



Cyberbullying and bystanders: A bibliometric analysis

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ABSTRACT

The negative effects of cyberbullying are broad and have become a global problem, affecting people of multiple age groups and identities. Despite the growing body of research on cyberbullying, especially on bystanders and interventions, instances of ignored cyberbullying victimization still persist. This phenomenon suggests greater examination of current bystander research, and this literature therefore maps and analyses the research contributions in this field and identifies future lines of research. The research findings are based on an examination of academic publications listed in Web of Science in the period 2007–2024 which were mapped using the preferred reporting items for systematic reviews and meta-analyses technique and bibliometric software (VOSviewer and the R software package Biblioshiny). (1) Analysis of the data reveals the current distribution of published research findings in the field, identifying the most impactful journal as *Computers in Human Behavior*, the core author as Vandebosch, the most prolific affiliation as University of Antwerp, and the most prolific country as the USA. (2) Analysis of the data reveals collaboration patterns between authors and countries, showing same affiliation co-authors to predominate and a lack of collaboration between countries. (3) Analysis of the data parses research trends in bystander intervention behavior research and proposes the directions of future research should focus on examining multiple social media platforms and school-based coping strategies in cyberbullying. The content analysis of relevant articles conducted by this study should provide valuable clues for those researching or intending to enter this field of study, as well as help to raise the emphasis on such research in academia.

Keywords: bibliometric analysis, cyberbullying, bystander, VOSviewer, Biblioshiny

INTRODUCTION

The development of digital media technology has had a massive impact on cyberbullying, with digital information exchange methods serving as the platform on which this form of bullying is conducted (Meinarni et al., 2020; Valkenburg et al., 2021). Some argue that cyberbullying is an inevitable consequence of the development of the social network (Zhu et al., 2021). Nevertheless, the 2030 agenda for sustainable development, proposed by the United Nations (2015), promotes the creation of safe, inclusive, non-peaceful, and effective learning environments, with the aim of fostering peaceful and inclusive societies. And there is consensus that cyberbullying is a global problem and its curbing requires worldwide effort (Herrerías et al., 2024; Vaterlaus & Winter, 2021). Cyberbullying manifests itself in different behaviors in different countries, but though there is an overall downward trend in the prevalence of cyberbullying, due to the absence of significant change or even upward trends in some countries, the cyberbullying response faces continuing challenges (UNESCO, 2019).

A recent empirical study showed that about 33% of female and 16.6% of male adolescents who experienced cyberbullying experienced depression. Moreover, nearly 7.5% of female and 2.3% of male respondents admitted that they had seriously considered suicide in the past year (Maurya et al., 2022).

Likewise, numerous studies have indicated that people who experience cyberbullying are not only psychologically traumatized (Englander, 2021; Li et al., 2023; Wright, 2024), but also more vulnerable to self-harm and suicide (Cohen-Almagor, 2022; Peprah et al., 2023).

In addition to the negative impacts of cyberbullying such as physical and psychological harm, cyberbullying also affects and reduces educational outcomes, jeopardizing sustainable development goals 3 (SDG 3) (good health and well-being) and SDG 4 (quality education). In addition, it impedes the realization of peace and justice, thus sabotaging SDG 16 (peace, justice, and strong institutions). As a result, cyberbullying research is highly relevant to the United Nations' SDGs (Achuthan et al., 2023) and a more in-depth understanding of the dynamics of cyberbullying can help promote a harmonious and just social environment (UNESCO, 2019). Unfortunately, although the prevalence and severity of cyberbullying has attracted widespread attention from all sectors of society, the overall social response has been inadequate (Englander, 2021).

However, driven by the increase in online communication, the role of bystanders in cyberbullying has attracted some attention. Research shows that bystander's attitudes and bystander's psychology can effectively impact intervention and outcomes in cyberbullying (Hendry et al., 2023). Moreover, bystander intervention in cyberbullying is openly recognized as a decisive tool and has attracted multinational, multidisciplinary attention (Hu et al., 2019; Liu et al., 2021). Unfortunately, poor bystander attitudes and motivation can have a negative effect (Herry et al., 2021). For example, bystander support for perpetrator participation can promote cyberbullying behavior, and ignorance regarding cyberbullying behavior can indirectly contribute to the severity of bullying (Machackova, 2020; Obermaier et al., 2016). Therefore, understanding the diverse role of bystanders and bystander behavior in cyberbullying and relevant research findings is critical.

LITERATURE REVIEW

Bibliometrics originated in by Pritchard (1969) and gradually developed into an important tool for analyzing and evaluating scientific literature (Achuthan et al., 2023). provide a quantitative tool for systematically reviewing and studying the existing literature in a given field (Mayr & Scharnhorst, 2014). Through such analysis, detailed information such as authors, keywords, journals, countries, affiliations, and references can be obtained. The application of this methodology can also help in uncovering the intrinsic linkages between information aiding the development of a field through bibliometric analysis (Abramo et al., 2011). Bibliometric analysis can also be divided into types, such as performance analysis and science mapping. Performance analysis focuses on assessing the overall performance of the field based on descriptive characteristics of authors, journals, affiliations and countries, while science mapping analysis, while science mapping analysis employs content analysis methods to explore the evolutionary characteristics of the field in depth, focusing on the changes in research themes and the development of research trends (Moral-Muñoz et al., 2020). Moreover, Ma and Xi (1992) emphasized that visualization methods in bibliometrics can help in the interpretation of data and make results more comprehensive.

Quite relevantly, bibliometric analysis of research findings on cyberbullying can provide important direction for researchers and inform the development of more effective policies to combat cyberbullying (Herrerias et al., 2024). Bibliometric perspective based articles on social safety goals, victims and perpetrators contribute valuably to cyberbullying research and measurement. For example, an article found bibliometric analysis of research on cyberbullying attackers and victims can help in addressing the root causes of cyberbullying phenomenon (Herrerías et al., 2024). Similarly, Cretu and Morandau (2022) utilized bibliometric analysis on research findings cyberbullying in education to help victims in the school environment. Researchers have also statistically examined perpetrators' perceptions and psychology of cyberbullying via bibliometric analysis (Bansal et al., 2023).

Moreover, bibliometric analysis can also clarify the combined, overlapping relationships between cyberbullying and intersecting areas. Of note, cyberbullying in schools has been bibliometrically shown to not only affect students' academic performance but also poses a threat to their physical and mental health (Cretu & Morandau, 2022). Similarly, cyberbullying in the workplace has been bibliometrically shown to seriously detract from the psychological health and quality of life of adults (Kim et al., 2021). Importantly, bibliometrically clarifying the combined, overlapping relationships between cyberbullying and bystanders can

help researchers identify and provide comprehensive thematic perspectives for related research. However, despite numerous articles confirming strong bibliometric research interest in the themes of cyberbullying and bystanders (Cretu & Morandau, 2022), bibliometric research comprehensively examining their intersection remains lacking.

Although there have been numerous bibliometric studies on participants in cyberbullying, reviewing the literature on the Web of Science (WoS) database fails to reveal a single bibliometric study outlining the overall state of such research, particularly the interplay between cyberbullying and bystanders. Therefore, to close this research gap, this study developed an overview of the evolution of research on bystander behavior in cyberbullying through bibliometric analysis.

The study retrieved publications from Clarivate's WoS database using R's Bibliometrix package (Aria & Cuccurullo, 2017) and VOSviewer, a tool used to visualize similarities through web graphs (Van Eck & Waltman, 2010), and explored the following research questions (RQ):

- RQ1:** Which journals, authors, affiliations, and countries are at the center of contributions to cyberbullying and bystanders research?
- RQ2:** Which journals, authors, affiliations, and countries are at the core of collaborative contributions to cyberbullying and bystanders research?
- RQ3:** What are the research trends and future research priorities in cyberbullying and bystanders?

MATERIALS METHODS

The WoS (core collection) was selected as the data source for this study, as it has been accepted by many researchers as a high-quality digital literature resource database and especially suitable database for bibliometric analysis (Ding & Yang, 2022).

To ensure the data retrieval was comprehensive and accurate, this study drew on the preferred reporting items for systematic reviews and meta-analyses (PRISMA) framework and the methodology of previous bibliometric studies on the topic of cyberbullying, serially combing for related concepts and terms. Multiple synonyms of cyberbullying were synthesized, such as "electronic bullying" OR "internet bullying" OR "online bullying" (Cretu & Morandau, 2024). After several rounds of screening and testing, eligible keywords were manually selected. The selected timespan was January 2007 (year of first publication of the earliest relevant literature in the database)–August 2024. The search was conducted on the 9th of August 2024.

Following the PRISMA process (Page et al., 2021), a high-level search was then performed using the option subject field (TS). The finalized search string was TS = (("cyberbullying" OR "cyber-bullying" OR "cyber bullying" OR "electronic bullying" OR "internet bullying" OR "online bullying") AND ("bystander" OR "bystanders*")). The initial search yielded 347 articles, and duplicates were then identified (n = 6) and excluded. Non-English language articles (n = 19) were also excluded. After screening, a thorough manual review of all remaining articles was conducted to exclude publications that were not relevant to the topic (n = 86). Based on the above criterion, a total of 236 articles were ultimately obtained. The PRISMA process was followed, as shown in [Figure1](#).

Moreover, for bibliometric analysis and visualization, two bibliometric software research tools were used. The first, Biblioshiny, is an open-source R package with a full suite of statistical techniques and performance analysis (Büyükkidik, 2022). While the second, VOSviewer, employs a probabilistic-based data normalization methodology for easy creation and visualization of easy-to-interpret bibliometric maps. It provides a variety of visualization views of data such as co-citation, co-country, and so on, with outstanding features including easy mapping and beautiful images (Van Eck & Waltman, 2010).

RESULTS

This section details the process of bibliometric analysis, including the following:

1. Performance analysis of publication growth, core journals, top-authors, top-affiliations, country publication, and other information analysis to identify and assess trends in the field (Moral-Muñoz et al., 2020).

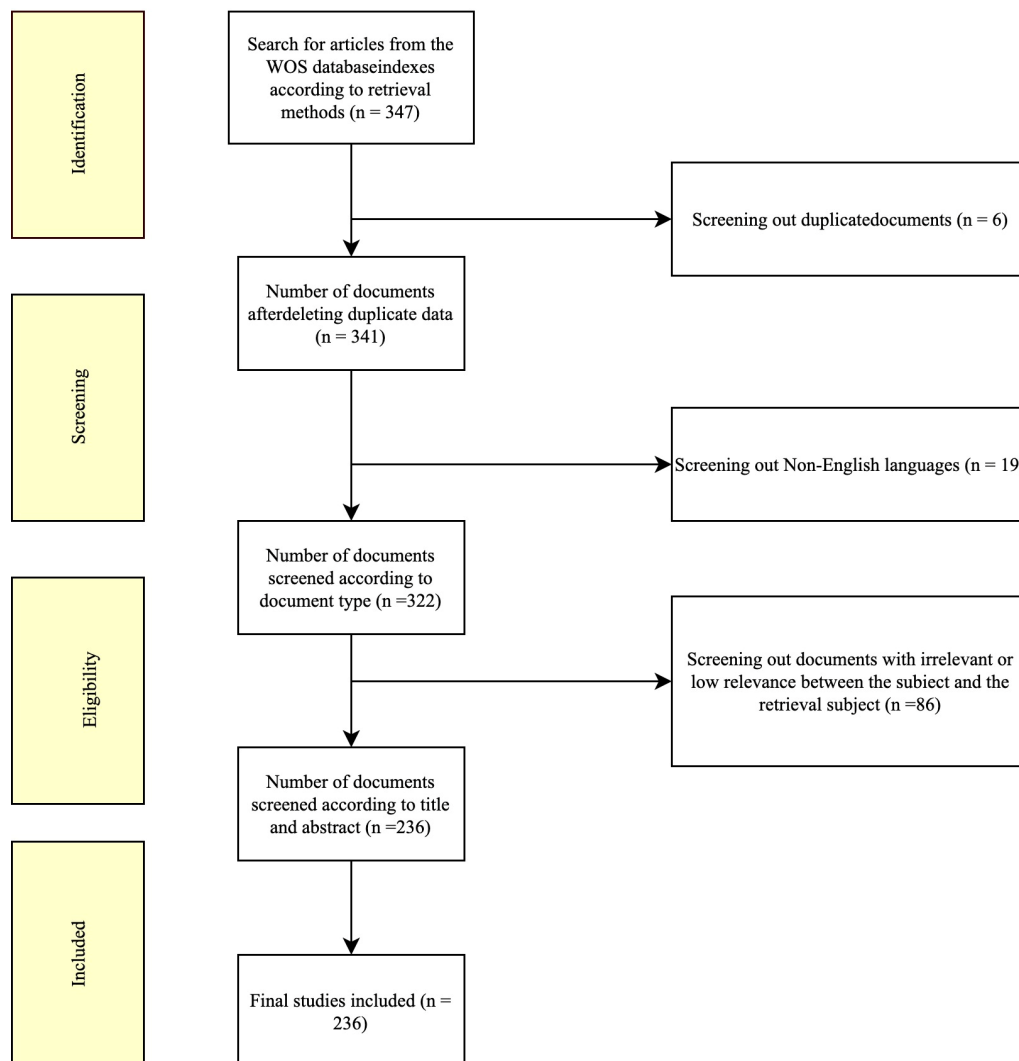


Figure 1. PRISMA process flowchart (Source: Authors)

2. Science mapping analysis of knowledge structures such as co-authorship and keyword co-occurrence. In co-authorship analysis, the knowledge structure is extracted and classified into clusters to reveal the strength of associative collaborations between authors and countries. It is used to explain patterns of personal and national cooperation in the field (Small, 1973). In comparison, keyword co-occurrence analysis is a publication content research technique. It analyses the relationships between clusters of research topics by extracting keywords from the full text of a publication. This method reveals the relevance of the research topics to each other. Keyword co-occurrence analysis can be used to enrich the interpretation of co-citation analyses (past) and bibliographic coupling (present), and to predict directions for development of the field (future) (Donthu et al., 2021).
3. Thematic evolution analysis has the role of demonstrating the dynamics of the field and interpreting trends (Cobo et al., 2011; Guleria & Kaur, 2021). Interpreting trending topics can complement contemporary popular themes and predictions of future directions (Ghorbani, 2024).

Performance Analysis

Descriptive structures

The 236 papers used in this study were written by 620 authors, published in 125 journals, and cited in 7134 references between 2007 to 2024 (as of 9 August 2024). Annual growth rate 14.5%. The average age of documents was 4.66 years. Also, there were an average of 3.56 co-authors per document, and average citations per document was 23.93, as shown in [Table 1](#).

Table 1. Main information about data (using Bibliometrix R package)

Variable	Value
Timespan	2007:2024
Sources (journals, books, etc.)	125
Documents	236
Annual growth rate (%)	14.5
Document average age	4.66
Average citations per document	23.93
References	7134
Authors	620
Co-authors per document	3.56

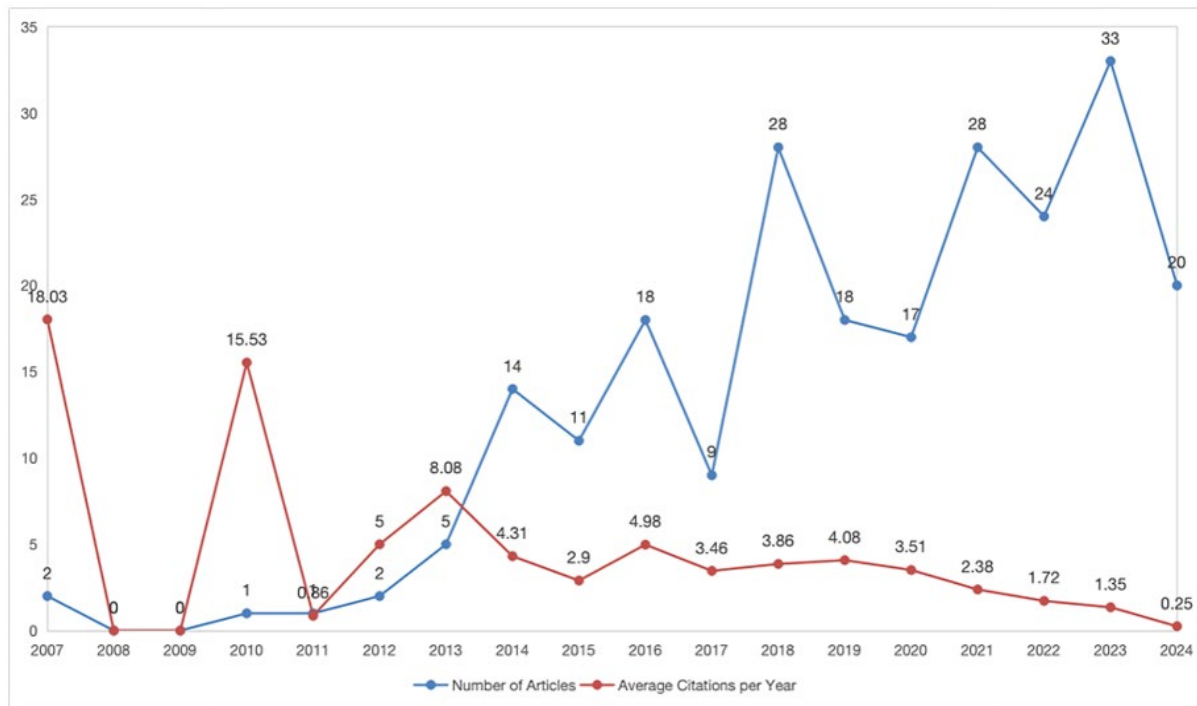


Figure 2. Article production and citation (Generated by authors)

Annual publication growth analysis

Figure 2 shows the number of publications on cyberbullying and bystanders, depicting annual publication numbers from 2007 to 2024. The data shows that the earliest article was “students’ perspectives on cyber bullying” (Agatston et al., 2007), and the article maintains the highest annual average of citations to date at 912. Overall, despite fluctuations in the yearly number of publications, on average the annual number of publications has grown. The growth trend can be broadly divided into two phases. In the first stage, which lasted until 2014, research on the topic was in an exploratory slow-growth phase, ranging between 0 and 14 annual publications. In the second stage, between 2015 to 2024, the graph of annual publications was characterized by a scissor curve. Although the overall trend was upward, there were fluctuating low spots in research production, with 9 publications in 2017, 18 publications in 2019, 17 publications in 2020, and 24 publications in 2022. The scissor curve could indicate variable research hotspots characteristics due to the influence of diverse related fields such as psychology, sociology, and education. It could also be impacted by the cybersecurity policies that have been implemented in various countries among other reasons. However, the main driver is likely that this is a new field and yet to be properly studied.

The most basic method of assessing the performance of publications in a particular field is to observe the frequency and impact of publications per year. Within the topic of cyberbullying, less attention has been paid to bystanders, resulting in high citations for earlier articles, with up to 18.03% of annual citations in one year being for articles published in 2007. However, while overall publication has risen, annual citations have decreased each year.

Table 2. Top 10 journals in the cyberbullying and bystanders research field

Rank	Journal	Publications	Citations	Average citation	Index
1	Computers in Human Behavior	30	1,843	61.43	21
2	Cyberpsychology Behavior and Social Networking	9	310	34.44	7
3	International Journal of Environmental Research and Public Health	9	61	6.77	5
4	Frontiers in Psychology	8	103	12.875	4
5	Journal of School Violence	7	83	11.85	4
6	Cyberpsychology-Journal of Psychosocial Research on Cyberspace	6	130	21.66	4
7	Journal of Interpersonal Violence	6	110	18.33	4
8	Current Psychology	5	57	11.40	3
9	New Media & Society	4	148	37.00	4
10	Journal of Adolescence	4	125	31.25	4

Table 3. Top 10 most productive authors in the cyberbullying and bystanders research field

Rank	Author	Documents	Citations	Average citation	Affiliation
1	Vandebosch, Heidi	12	896	74.660	University of Antwerp
2	Van cleemput, Katrien	9	820	91.110	University of Antwerp
3	Poels, Karolien	9	677	75.220	University of Antwerp
4	Bastiaensens, Sara	8	674	84.250	University of Antwerp
5	De bourdeaudhuij, Ilse	8	645	80.625	Ghent University
6	Bastiaensens Sara	8	674	84.250	University of Antwerp
7	Bussey, Kay	7	357	51.000	Macquarie University
8	Barlinska, Julia	5	293	58.600	University of Warsaw
9	Szuster, Anna	5	293	58.600	University of Warsaw
10	Machackova, Hana	7	254	36.280	Masaryk University

Core journals with number of articles

A count of the journals in which the literature belongs reveals that most of the journals in which papers in this field are published are in the field of violence studies or psychological studies, with the exception of a small number of general interest journals. **Table 2** presents the top 10 journals in terms of articles published.

Ranking first, a total of 30 articles were published in the journal *Computers in Human Behavior*, far more than any other journal. Moreover, *Cyberpsychology Behavior and Social Networking* ranked second, but had an average number of citations per article of 34.44. Also noteworthy was that *New Media & Society* had only 4 publications but had an average number of citations per article of 37. surpassing even the average number of citations per article of *Cyberpsychology Behavior and Social Networking*. This indicates that the journal is publishing higher quality articles and is receiving lots of attention in the area of cyberbullying and bystanders. In order to explore the reasons for this,, we analyzed the journal's articles and found that they focus on the interactions of cyberbullying on social media and also how morality and ethics in new media can help curb cyberbullying.

Top productive authors and affiliations

Cyberbullying research has attracted the attention of a growing number of scholars, and an overview of cyberbullying-related research necessitates knowing the most prolific authors in the field. After various calculations, the ten most productive authors were determined, as shown in **Table 3**. Vandebosch is the most prolific scholar with 12 publications and the most citations. She specializes in the study of cyberbullying among adolescents. She has co-authored publications with other popular scholars in the top-4 such as Van Cleemput, Poels, and Bastiaensens.

Analysis from the number of published papers, the top-4 scholars are more concerned with bystander helping intentions in cyberbullying. Moreover, their research context is mostly contextualized on adolescents. Their collaborative articles have 469 citations and discuss bystanders' intentions to help and behaviors when witnessing victims in serious incident situations (Bastiaensens et al., 2014). The fifth most popular scholar also conducts predictive analysis of bystanders' positive, negative behaviors (DeSmet et al., 2016).

Table 4 shows that researchers affiliated to the University of Antwerp have 15 published articles with 1081 citations, which indicates that this affiliation holds the top position in the field. It is noteworthy that the four most creative scholars are all from the University of Antwerp. Moreover, although the number of articles

Table 4. Top 10 most relevant affiliations in the cyberbullying and bystanders research field

Rank	Affiliation	Documents	Citations
1	University of Antwerp	15	1,081
2	Ghent University	13	879
3	University of Lisbon	9	103
4	Masaryk University	8	290
5	Macquarie University	7	357
6	McGill University	6	75
7	Penn State University	5	56
8	Alexandru Ioan Cuza University	5	8
9	University of Warsaw	4	127
10	Beijing Normal University	4	15

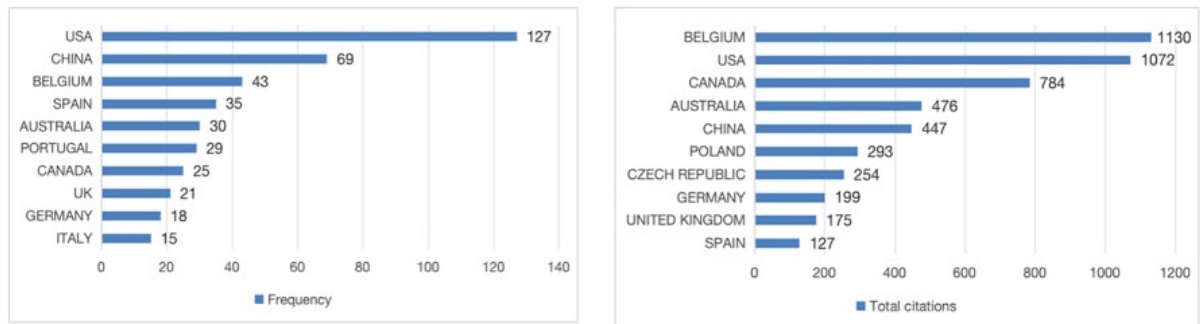


Figure 3. Top 10 countries of publication and total citation (Taiwan included in China) (Generated by authors using Bibliometrix)

published by researchers from the University of Warsaw is 4, the number of citations is relatively high at 127, which makes it a strong research affiliation with high quality impact in this field.

The country of publication and citation

To further determine the strength of the authors’ countries, **Figure 3** shows the top 10 countries in terms of the number of publications and the top 10 countries in terms of citations. The countries with the highest number of publications are the USA, China, Belgium, Spain, and Australia, in that order.

Although the total publication originating from Belgium is only 43, which is much lower than the first ranked USA, for total citations it occupies first place. In a sense, citations represent the quality of articles. Further exploration revealed that articles from Belgium concentrated on the influence of bystander psychological factors and environmental factors on bystander behavioral choices. They fill an important niche in the field of bystander cyberbullying, reflecting the influence and important academic position of this country in this field.

In the global ranking of number of publications, China has exhibited certain capacity for scientific research output, standing as the sole developing country among the top 5. As a developing country, China has a relatively high number of literature originating from it, this may be related to China’s broad internet penetration and fast economic development. However, for overall number of citations, it is ranked 5th, which indicates that despite the high amount of literature on cyberbullying, the quality of these requires improvement.

Science Mapping

Co-authorship of authors

Co-authorship analyses enable the identification of key scientists and the study of associations between them (Nobanee et al., 2021). VOSviewer identified 620 authors based on the data. To identify core authors, the co-authorship cartography was narrowed to papers with 4 minimum co-occurring authors, and a total of 19 authors met the threshold and were grouped into 8 clusters. The node visualizations represent the overall link strength. **Figure 4** shows the co-authorship visualization graph.

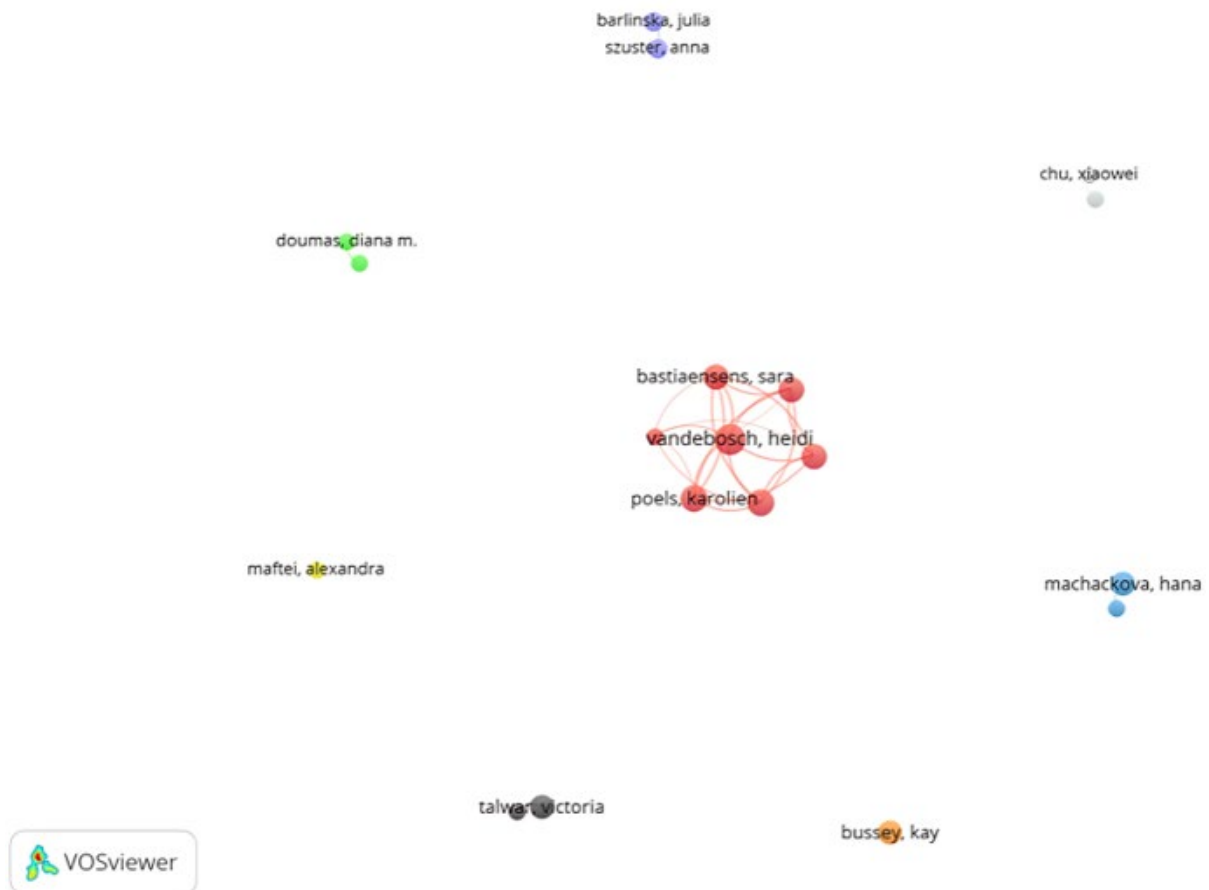


Figure 4. The network visualization of co-authorship authors level (Generated by authors using VOSviewer)

Prolific authors seem to have the largest collaborative networks. The highest scoring co-author is Vandebosch, who appears at the center of the cluster with 46 links. This indicates that she has collaborated with 46 authors, making her the most influential, as well as the most collaborative author.

The red cluster is the largest cluster of associations with 7 co-authors. Of these, Vandebosch and Van Cleemput collaborated the most and co-authored 4 papers. Moreover, except for Pabian, who is from the Netherlands, all others in the red cluster are from Belgium. The second largest associated cluster has 5 authors, who feature in at least two articles in common. The colors purple, grey, green, blue, and black correspond with the authors' countries Poland, China, USA, Czechia, and Canada. It is important to note that author collaborations from these clusters also share the same institutional affiliation. In conclusion, the current topic is very poor in terms of collaboration between authors. Researchers could strengthen their collaboration and explore potential field development advantages in each context.

Co-authorship in countries

According to a co-authorship cartography for the nationalities of authors with international collaborations with over five countries, a total of 14 countries had authors reaching the threshold. **Figure 5** shows a visualization of the overlay between co-occurring countries over time. Each node represents a country and the connecting lines between the nodes indicate the existence of cooperation between countries (Zhang et al., 2019).

Although research into the target topic began in 2007, the earliest international co-authorship collaboration was between Belgium and Italy in 2016. Currently, the USA excels in international collaborations with 59 papers with international collaborations, followed by China with 36 papers, the UK, Australia, and Italy. Overall, there are no more than 6 international collaborations with co-authors from among the remaining 45 countries.

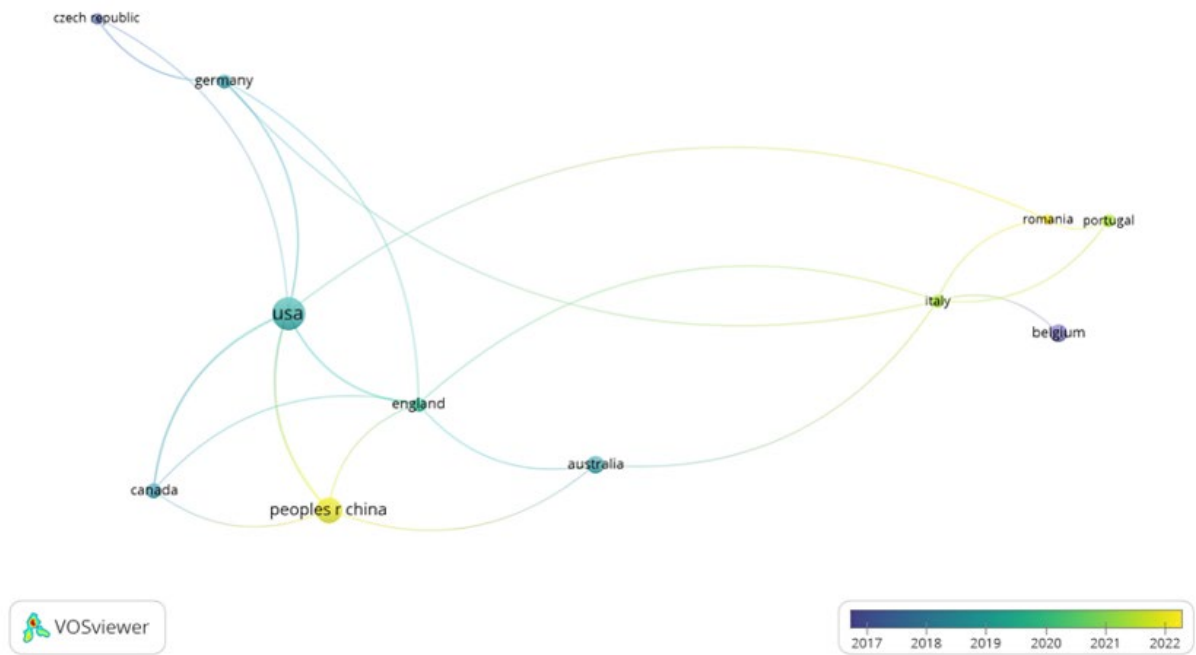


Figure 5. The visualization of the bibliographic coupling network among countries (Taiwan included in China) (Generated by authors using VOSviewer)

Keyword co-occurrence analysis

Keyword analysis was used to generate a high-level summary of the core content of an article, through identification of high-frequency words. Moreover, cluster analysis of such keywords was used to succinctly and intuitively reflect the trends in the theme of cyberbullying bystanders and the direction of writing. In order to ensure accurate results, words with similar or identical meanings, such as “cyberbullying” and “cyber bullying,” were manually combined. In addition, keywords with low relevance were deleted, with the minimum number of keyword occurrences set at the threshold value of 9. Based on the co-occurrence of keywords from the set of 825 retrieved keywords with a frequency of 40 or more, a visualization was also constructed, as shown in [Figure 6](#).

In the network visualization, each keyword is represented by a node, with the size of each node representing the number of occurrences of its keyword. The larger the node, the greater the number of occurrences of the keyword. The lines connecting the nodes represent the strength of the association or frequency of co-occurrence. Clusters of highly similar nodes are reflected in corresponding colors, with the distances between the clusters indicating the different magnitudes of association between them. The analysis yielded four clusters. Based on network visualization in VOSviewer, as shown in [Figure 6](#), adolescents, bystander behavior, victims, and intervention can be considered hot topics in cyberbullying and bystanders studies. These keywords appeared 102, 96, 86, and 68 times, respectively.

The prominence of the red cluster indicates that bystander intervention and coping are thought to play a decisive role in cyberbullying. The visualization also reveals diverse factors thought to influence bystander response, particularly anonymity in the social environment (Desmet et al., 2012) and characteristics of cyberbullying victims or victims. Notably, victim pain, victim distress, and victim behavior seem to be multifaceted and integrative intervention factors (Desmet et al., 2012; Macháčková et al., 2013; Van Cleemput et al., 2014).

Second, green cluster explores the impact of cyberattack behavior on the mental health of secondary school students and the role of bystanders and coping strategies. Bystanders appear categorized into three types, namely outsiders, those assisting or reinforcing the bully and those supporting or defending the victim (Bastiaensens et al., 2014). Although cyberbullying often occurs on social networks, the perpetrators and victims often appear to be students (Chen et al., 2023). DeSmet et al. (2016) has suggested that researchers center the psychological and physical safety of adolescents students in cyberbullying research. Cluster

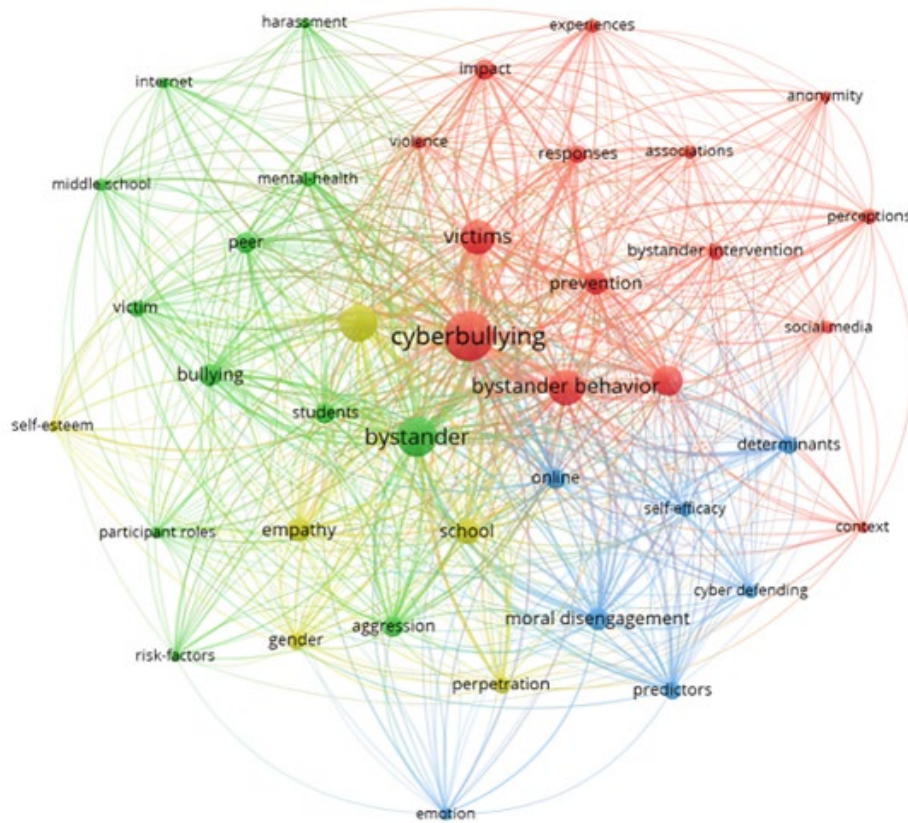


Figure 6. Visualization for keyword co-occurrence analysis (Generated by authors using VOSviewer)

analysis also shows the most approach considered by researchers is school intervention. Researchers appear to think schools can identify breakthroughs for bystander intervention in cyberbullying by observing the online environment, focusing on the mental health of victimized adolescents, and focusing on the aggression of the perpetrators (Chen et al., 2023). Victims of cyberbullying, also known as the victimized targets, have also drawn significant focus in cyberbullying bystander research. The green cluster suggests that in the long run, schools can address student mental health concerns by upgrading interventions, preventing the double whammy of traditional school bullying and cyberbullying, and guiding students to a good culture of the Internet use.

The third blue cluster centers on the psychological motivation for opposing cyberbullying, specifically emphasizing the importance of “moral disengagement” and “self-efficacy” in behavioral decision-making. While low moral disengagement can evoke more bystander intervention behavior (Nagar et al., 2022), high self-efficacy not only influences participation in cyberattacks, but also enhances bystander helping behavior (Paula et al., 2020).

The fourth yellow cluster focuses on reviews of relevant articles and finds that adolescent students are prone to be involved in cyberbullying, both as bystanders and victims (Sónia et al., 2024). Macháčková et al. (2013) considered focusing on the student population as a pressing issue in cyberbullying. Adolescent students engage in more online usage in order to fit into a social environment where their peers use the internet, which creates a higher need for adolescent cyberbullying victim safety, and protective bystander response (Sónia et al., 2024). Moreover, one of the important influences on intervention in cyberbullying behavior is peer support. A study of 321 German adolescents found that empathy positively predicted bystander-supportive victim behavior. Indeed the role of empathy is relevant not only in school but also in environments such as work (Coyne et al., 2019).

Each of the four clusters focus on specific research directions, ranging from analysis of the phenomenon of bystander behavior, exploration of the roles of schools and student populations in cyberbullying, exploration of the psychological mechanisms of bystanders, and study of adolescents’ bystander behaviors, exemplifying the multidimensionality and complexity of cyberbullying research.

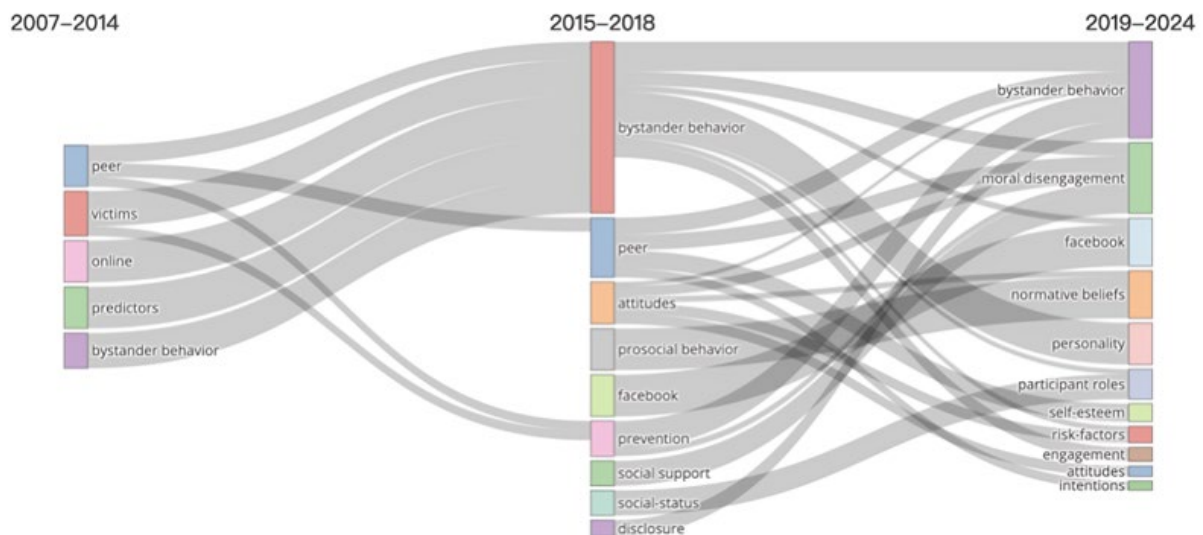


Figure 7. Thematic evolution of cyberbullying and bystanders research (Generated by authors using Bibliometrix)

Thematic Trend Analysis

Thematic evolution analysis

Thematic evolution analysis can effectively illustrate the progress of knowledge frontiers and assist in analyzing evolutionary trends, evolutionary links, and evolutionary directions in a research theme (Guleria & Kaur, 2021). As shown in **Figure 7**, the topic's evolution was divided into 3 phases, 2007–2014, 2015–2028, and 2019–2024. Bystander behavior has been the subject of sustained attention, it has evolved in a direction thrice and in the course of its evolution, the focus of research has gradually shifted. Initially, in the 2007–2014 phase, the terms “victim” and “bystander” were strongly associated. However, during the 2019–2024 period, academic interest in bystander behavior gradually shifted to emerging issues in categories such as “moral disengagement” and “self-efficacy”. Similarly, after 2015, research on Facebook started to increase, which may be linked to the rapid growth of social networks. The intersection and evolution in focus demonstrates the diversity and complexity of the cyberbullying and bystander research topic.

Trend topics

An examination of keywords with a frequency of 8 or more reveals that their use changed significantly over time. **Figure 8** shows their frequency during the period 2014–2024. The most popular topics are bystander “prevention”, “coping strategies” “online” and “empathy” which have constantly trended throughout the period. However, while the frequency of any keyword may grow over time, some keywords had their maximum expression in previous years and showed only transient growth (e.g., “victims”, “bystander effect”, “cyber defending”, and “aggression”). In addition, the increasing popularity of keywords such as “coping strategy” and “school” in recent years points to potential future research directions.

DISCUSSION AND CONCLUSION

This study conducted a bibliometric study of cyberbullying and bystanders research, identifying 236 articles from 2007 to 2024. The data and analysis was then used to answer three RQs.

The first question, “Which journals, authors, affiliations, and countries are at the center of contributions to cyberbullying and bystanders research?” was answered in section *performance analysis*.

1. *Computers in Human Behavior* with 1,843 citations is the most productive journal in the field, closely followed by *Cyberpsychology Behavior and Social Networking* with 310 citations. Moreover, although the number of published articles in *New Media & Society* is relatively low at 4, the high number of citations at 148 points to it having a very high quality performance. The categorization of journals provided

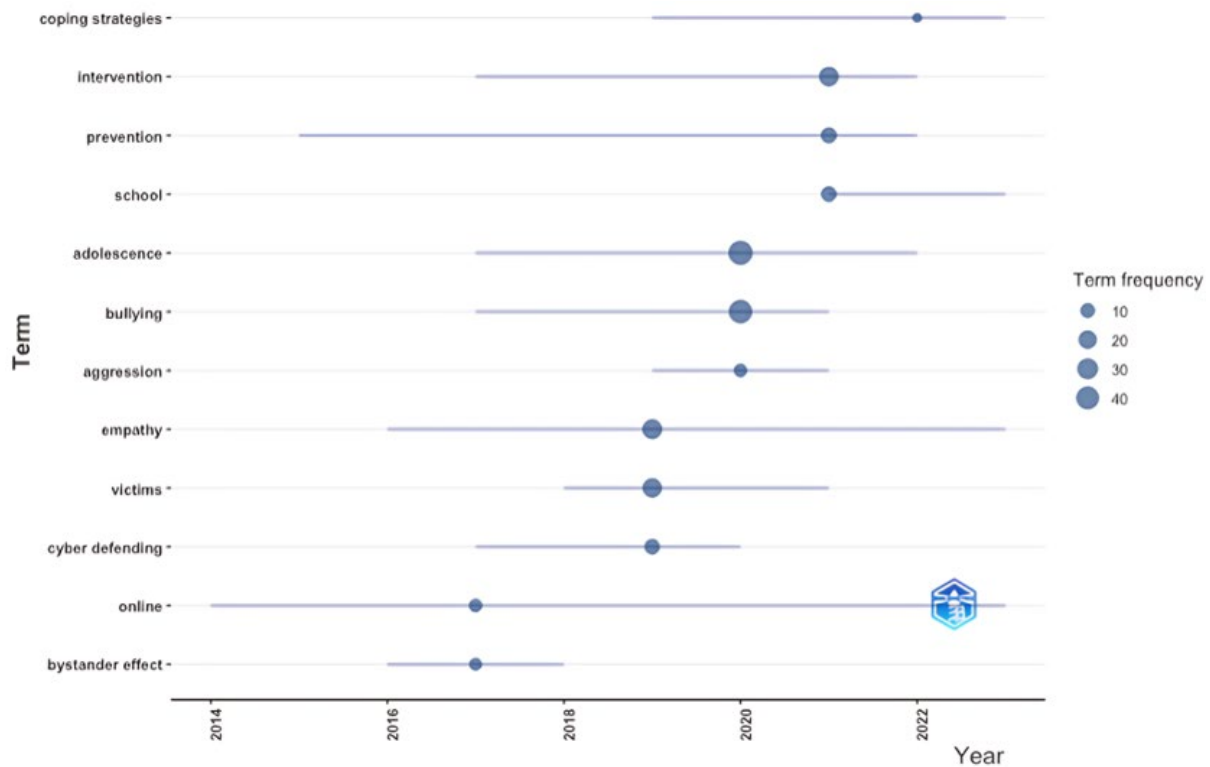


Figure 8. Trending topics of cyberbullying and bystanders research (Generated by authors using Bibliometrix)

should be helpful for researchers intending to select productive journals to publish relevant research results.

2. In addition, several prolific authors were found to make up a large part of the core authors in the topic. Notably, Vandebosch published 12 relevant articles and Van Cleemput published 9, with 896 and 820 citations, respectively. Articles by these authors have been cited in increasing quantities since 2007, which shows overall generational improvement.
3. Of the various affiliations, the University of Antwerp is responsible for the most contributions to the topic, with first rank in the number of articles published.
4. In terms of total literature publications, the USA overtakes Belgium as the leading country on this topic, however, in terms of total citations, Belgium is in first place.

The second question, "Which journals, authors, affiliations, and countries are at the core of collaborative contributions to cyberbullying and bystanders research?" is answered in section *science mapping*. In terms of co-authorship nationality, the red cluster centered on Belgian authors, is the mainstay of this type of research. In terms of international collaboration, the USA is by far the most frequent country of international co-authorship. Moreover, the data indicates countries with rapidly developing social networks, such as the USA and China, are more influential and play an important role in this field. In terms of collaboration patterns, most co-authorships are between authors from the same countries and there is a lack of international cooperation. Though there are also a substantial number of independent research papers, the academic community is urged to expand international exchange among researchers.

There is a growing body of research generated around the adolescent population, and with the growing popularity of social media, there has been a lot of attention paid to the psychological transformations that occur in students, and among peers bystanders when they are involved in cyberbullying. Publications on this topic however remain scarce. Increased research on bystanders could not only improve intervention in cyberbullying cases but also prevent and reduce the likelihood of cases. Moreover, research in this area is in line with SDGs development goals. Overall, addressing this issue requires sustained scientific effort. However, bibliographic coupling shows research in this area is dominated by the blue cluster, centered on the USA.

The third question, “What are the research trends and future research priorities in cyberbullying and bystanders?” is answered in section *thematic trend analysis*. It shows that research interest in this area is shifting from “prevention” and “victim” to “moral disengagement” and “normative beliefs”. While earlier research focused on intervention and prevention strategies, in recent years, more attention has been paid to psychological mechanisms. Moreover, the shift in emphasis from victim to bystander has been a major direction in cyberbullying and bystanders research. Facebook has been the focus of research involving social media in this area, so future research needs to improve applicability across more social media platforms. More recent research themes also continue to focus on other aspects of bystander behavior, such as improving risk reduction cyberbullying through ongoing research into personal attitudes and personal ethics. Topic trends reveal huge potential in the area of intervention behavior in literature, and growth in research on prevention is expected to continue in the coming years. The absence of the bystander effect and cyber defending in early research reflects the importance of issues related to the emergence of cybersecurity. Future research could focus on the research trends of recent years, such as the role and impact of “coping strategies” and “schools”.

This study and its conclusions are limited in a number of ways. To start with, the results obtained in 2024 stop on the 9th of August, which is the point in time when the data were collected. Another limitation is that only the WoS database was used. This may result in less comprehensive data. Further, the bibliometric analysis adopted technical decisions, such as regarding the choice of language and field of study, which may have excluded papers relevant to the analysis.

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