



Bibliometric Analysis of Human Aggression Research: Trends, Collaborative Networks and Emerging Themes in the Last Decade

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Abstract

The analysis of research trends, the pattern of collaboration, and growth in citations with respect to works in psychology and related fields published over a decade are laid out. The steady increase in citations from 2014 through 2023 shows increasing recognition and impact on the works cited. However, the publication trends over the years are wavering, with significant drops occurring after 2014 and during the pandemic in 2020, followed by a significant increase in 2022 and an anticipated rise in 2023. There is a lot of strength in collaboration related to the involvement of central authors and countries, with the United States being identified as the major hub. There is an interdisciplinary focus on the psychological, biological, and social dimensions of the study on human aggression. Despite such a breadth of research, some potential gaps remain in uncovering

cultural, economic, and intervention strategies. This overview emphasizes the strength and interdisciplinary characteristics of this field and insists on its continued relevance while pointing out possibilities for future research.

Keywords: Bibliometric analysis, bio-psychological model, human aggression

Introduction

Human aggression refers to any behavior directed toward another individual that is carried out with the "proximate intent to cause harm" (Anderson & Bushman, 2002). In addition, the perpetrator must believe that the behavior will harm the target and that the target is motivated to avoid the behavior. Accidental harm is not aggressive because it is not intended. Harm that is an incidental by-product of helpful actions is also not aggressive, because the harm-doer believes that the target is not actuated to protect him from the action. Aggression is assumed to manifest itself in conflict, war, destruction, and violence (Neupane & Khanal, 2017; Mandal & Roy, 2024). Aggression is an intended behavior that "marks in personal hurts and obliteration of property of the victim. The hurts may be psychological or physical. It is in the form of devaluation or degradation of someone's emotional condition, or marked by deformed body parts of the victim of aggression" (Neupane & Khanal, 2017, p. 118). Further, the researchers posit that variations in defining aggression pervade because some authors describe aggression solely in terms of attributes of the behavior. This harm can take many forms such as "physical injury, hurtful feelings, or damaged social relationships" (Neupane & Khanal, 2017; Dewi & Kyranides, 2021). Although definitions vary slightly, many prominent aggression researchers have utilized highly similar definitions. For example, in order to better distinguish between certain subtypes of aggression, Anderson and Bushman (2002) more specifically include assumptions about the instigator, emotional concomitants, or the intent of potentially hurtful actions (Neupane, 2014). Further, aggression is such a behavior that is intended to injure others psychologically or physically. Likewise, Kowal, et al., 2024, also put a similar opinion about aggression that it is an intentional injury of others. He added that there are two kinds of aggression that explain the behavior of aggression: instrumental aggression and hostile aggression (Fite, Tampke, & Griffith, 2023). Instrumental aggression is a way to get a target, which is done by an individual (Neupane, 2017; Wang, et al., 2023).

Understanding the mechanisms and management strategies for anger has been of interest because of its impacts. Scantly available, however, is data on the scientometric analysis in relation to human aggression in developing management strategies for anger. One such method that can be used to make a qualitative and quantitative assessment of the trend in research literature is bibliometrics, introduced in 1969. This approach helps scholars quickly identify key research areas and development trends in specific fields. It also allows for an assessment of the dispersion of the

research across countries/regions, authors, and journals, hence laying a groundwork for future studies. VOSviewer is information visualization analysis software applied across a wide array of subjects to determine the status and trends of research. This paper explores hotspots and development trends of research into human aggression during the last decade. VOSviewer makes new insights into foundational research possible in the creation of a map of scientific knowledge.

Materials and Methods

This paper aims to analyze the progress achieved towards research on human aggression through the Dimensions Database. This research paper applies bibliometric analysis to solve the given research problem. Bibliometric analysis is a systematic use of statistical and mathematical methods in the analysis of bibliographic data, which is predominantly applied in scientific research and library and information science. It is a means of analysis for some of the quantitative characteristics of scientific literature, such as citations, publication patterns, authorship, impact factors, among others, that is aimed at understanding characteristics, trends, and dynamics of academic publications in some fields or disciplines.

This paper focuses on scholarly documents gathered from the Dimensions Database (<https://app.dimensions.ai/discover/publication>), that were published between 2014 and 2023, and extracted on July 31, 2024. We recorded publications containing "human aggression" in their titles, keywords, or abstracts. A bibliometric analysis has been conducted to find out the trends about: a) the evolution of published articles about human aggression throughout these years; b) the field of studies; c) countries that have more significant numbers of published investigations related to this area; and d) top articles in relation to citations. The main methodology undertaken in this study focuses on the capture of those articles that go into several dimensions of human aggression. The query to be extracted will be designed in a manner to retrieve articles that mention any of the specified keywords anywhere in their title, abstract, or keywords section.

Filtration Procedure in Bibliometric Data Analysis

1. Gathering of Raw Data (Defining the Population): The seed dataset included 680 documents on "human aggression" downloaded from the Dimensions.ai database.
 2. Filtering by Time (Defining the Time Ranges): The data set was filtered to documents published from the year 2014 until 2023. There were 217 records left after the process of filtering.
 3. Filtering by Document Type (Choosing the Type of an Article): The research enabled the filtering for the necessities of selecting peer-reviewed articles and not reviews, conference papers, and else. At this final stage of filtering, the total number of articles in the sample was 152 articles.
- Final Sample Size (Sample Size): Finally, a total of 152 articles was the core sample for the bibliometric analysis.

Inclusion and Exclusion Criteria:

Inclusion Criteria

Specific Focus on Human Aggression: Only those articles that clearly explore various aspects of human aggression were included. This includes investigations into the causes, manifestations, consequences, and interventions related to aggression in humans.

Types of Articles: It encompassed theoretical papers discussing concepts, frameworks, and models of aggression; empirical studies that presented original research data; and literature reviews that integrated the studies already conducted.

Peer-Reviewed Articles: Only peer-reviewed articles are considered to draw on for credibility and reliability in data. In a peer-review process, the research work has to meet the required academic standards and be relevant to the field.

Period of Publication: The publications were limited within the timeline from 2014 and 2023. This timeline was chosen to make the latest trends and newer developments pertinent to the studies on human aggression.

Exclusion Criteria

Animal Studies: Those that were aimed at testing the animals for their aggression were also eliminated from the study since this was an endeavor to explain human aggression. This will make the analysis pertinent and specific.

Exclusion of Non-Peer-Reviewed Publications: Editorials, opinion pieces, conference papers, and other non-peer-reviewed publications were removed to maintain some level of rigor and consistency within the study. These might not have received the same level of scrutiny.

Off-topic Material: Also excluded were publications in which, even though the term aggression had been used, the phenomenon was not primarily being explained in a human being, or when it had contributed little to the present understanding of human aggression. Researches where aggression was a peripheral issue are also put out of consideration.

Bibliometric Data Analysis Processes

Data Collection (Source Selection):

This step details the methods and systems from which the data used in the analysis are collected. These can be databases such as Dimensions.ai (Mahat, Karki, Neupane, Shrestha, & Shrestha, 2024).

Data Extraction: Details about the publications, citation, keywords, and author's details were contribute to the basis for extracting bibliometric data.

Cleaning and Preprocessing: Standardization: All the popular normalization processes such as standardizing the names of the authors and institutions and keywords.

Deduplication: The process of eliminating duplicate records, which in its working is in the timescale of maintaining data accuracy.

Descriptive Analysis: Publication trends: The publication profile over time. **Authorship and collaboration:** Insight into co-authorship trends and institutional collaboration (Mahat, Neupane, & Shrestha, 2024).

Network Analysis: Co-citation analysis: The collection of links formed from the set of documents in a database.

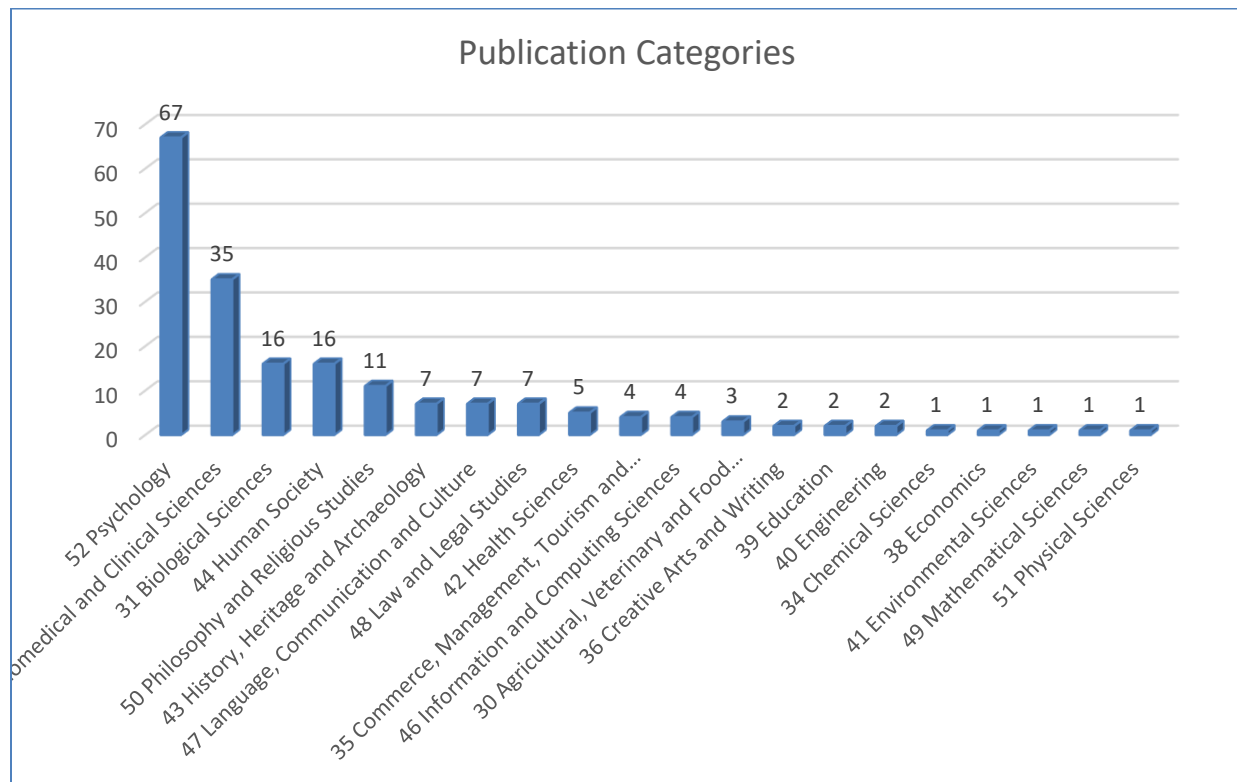
Co-word analysis: Maps of co-occurrences of keywords, which enable identification of emergent themes of the research.

Visualization: Graphical representation: The insights derived from bibliometric data are represented in the form of graphs, heat maps, and networks.

Mapping techniques: Bibliometric mapping and other methods to represent the research landscapes visually.

Results and Analysis

This section (Figure 1) indicates the number of publications within various categories. Each bar indicates a specific category with the number of publications shown in height.



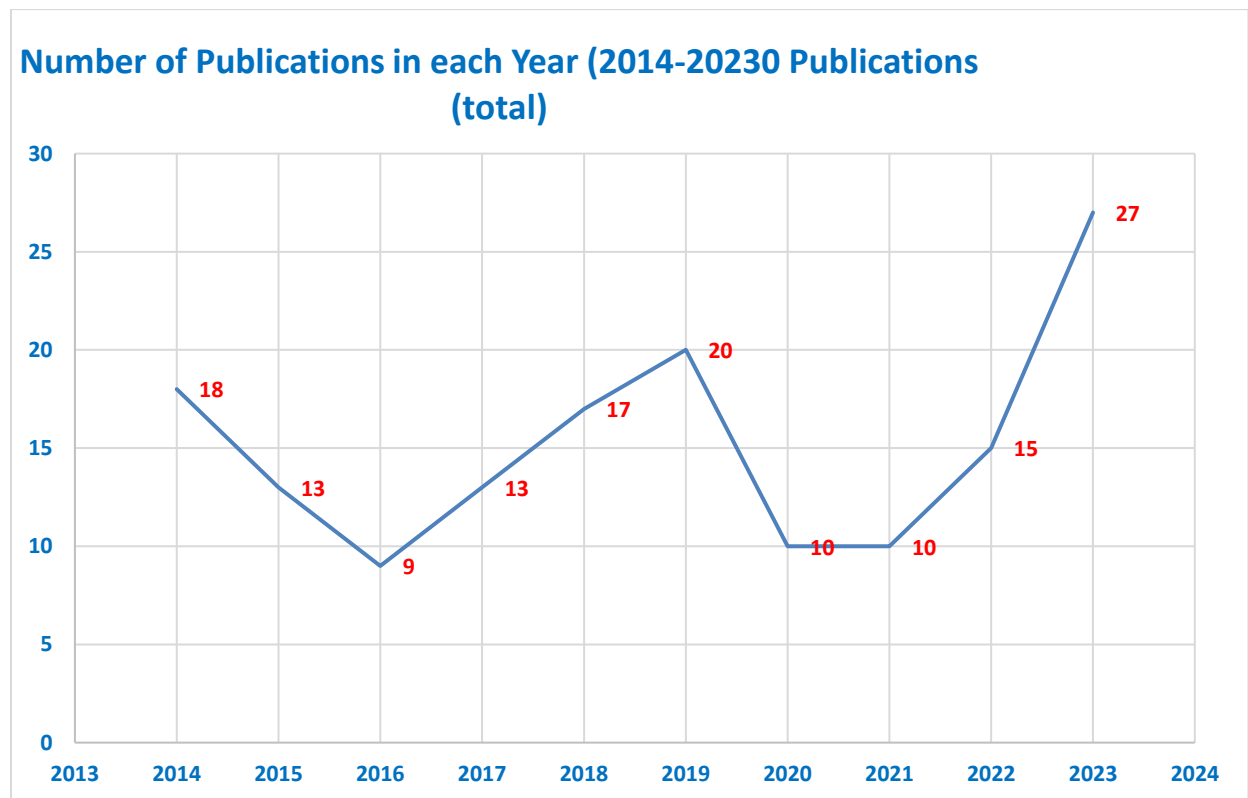
Source: Dimensions.ai

Figure 1: Categories of Publication from 2014-2023

There are more publications in the psychology category than other categories combined. This has almost twice as many publications compared to the next highest category, which are biomedical and clinical sciences. This could mean there is strength in that focus or higher research productivity in psychology within the dataset. Nevertheless, in many categories, the number of publications is very low (1 or 2). This could be a case of either underrepresentation or less research activity in these fields in this dataset. This raises questions with respect to the distribution of research efforts and resources.

Hence, the graph bars show an enormous gap between the number of publications in different categories, the first being psychology by a far margin. This invites further reflection on priorities in research and funding allocation, perhaps already indicating the need for a more balanced approach to academic research in diversified fields.

Figure 2 shows the number of publications from 2014 to 2023, with the years marked across the horizontal axis and the number of publications marked on the vertical axis; in red are the total number of publications made for each year.



Source: (dimensions.ai)

Figure 2 : Number of Publications in each Year from 2014 to 2023

From this graph, one can observe a fluctuating trend of publications over a period of ten years. The number of publications cannot be seen to grow linearly or in any steady pattern; it changes drastically, with isolated incidents of rising and dropping.

There were published 18 publications in the year 2014. Value decreased in the subsequent two years, particularly 13 publications in 2015, and declined to 9 publications. The counts started declining after 2014.

The number of publications was resurrected in 2017, with 13 publications. It increases further as it depicts a higher number in 2018 for 17 publications, and it peaks further to 20 in 2019.

Unfortunately, a sharp drop can be seen in 2020, with the number of publications now falling to 10. The figure remained steady the following year.

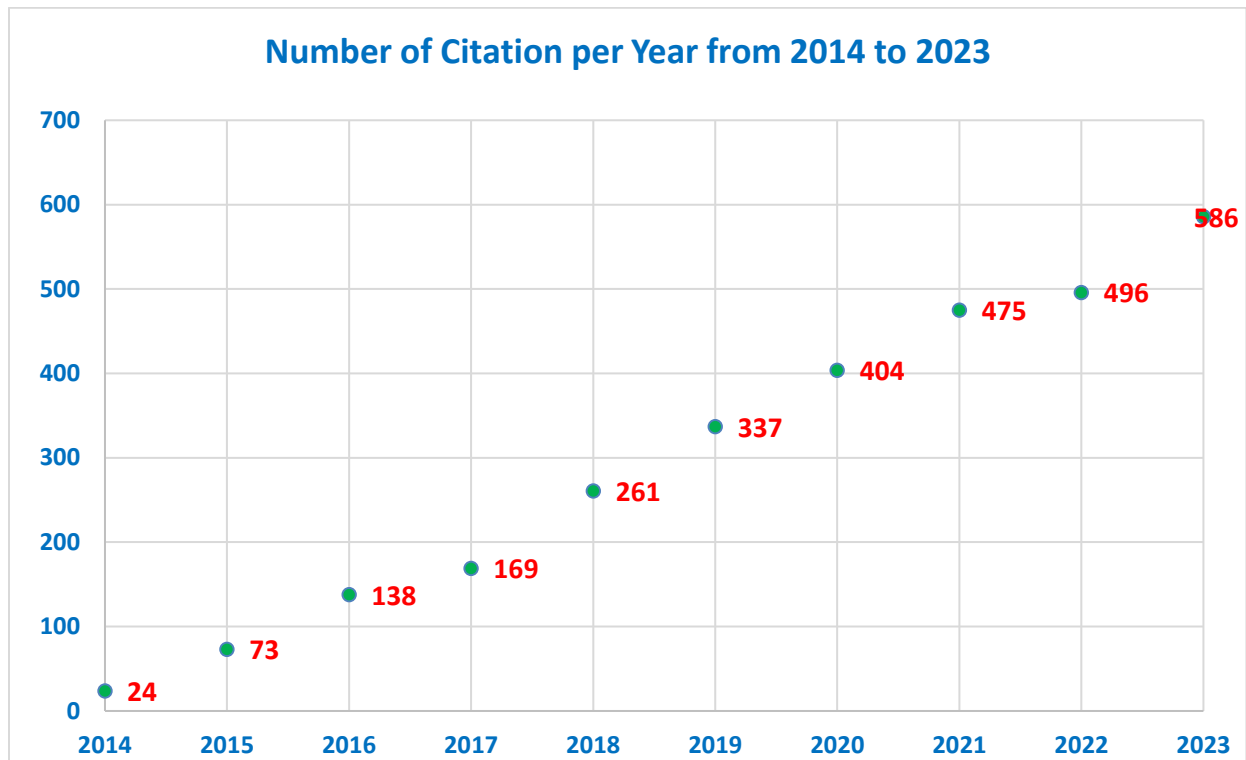
The published works started to increase once more in 2022, with 15 publications and then a large increase like an explosion, with 27 published in 2023.

The graph shows uneven growth of research outputs for the field, with sharp declines and recoveries recorded in different periods. This might mean, though, that driving factors from the exterior are mechanisms such as financial cycles, global events (for example, the current pandemic), or changes in academic or general interest. Besides these causative factors, there might be other external factors too. Most dramatically, the fall of the curve in 2020 is attributed to the global disruptive state of the wave driven in by the COVID-19 pandemic, likely a main contributor to the reduced number of publications. Researchers and academic institutions may have had their operations affected by an inability to conduct and publish research at this time.

On the other hand, the spike in the year 2023 may suggest a new increasing trend expected to come in the subsequent years, which will continue only if the driving factors of this current increase—either interest, funding, or relevance in society—do not change.

Thus, it shows notable fluctuations over the years in the publication numbers for a dynamic research environment. That is, in the year 2023, there is a promising upturn coming after a long period of stagnation or decline in the circle. However, the main inconsistency and the big valleys in this dataset reflect great vulnerability to outside factors in setting priorities according to the necessities at stable support rates and the interest in this field to be held in order to maintain publication numbers and augment them in a reliable way.

Publication citations are the number of times that publications have been cited by other publications in the database (Karki, D'Mello, Neupane, Shrestha, & Mahat, 2024). The graph shows how many citations are received per year. Figure 3 demonstrates the number of citations per year from 2014 to 2023.



Source: (dimensions.ai)

Figure 3: Number of Citation per Year from 2014 to 2023

The graph shows a clear increasing trend in citations, from 24 citations in 2014 to 586 in 2023. This rise looks more rapid after 2016, the work being cited has become more recognized or relevant. While talking about the growth rate in citations, it is almost consistent but with differences in rates of growth for each ensuing year. From 2014 to 2016, it recorded moderate growth. There is more of a jump in citations between 2017 and 2020. Growth continues but seems to slow a little between 2020 and 2022, with another discrete jump in 2023.

This could be indicative of the fact that the referenced work has been gaining increased recognition and impact over the years. The steep increase in the last few years may suggest that the work has become very influential or relevant to present research or practice.

After the analysis of the data, the citation growth is relatively stable and does not drop suddenly. That is good. Nevertheless, the slight leveling off in the rate of increase from 2021 to 2022 could have a slight hint that the work has hit a saturation point in terms of its influence. It may be due to other external factors such as publication trends in the field. Thus, everything in the graph is put into a positive and impactful trend, indicating that the work in question is gaining increasingly wider recognition and relevance to the field of study over the time.

Figure 4 represents a network visualization depicting co-authorship among various authors, with the nodes being the authors and lines representing edges. The node size could be the number of one's connections or publications, and the line density could be interpreted to show the intensity of the collaboration

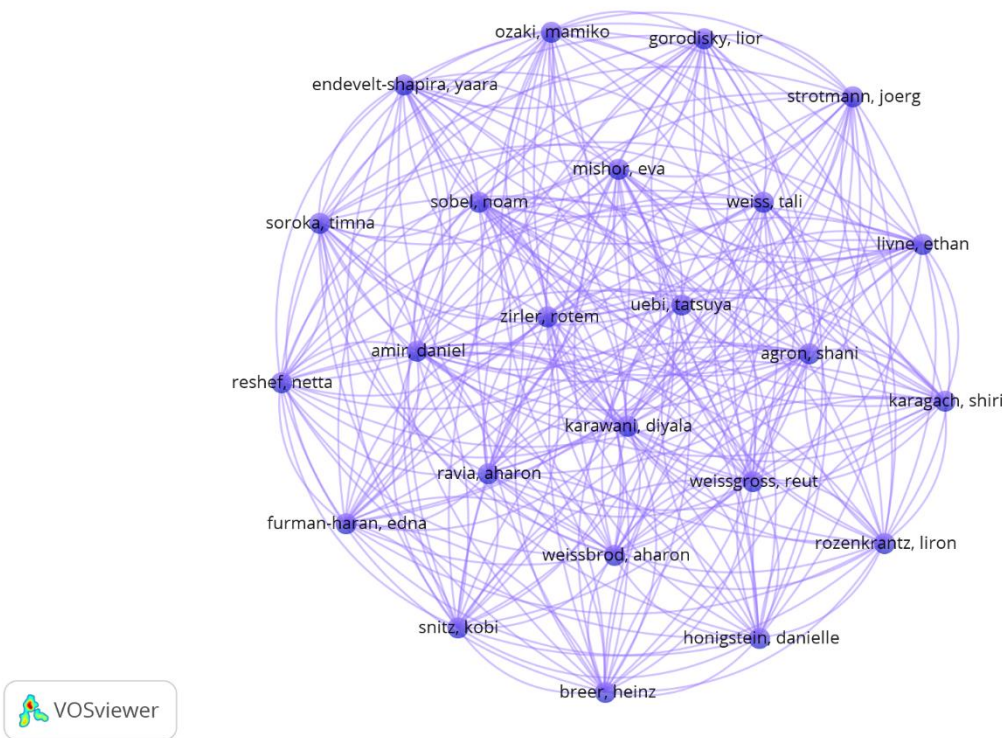


Figure 4: Co-authorship with authors networking visualization

The central authors, Eva Mishor and Noam Sobel, indicate that they have more co-authorships than others. This could mean that they are central players in the collaborative research going on in this group. Other key nodes include Yaara Endevelt-Shapira, Daniel Amir, and Tali Weiss.

While talking about cluster formation, we can notice that there are clear groups around central authors, which indicates small sets of authors working frequently with one another. Such clusters may indicate focused research teams or thematic research areas.

The network visualization also shows connectedness. The network is pretty well connected, with most of the authors having more than one collaboration. This kind of density in connectivity would demonstrate that the research environment is collaborative. Further, Mamiko Ozaki, Jörg Strotmann, Liron Rozenkrantz, and a few others are rather peripheral. It indicates there are fewer connections or more specialized collaborations.

The network also shows collaboration potentiality. The dense network and large number of interconnections show that there is huge potential for conducting interdisciplinary research and collaboration. Peripheral authors could benefit by getting in touch with more central individuals to increase their degree of collaboration.

Thus, the co-authorship network visualization expresses the community that is collaborative and more interconnected. It has a few central cadre organizers driving most of the collaborative efforts. In this regard, the visualization helps to identify key collaborators and potential areas for the growth of research networks. On the other hand, dense interconnectedness gives very strong pointer to the existence of very high potential for interdisciplinary research. Peripheral authors need much greater integration into the central collaborative network.

Figure 5 shows co-authorship network visualization between different countries. In the network, the nodes are countries, and the size relates to their number of publications. The lines connecting nodes are collaborative relationships, with the thickness showing the strength of collaboration.

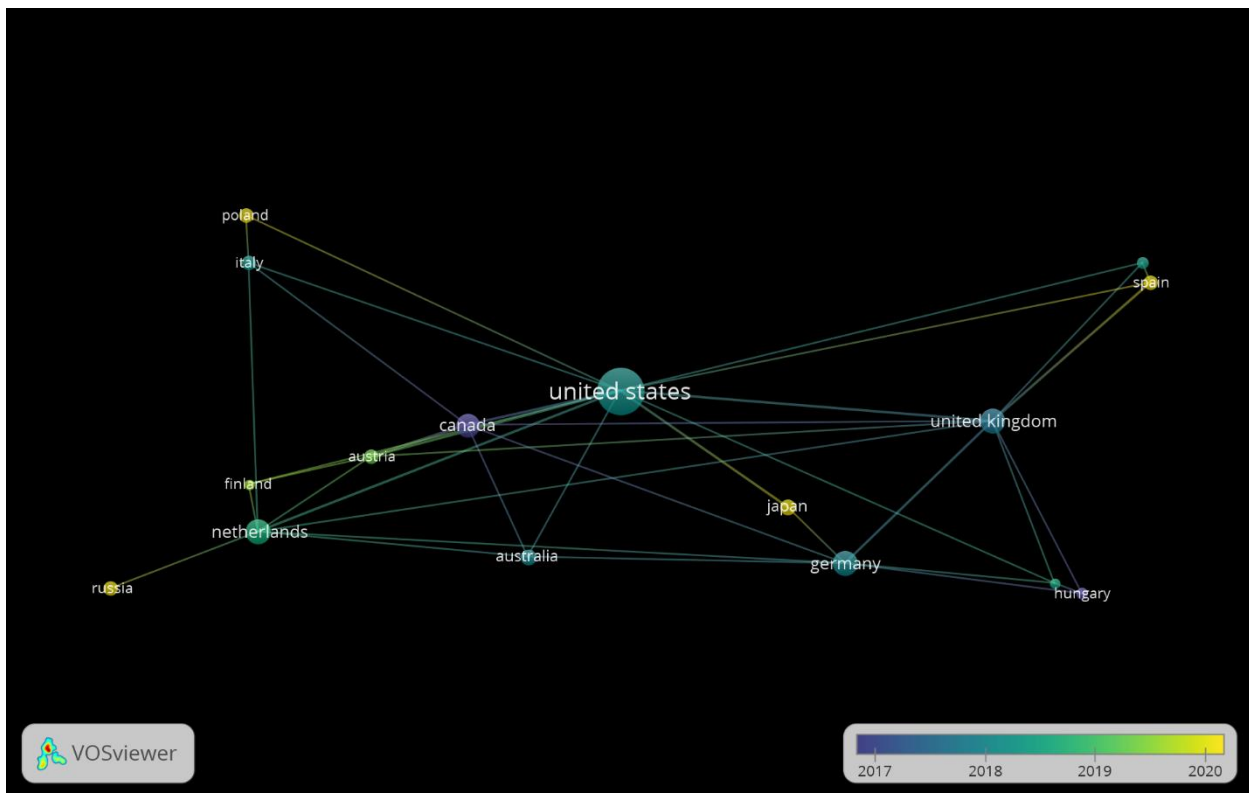


Figure 5: Co-authorship network visualization between different countries

The United States is the largest node, which indicates a lead role in international research collaborations. It has many edges with other nations, indicating large collaboration networks. These edges are of relative thickness, underlining close collaborative relationships with quite a good number of countries. The collaboration is intense with Canada, the United States of America,

behavior or psychological construct under study in many contexts. Then, the word "human" takes a big size as well, meaning that there is interest in understanding aggression not in animals or other living species but precisely in man.

Next, the terms "behavior," "psychology," and "behavioral" refer to the fact that human aggression is explored from the psychological and behavioral perspectives. Presumably, researchers are interested in the way aggression is displayed in behavior and the psychological reasons underlying it. Similarly, words such as "social" and "violence" emphasize that aggression is not simply an individual but a social problem. In fact, using "violence" assumes that aggression may take place in social behavior— thus, social dynamics and influences— and the results of considering this form of violence.

Likewise, the use of the words "genetic" and "neural" would mean interest in the biological aspect of aggression. How genetics and brain function reflect on aggressive behavior is what is studied. Then, the words "stress" and "testosterone" clarify the presence of harassing and hormonal triggers in the development or exacerbation of such a state as aggression. More precisely, biologically, the use of the hormone testosterone is associated with aggression. These words "mechanism" and "analysis" indicate that studies are aimed at understanding the underlying processes or mechanisms of aggression. This would involve deconstructing whatever it is that triggers, maintains and expresses aggression. Finally, the words "violence" and "conflict" indicate that aggression is studied with respect to interpersonal or social conflicts, in terms of how aggressive behaviors might be involved in their origination or consequence.

When scrutinize it from interdisciplinary focus, several disciplines are depicted in terms of studying human aggression. Research seems to be conducted within the rubric of psychology, biology, and social sciences, among others. This kind of interdisciplinarity is very important because it recognizes or puts the fact forward that aggression is a many-faceted reality with a lot of factors at play.

From biopsychosocial model, the key words lay foundation to the biopsychosocial model of aggression, where biological, psychological, and social factors are all said to be the basic contributors towards understanding human aggression. These examples include genetics, hormones, stressors, behaviors, violence, and social dynamics.

Potential Research Gaps: While the wide array of topics covered by the word cloud is obvious, it also shows some potential research gaps, such as: how cultural, economic, or political factors may carry lesser emphasis in the shaping of aggression. In the same way, terms that relate to interventions or solutions to aggression are less represented, which again gives an idea of a possible focus more on the understanding end rather than mitigating aggression.

Therefore, the word cloud glimpses the nature of different and complicated research about human aggression. It further shows very well that any interdisciplinary approach needs a combination of factors from the biological, psychological, and social to be able to comprehend totally the mechanisms and implications of aggression. Even though the focus might seem very well broad at the present moment, in greater detail research has to be done in the future regarding influences of culture, economy, and politics with a stronger focus on intervention strategies to help cope with and reduce aggressive behaviors.

Conclusion

The analysis expresses a dynamic and influential psychology research landscape, with fast-growing citations, fluctuating publications, and tight interdisciplinarity. Despite disruptions like the COVID-19 pandemic, disrupted research output has bounced back to refute suggestions of irrelevancy and prove its resilience. Key authors and countries, especially the United States, perform pivotal roles in this collaborative environment. Whereas one can trace a swing in interest toward the psychological, biological, and social aspects of human aggression, possible gaps in cultural, economic, and intervention-focused studies delineate areas for further investigation. In general, though, a firm momentum has been created, probably with long-lasting effect.

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