collaboration Between Authors

Because of the findings, we determined that there are 4,911 authors who have published 5 or more on cyberbullying, and 189 of them cooperated. **Figure 3** shows the relationships between the

authors who contributed to the publications on cyberbullying on the visual network map.

Figure 4 shows that the most influential researcher in terms of collaboration is Heidi Vandebosch (Belgium/Antwerp



University) with 44 articles, 1,429 citations and 119 Total link strength. Other influential researchers are Rosario Ortega-Ruiz (Spain/Cordoba University) with 74 Total link strength, Li Lei (China/Renmin University) with 61 Total link strength, Michelle F. Wright (USA/Pennsylvania State University) with 56 Total link strength, Rosario with 55 Total link strength It's Del Rey (Spain/Sevilla University).

DISCUSSION

Co-authoring network analyzes revealed that we conducted the most effective research on cyber bullying in the USA, and collaborations on cyber bullying research were heterogeneous, except for some regions. All the top 5 universities that make the most publications on cyber bullying are within the member

states of the European Union. The visual network map shows cooperation in studies on cyber bullying.

Cooperation Between Countries

Many researches on cyber bullying are carried out in centers originating from the USA. Barragán Martín et al. (2021) revealed similar findings to support of this finding in their study. Considering this situation, US academics may be more open to international collaborative studies. Among the findings, we divided cooperation links between countries around the world regarding cyber bullying into 8 clusters in total. Among these 8 clusters, the 3rd cluster differs from the other clusters in one aspect. Especially in the 3rd cluster, all the cooperating members consist of Spanish-speaking countries. Spain, which is in this cluster, is the country that makes the most research on cyber bullying after the USA. Other studies support the finding of this research result (González-Moreno et al., 2020; Barragán Martín et al., 2021).

From this point of view, the cooperation of Spanish researchers is one-sided and it can be sufficient for their cooperation with other countries of the world. Barragán Martín et al. (2021) revealed that 92% of studies on cyber bullying were in English and 8% in Spanish. This is another indication that the cooperation of Spanish-speaking countries is not heterogeneous. Therefore, further cooperation with the countries in the Spanish group in future studies may provide an important advantage for the generalization of the cultural richness and results in the literature. We also did not find Russia or Russian-speaking countries in any cluster. This is an interesting finding when we consider the number of schools and students in the Russian Federation. As a matter of fact, Russia is among the top 10 countries where cyber bullying cases are most common (Кушцова and Маркман, 2017). Russia received a higher score than the United States in the PISA 2018 report on general bullying (OECD, 2019). Therefore, cooperation with Russia and Russian-speaking countries can significantly increase the cultural richness in the literature.

Cooperation Between Institutions

Visual network analysis shows that there is inter-agency cooperation in studies on cyber bullying. A Spanish (University of Sevilla) university ranks first among institutions contributing to cyber bullying research with 35 total link strength. Considering the total cooperation power, it is an interesting finding that the top 5 universities are in Europe. Contrary to the fact that the USA

is in the first place in terms of inter-country connection power, US-affiliated institutions are not at the forefront.

Collaboration Between Authors

Visual network analysis shows that there is cooperation between authors in studies on cyber bullying. This indicates that cyber bullying can be seen in different countries and is a global problem. Collaboration between authors from different countries can provide a better understanding of the underlying mechanisms of cyber bullying. Heidi Vandebosch (Belgium) ranks first with 119 Total link strength in the findings regarding inter-author collaboration. There is only 1 author from the USA in the top 5 authors. Michelle F. Wright (USA/Pennsylvania State University) ranks 4th with 56 Total link strength.

CONCLUSION

This study mapped the articles published on cyber bullying between 1970 and 2021 through collaborations. The results showed that this field has been developing rapidly, especially after the 2000s. It carried research on cyber bullying out in various geographic regions around the world, although some regions are underrepresented. The findings also revealed that research on cyber bullying was grouped into eight interrelated clusters; this suggests that their research on cyber bullying has a cross-cultural nature. The article presents a general picture of the emerging field with its positive and negative aspects.

Limitations of the Bibliometric Review

The most basic limitation of this research is that the data obtained from the research is limited to the time period until July 24, 2021. We did not include studies published after this date in this analysis.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

RY and AP jointly wrote the manuscript. Both authors contributed to the article and approved the submitted version.

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