

DECODING THE CYBERBULLYING BEHAVIOUR RESEARCH TRENDS: A BIBLIOMETRIC ANALYSIS

Noor Syazwani Ishak¹

Mohd Firdaus Roslan²

Khairul Hafezad Abdullah³

Mohd Ridwan Abd Razak⁴

Abdul Muhaimin Mohaidin⁵

¹Faculty of Arts and Social Sciences, Universiti Malaya, Kuala Lumpur, Malaysia (UM),
(Email: syazwanii@sunway.edu.my)

²Faculty of Engineering & Technology, Tunku Abdul Rahman University of Management and Technology,
Kuala Lumpur, Malaysia (TARUMT),
(E-mail: mohdfirdaus@tarc.edu.my)

³School of Business Management, Universiti Utara Malaysia (UUM), Malaysia,
(Email: khairul085@uitm.edu.my)

⁴Faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Perak, Malaysia (UPSI),
(Email: mridwan@fpe.upsi.edu.my)

⁵Faculty of Bioeconomic and Health Sciences, Universiti Geomatika Malaysia, Malaysia (UGM), Malaysia,
(E-mail: abdulmuhaimin@geomatika.edu.my)

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Abstract: *Cyberbullying behaviour is a form of bullying that takes place online or through electronic devices which may disturb the peace of users and others. This study aims to explore cyberbullying behaviour research-related publishing patterns and rank the most used author keywords in the Scopus and Web of Science (WoS) databases. The eminent software, ScientoPy and VOSviewer, are used to run and execute relevant publication data retrieved from Scopus and WoS. The results showed a positive trend in the growth of cyberbullying behaviour literature in both databases since 2012. The top three research areas that dominate this topic are “psychology”, “education & educational research”, and “computer science”. Based on the country analysis, United States has become an active publisher, followed by Spain and United Kingdom. Importantly, this study emphasised the scholarly communication practices prevalent in cyberbullying behaviour research have impressively propagated. The trends will assist researchers in recognising the various fields in identifying the core areas, proactive institutions, and productive authors published in this knowledge for supplementary investigation. Besides, by examining the most popular keywords, the results of this study enable researchers to discover the possibility for future research that may be conducted, particularly concerning the annual growth rates, which have been trending in the last five years.*

Keywords: *Cyberbullying Behavior, Cybervictimization, Social Media, Bullying*

Introduction

Cyberbullying behavior refers to the deliberate and repeated actions of using an electronic communication platform or technology to harass, intimidate or harm an individual. According to Watts et al., (2017), cyberbullying behavior refers to acts that are deliberately made to emotionally disturb other users who act in the technology system. While according to Al-Ameedi & Al-Ghizzy (2022), cyberbullying behavior is the repeated use of electronic communication technologies to harass and cause distress to others. Cyberbullying will usually use digital devices such as computers, smartphones or tablets to target someone and cause them to experience emotional, psychological or social stress. Where, this device is easy to find and easy for users to use (Peirce et al., 2019).

Cyberbullying can take many forms including sending abusive messages, spreading rumours, sharing embarrassing photos or videos, and impersonating someone from the online community. This often happens via social media platforms, online forums, email, instant messaging or text messages. According to Zhu et al., (2021), usually victims of cyberbullying belong to teenagers, the elderly and anyone who is not sensitive to current issues. This matter will slightly damage and disturb other users in online or offline communication sessions (Soni & Singh, 2018).

Cyberbullying behavior can have a severe negative impact on the victim's well-being and can lead to long-lasting psychological and emotional consequences. This negative effect if not controlled, will certainly bring bad symptoms directly to the user (Laurensius et al., 2019). Because of this, it is important to provide support for individuals who have experienced cyberbullying by creating awareness of online use to help reduce the harmful effects of cyberbullying behavior. This is because most cyber users should not be bullied and cyber users are free to browse online platforms without interruption (Makori & Agufana (2020).

It is challenging for researchers to evaluate the material's current grasp, usefulness, and future direction due to the volume of information and the never-ending publication of the study on any research topic (Abdullah & Sofyan, 2023; Roslan et al., 2023). Thus, in order to address the issue of excessive information availability and the breadth of different research topics, specific methodologies, such as bibliometric analysis, assist scholars and researchers in gaining a broad or even microscopic view of the overall progress and steady and continuous flow status (Gazali et al., 2021). Information retrieval is crucial to the cross-disciplinary field; this process can analyse aspects of information science and publication trend analysis. The bibliometric technique visualises vast publishing outputs necessary for deriving valid conclusions, such as the evolution of publications, study fields, and influential authors (Sofyan & Abdullah, 2022). Bibliometrics made it easier for researchers to identify research gaps, emerging research prospects, and significant research areas (Abdullah & Othman, 2022). It indirectly enables them to summarise the significant trends of a particular study field. This study used Scopus and Web of Science (WoS) databases and was executed using ScientoPy to accomplish bibliometric analysis. The current study's primary goal was to identify patterns in gamification-focused publications.

In contrast to most previous literature reviews that focused on single aspects of cyberbullying behaviour, this study contributes to a more systematic and updated analysis to better understand the landscape of cyberbullying behaviour research. Specifically, this study addressed the following question:

- RQ1: What is the trend of research on cyberbullying behaviour published to date?
 RQ2: Which countries contribute significantly to the study of cyberbullying behaviour?
 RQ3: Who are the most prolific authors on cyberbullying behaviour?
 RQ4: What are the most institutional of publications on cyberbullying behaviour?
 RQ5: What are the main keywords of scientific research on cyberbullying behaviour?

Method

This bibliometric study examined the publications collected in the Scopus and WoS (Web of Science) database. The Scopus and WoS database is preferred since it is a multidisciplinary database with more articles in social science, education-related journals, management and other documents in various academic disciplines (Sweileh, 2022; Visser et al., 2021). The Scopus and WoS databases also attract most scholars to obtain publications for their review purposes (Abdullah et al., 2023). These databases span multiple fields (Martín-Martín et al., 2021), and searching them would aid researchers in locating the most significant number of citations on cyberbullying behaviour primary sources for bibliometric studies (Pranckutė, 2021).

Search Strategy

After defining the databases, the search query (“cyberbullying behaviour” OR “cyberbullying” AND “behaviour”) was chosen. The following fields were scanned for topic-related terms: article title, abstract, keywords. This inquiry was completed on June 17, 2023.

Figure 1 depicts the data processing sequence in this analysis based on Abdullah (2022). It consists of a systematic strategy that has been divided into three primary parts. First, the title should be determined, and the datasets be developed and gathered. The second phase involves integrating the databases and obtaining the ScientoPy-analysable parameters. In the last stage, ScientoPy and VOSviewer parameters are used to evaluate and analyse the results.

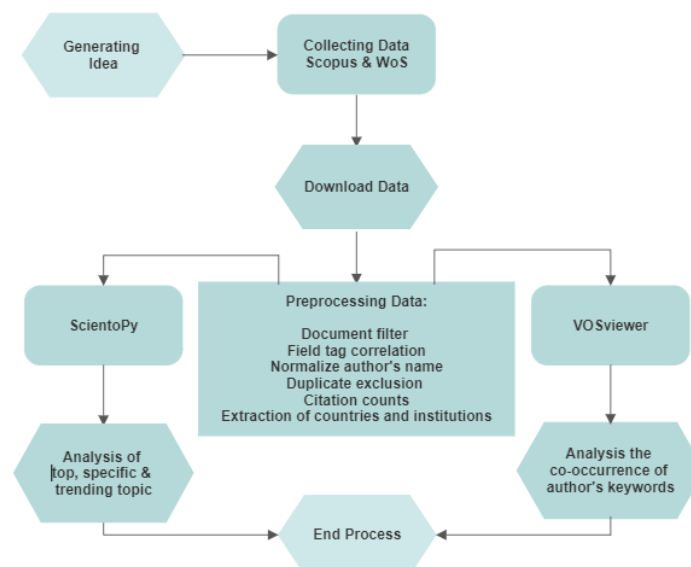


Figure 1: Bibliometric Workflow (Abdullah, 2022)

Data Analysis

In this study, two software programmes were utilised: ScientoPy and VOSviewer. ScientoPy is an open-source Python software developed by Ruiz-Rosero et al. (2017) and subsequently tested for usability and effectiveness in a later study by Ruiz-Rosero et al. (2019). Pabon et al. (2020) demonstrated that this software helps detect and eliminate duplicate datasets and clean

up non-standard data formats. ScientoPy, as demonstrated by Ruiz-Rosero et al. (2019), can automatically categorise and report on the top themes based on author or index keywords, as well as identify the most prolific authors and countries involved in the research, using bibliographical information. VOSviewer is another piece of software used to map the co-occurrence of authors' keywords. VOSviewer is a software application that assists in constructing and visualising bibliometric networks (Abdullah et al., 2020; Roslan et al., 2023).

Results

In this section, we present the research we did to figure out the status of publications about cyberbullying behaviour in the Scopus and WoS database.

Trends in Publication

Figure 2 presents the number of publications on cyberbullying behaviour. The initial study was published in 2006 for Scopus publications and 2010 for WoS publications, while for Scopus publications was an emerging slow-increasing trend till 2011. After 2012, the number of cyberbullying behaviour publications began to grow rapidly. Interestingly, the sharp rise in Scopus publications happened in 2015. Compared to WoS, Scopus publications have grown steadily, with a sharp rise after 2016. The increased interest in cyberbullying behaviour research in both databases shows that this topic is crucial in advancing cyberbullying behaviour research and mental health issue. According to Kircaburun et al., (2019), cyberbullying behavior is an activity that is not healthy for other users because it will give a wrong view to the society that uses it. With that, research on cyberbullying behaviour has gained more attention in recent years to discover the best argument for increase awareness and motivation to other users so that users have no doubts about browsing the internet and social media.

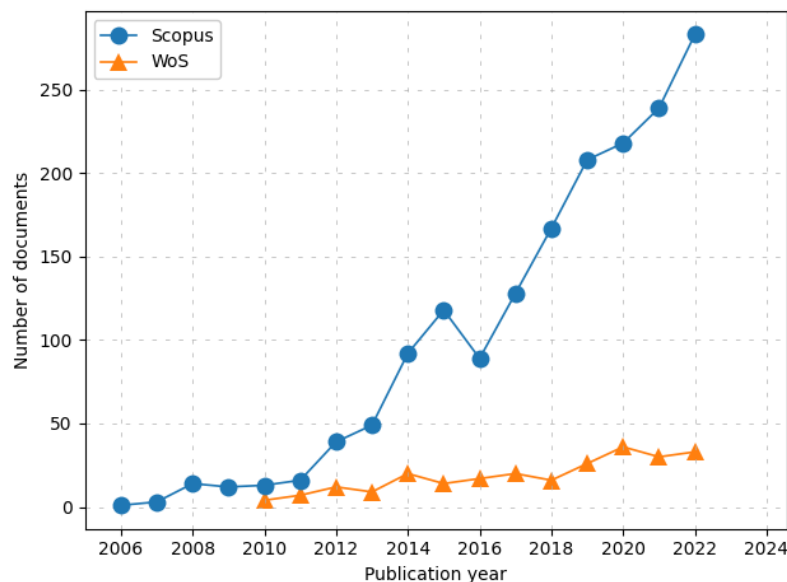


Figure 2: Timeline Graph of Cyberbullying Behaviour Research

This study also sought to determine where cyberbullying behaviour documents were published by analysing document types and language data. Table 2 shows the different types of documents where publications on cyberbullying behaviour have been published. As can be seen, the majority of the publications are journal articles, with 1597 articles (82.1% of the total documents). Following the articles, it is a conference paper (n = 162, 8.3%), a review paper (n

= 138, 7.1%), and a proceedings paper (n = 34, 1.7%). For other publications (book chapter, early access, and article in press), each has made up under 1% of all documents.

Table 2: Document Type of Cyberbullying Behaviour Research

Document Type	Total Publications	Percentage (%)
Article	1597	82.1
Conference Paper	162	8.3
Review	138	7.1
Proceedings Paper	34	1.7
Book Chapter	7	0.4
Early Access	6	0.3
Article in Press	2	0.1
Total	1946	100.00

Publishing Countries

Since 2006, cyberbullying behaviour research has been conducted in various countries. Figure 3 shows the country evolution graph, United States, Spain and United Kingdom were identified as the top three publishing countries in cyberbullying behaviour research. While, the three lowest-ranked countries are Germany, Turkey and Malaysia. There are still not many countries that contribute towards the publication of cyberbullying behaviour research. Thus, the study of cyberbullying behaviour should be explored deeper and further in many countries.

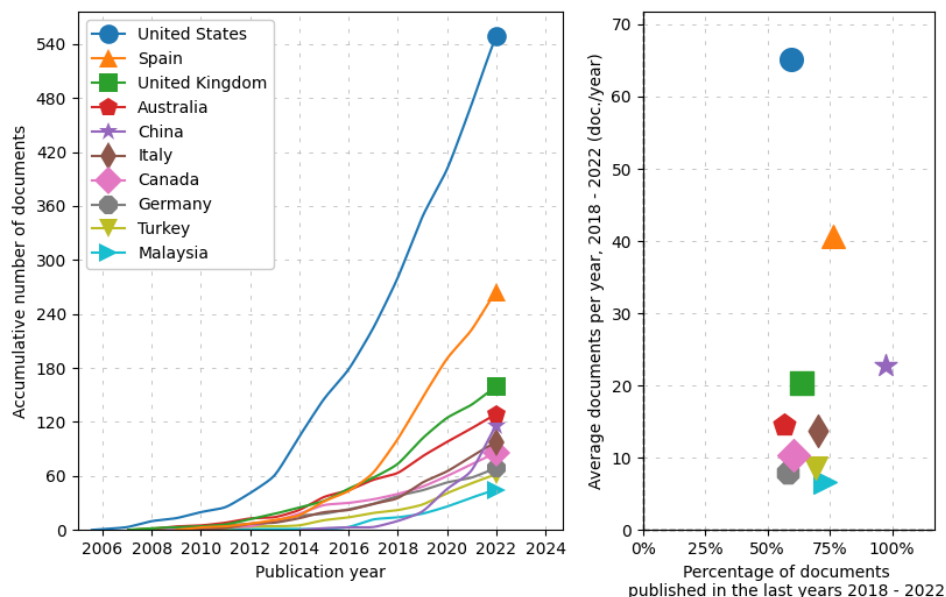


Figure 3: Country Evolution Graph of Cyberbullying Behaviour Research

Productive Authors

The information in Figure 4 pertains to the most productive authors in cyberbullying behaviour research, which are ranked according to the number of publications. A list of ten authors is included, along with the 17 years and the last five years' trending percentages.

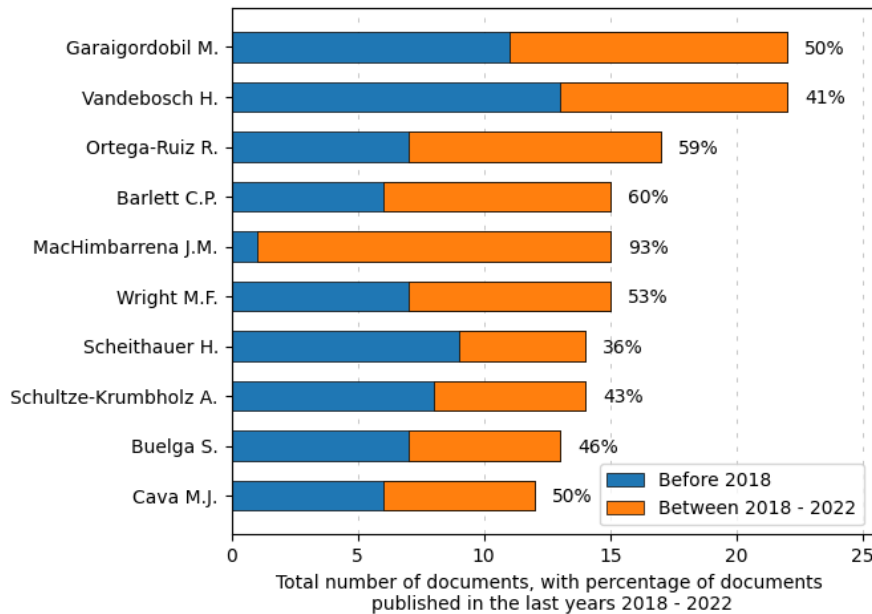


Figure 4. Productive Authors Bar Trends of Cyberbullying Behaviour Research

According to Figure 4, Garaigordobil, M. was ranked first with 22 publications, followed by Vandebosch, H. with also 22 publications and Ortega-Ruiz, R. with 17 publications. All three authors were the most productive writing journal and remained the most influential in cyberbullying behaviour research, with the possibility plans to maintain further publications for the future. Notably, MacHimbarrena, J.M. has been the proactive author in the last five years, with 93% of publications released from 2018 to 2022. Also, the compelling authors in the previous five years is Barlett, C.P., with 60% of publications. This author data is the most up-to-date information for future readers and researchers who want to know which authors are most active in this study of cyberbullying behaviour research.

Institutional Analysis

Figure 5 pertains to the top ten institutions that publish academic works on cyberbullying behaviour research. The scholars from Palacky University Olomouc in Czech Republic were credited with the most publications, with 7 publications. The second institution is University of Cambridge in United Kingdom, and University of Florence in Italy is ranked third in this study. An intriguing feature of the top ten institutions in 17 years is that three institutions are from United Kingdom. Thus, University College London in United Kingdom is the most active for the last 5 years with 80% of publications. This shows that publications related to cyberbullying behaviour research are still growing over time.

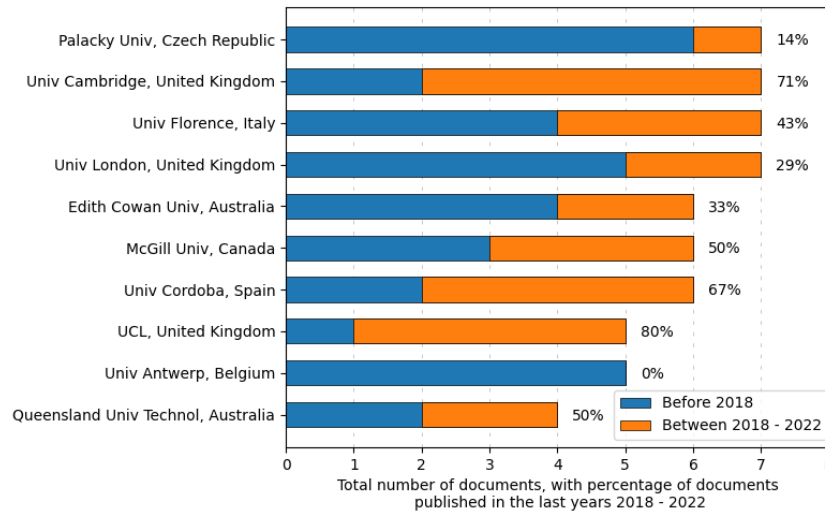


Figure 5. Institutional Bar Trends of Cyberbullying Behaviour Research

Author Keywords

Figure 6 exhibits 10 previously researched keywords. As illustrated in Figure 6, the top three used term is “cyberbullying,” followed by “bullying” and “adolescents”. Data processing was given importance to this broad phrase directly related to the subject. Important keywords are made available to assist readers and future researchers in determining which ones to employ while conducting document analysis (Abdullah et al., 2022). While Figure 6 illustrates the first 10 keywords, ScientoPy enables us to view an infinite number of keywords (Ruiz-Rosero et al., 2019). Also, Figure 7 displays the percentage of documents published in the preceding five years (2018– 2022) to illustrate a relative increase. We can observe from this indicator that “mental health” has the highest proportion (84%). It is self-evident that the issue has increased significantly over the last five years compared to other keywords. Additionally, “cyberbullying” itself has been a hot topic, with 688 (63%) publications published from 2018 to 2022. Thus, this study depicted that mental health and cyberbullying has sparked scholars’ curiosity.

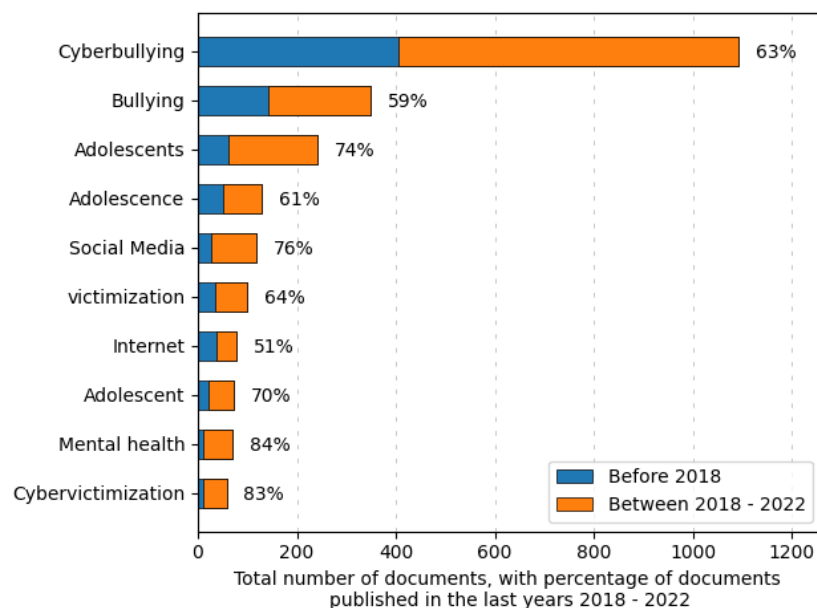


Figure 6. Author Keywords Trends of Cyberbullying Behaviour Research

Furthermore, based on Figure 7, it can be deduced that the most frequently used keywords were “cyberbullying”, “adolescents”, “social media”, “mental health”, and “cyber-bullying”. These keywords are inextricably linked. The keyword “cyberbullying” was grouped in the same clusters (red colours) with “social media”, and “machine learning”. “Cyberbullying” is also closely linked to “internet”. Based on this map, cyberbullying research is also focused on social media and mental health, which it should be a priority for all users to maintain good behavior while browsing social media. Therefore, Internet and social media users should use the platform positively and beneficially for all groups, making it easier for other users to feel good about using it. (Akram & Kumar, 2017; Siddiqui & Singh, 2016). In addition, the conditions conducive to social media users are constantly maintaining the best behavior and making inadequate approaches like cyberbullying. Importantly, this study shows that research on cyberbullying is not limited to social media but has attracted psychology and risk factors scholars.

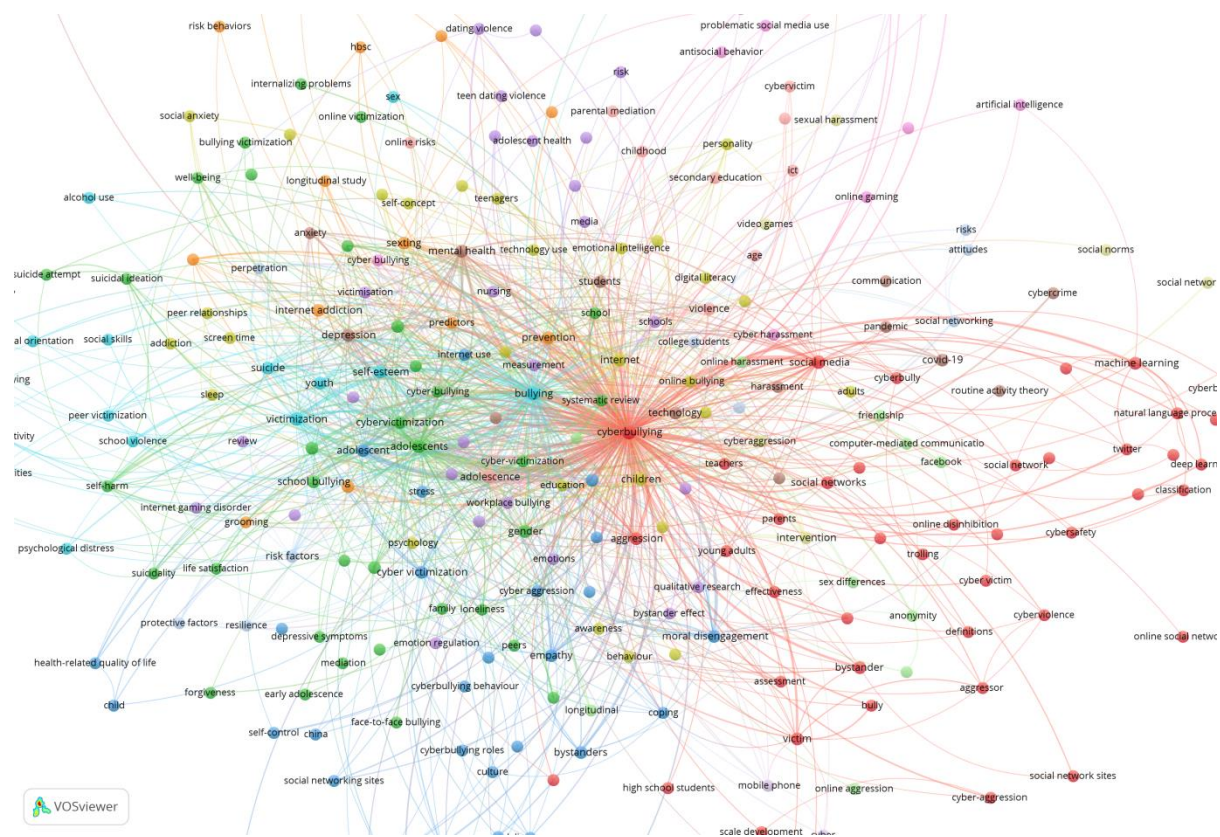


Figure 7: Network Visualisation of The Co-occurrence of Author Keywords

Conclusion

Positive states about cyberbullying behaviour research were found to be related to mental health, although it found a problem with this cyberbullying behavior, but can still be overcome by developing trust and support to create the best mental health. Therefore, it is essential to know the relationship of this study with the importance of violence awareness found in a cyberbullying behaviour. This research looks at how often specific articles are published and how often they use certain keywords to determine cyberbullying behaviour.

The results indicated that publications on cyberbullying behaviour research have increased significantly since 2010. Notably, Scopus publications have expanded consistently compared to WoS, with a sharp increase following 2016. With over 70 publications, psychology has been

identified as the most thoroughly explored research area. United States, Spain and United Kingdom have been designated as the research area's top three publishing countries. Garaigordobil, M. was the most productive authors and often published in cyberbullying behaviour research, followed by Vandebosch, H. and Ortega-Ruiz, R.. With 7 publications, scholars from Palacky University Olomouc in Czech Republic were credited with the most active institution. The keyword "cyberbullying" is the most frequently used by previous researchers, followed by "bullying" and "adolescents". Cyberbullying was clustered in the same group with "social media" and "machine learning". Remarkably, "cyberbullying" and "mental health" are inextricably intertwined.

Certain limitations to this study may help direct future studies. Publications in the Scopus and WoS databases were analysed and mapped for this research. As a result, the findings of this study were limited to deducing the most critical themes or keywords associated with cyberbullying behaviour research found in those databases. Therefore, if future research wishes to expand on the foundation or address broad subjects, a systematic literature review or meta-analysis is recommended to provide the most relevant evidence synthesis possible. Nonetheless, scholarly dissemination in the cyberbullying behaviour research field is provided to potential readers and future researchers keen on this topic.

This study provides a novel perspective by demonstrating that research on cyberbullying behaviour is not restricted to internet and social media but has drawn scholars to explore cyberbullying behaviour within the framework of cybervictim and cyberviolence, which transcends research areas. Therefore, the study will aid researchers from various fields in identifying essential publication trend factors for systematically disseminating cyberbullying behaviour research. In addition, this study's findings motivate researchers to collaborate and develop new research paradigms for evaluating cyberbullying behaviour research by analysing the most often-used terms through empirical studies.

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