

The Scientometrics of Child Sexual Exploitation Material Offending: An Analysis of Fifty Years
of Academic Research

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Abstract

Child sexual exploitation material (CSEM) research is an increasingly important area of interdisciplinary study. Key research areas include offenders and offending behavior; legal and societal issues; victimology; treatment; investigations; digital forensics; and deterrence. Many publications are multidisciplinary, with fields including law, psychology, criminal justice, sociology, digital forensics, data analytics, and related areas. This study examines the historical body of research on CSEM offending through a scientometric review. The Web of Science Core Collection was searched for relevant research articles with no date restrictions, and 990 responsive papers published between 1978 and the present were identified. The key authors in the field included Michael Seto ($n=31$, $fc=10.87$), Ethel Quayle ($n=21$, $fc=7.49$), and Kathryn Seigfried-Spellar ($n=12$, $fc=7.17$), with the paper “Prevalence and Characteristics of Youth Sexing: A National Study” by Mitchell et al. identified as the most cited. Historiographical analysis identified works by Ethel Quayle and Max Taylor as well as Michael Seto as seminal papers in the field, and the United States (45.7%, $n=452$), the United Kingdom (29.2%, $n=289$), and Australia (23.6%, $n=234$) as the countries with the highest numbers of publications. Keyword analyses found the terms child pornography and indecent images decreasing over time, and the terms CSEM and child sexual abuse material increasing in usage.

Keywords: Scientometrics; Child Sexual Exploitation Material; Child Sexual Abuse Material

Introduction

In 2024, the United States National Center for Missing and Exploited Children (NCMEC), a clearinghouse for reports of child sexual exploitation, received a record 62.9 million images reported as child sexual exploitation material (CSEM) (NCMEC, 2025). The volume and impact of these images on their victims has driven substantial cross-disciplinary research interest. Elsewhere, legal scholarship on current and proposed legislation (Bleakley et al., 2024); psychological research on offender psychopathology, treatment for individuals impacted both directly and indirectly, and investigator well being (Armitage et al., 2024; Kleijn et al., 2025; O'Brien et al., 2024); criminal justice research on recidivism (Hörnle et al., 2024); and digital forensics research on electronic behaviors and profiles (Ngo et al., 2024; Nurmi et al., 2024) represent a small cross-section of recent academic studies in the field.

Early CSEM research articles primarily discussed the legal aspects of child pornography (Page, 1981; Payton, 1978). Psychological research was represented early-on as well, with one of the first psychological articles covering a case study of a pubescent victim (Schoettle, 1980). Technology-focused research arose later, with an influential paper by Mehta (2001) cataloging the use of Usenet in an early Internet research study. Quayle and Taylor (2002) built on this with their seminal work highlighting CSEM as an internet problem.

The research terminology has additionally changed over the past 50 years as well. Pornography as a term potentially traces back to 192 CE and Athenæus, (*LOOKING AT PORNOGRAPHY (the Word):*, 2020), from the Greek term πορνο-γράφος, meaning a writing about harlots (Bolling et al., 1926). Child pornography is significantly newer as a term, and is cited by the Oxford English Dictionary as first being used in 1967 (*Child Pornography, N. Meanings, Etymology and*

More, n.d.) in the Winnipeg Free Press. The earliest academic use of Child Sexual Abuse Material (CSAM) was found in the work of Lessard (Lessard, 1997), and of CSEM in 2009 by Angela Carr as part of the global symposium for examining the relationship between online and offline offenses and preventing the sexual exploitation of children (Oosterbaan, 2009).¹

Given the growing interest in CSEM offenders and offending, as well as the social and cultural impacts of its proliferation, enough research has been conducted to warrant a retrospective scientometric analysis. To-date, there has been one paper published in 2018 containing a bibliometric review of the fifty most cited papers related to child pornography research using Google Scholar (Hussain et al., 2018), however no comprehensive scientometric reviews of the field have been published.

This paper used the Web of Science database to identify the corpus of relevant research conducted in the highest impact journals, with articles found ranging from 1978 through the present. The articles were analyzed using a scientometric approach (Mingers and Leydesdorff, 2015), and the results presented visually, with a critical discussion of the findings and directions in the field.

Methodology

The Web of Science Core Collection was searched for topics related to CSEM, using the most common terms in the research - child sexual abuse material, child sexual exploitation material, child pornography, indecent images, innocent images, and child sexual abuse images. The Web of Science was chosen for its breadth as well as its vetting process for inclusion, which was expected to encompass all of the most impactful journal and conference publications in the field

¹ Although these were the earliest identified found through Google Scholar, they are almost certainly not the first utterances nor written uses of the terms.

without the inclusion of lower-quality publications. The search was conducted using the Topic field, which indexes the Title, Abstract, Author Keywords, and Keywords Plus fields (*Web of Science Core Collection Search Fields*, n.d.). The specific search was as follows:

TS=("child pornography" OR "child sexual exploitation material" OR "child sexual abuse material" OR "indecent image*" OR "innocent image*" OR "child sexual abuse image*")

The search resulted in 1135 documents. Of these, 1069 represented peer reviewed articles or conference proceedings. The resultant article abstracts were manually reviewed, and articles where CSEM was only an incidental mention (e.g., an article talking about a new cryptographic technique where the authors list a dozen criminal uses of encryption in the background section) were removed, however anywhere CSEM was not the core topic but was a direct application (e.g., discussions of cyberlaw that specifically cover CSEM or age estimation techniques tested against a CSEM dataset as one of the experimental approaches) as well as those directly addressing CSEM were included (n=990).

Analysis

The Web of Science results were exported as plain text with the full record and all cited references. Fields included the abstract; journal and author names; paper title keywords; affiliations (including country); citation volume; category; and the associated reference metadata.

The data was imported into R Studio (4.5) and processed using the Bibliometrix package. The individual fields (keywords, title, abstract) were tokenized to allow for n-gram analysis, and the names normalized for institutions and individuals. Biblioshiny was used for visualizations (Aria

and Cuccurullo, 2017). Additionally, VOSviewer was used for network visualizations where relevant (Arruda et al., 2022).

Specific measures included local citation counts (citations of papers within the corpus); and fractional paper counts (fc), which credit authors on a pro-rated basis (Egghe, 2008).

Historiography was conducted and co-word analyses performed (He, 1999) using the Walktrap algorithm (Pons and Latapy, 2005), with a synonym list utilized to group terminology where relevant.

Results

The 990 papers contained 30,007 references and were published between 1978 and 2025 with an annual publication growth rate of 7.51%. There were 16.26 average citations per document, with an average of 1.57 citations per document/per year. The corpus contained 1,906 authors, with 259 papers authored by a single author, and an average of 2.86 authors per paper.

Overall publication levels are shown in Figure 1. Publication rates are increasing, with over 50% of all publications in the field having been published in the past 8 years. Publication rates were largely small with limited growth until seminal publications in 2002 and 2003 (Quayle and Taylor, 2002, 2003) drove an exponential increase, with a second point of substantial increase in 2005 and 2006 related to additional highly influential publications (Seto et al., 2006; Seto and Eke, 2005) building on the earlier work as shown in the key historiography of the field (Figure 2).

Figure 1: Annual scientific production of CSEM-related research

Figure 2: Historiography of key CSEM publications

Publishers

To identify the core journals in the field, Bradford's law was used (Table 1) (Brookes, 1977).

The field's publications showed a Zipfian distribution, with Sexual Abuse (n=51), Child Abuse and Neglect (n=34), and the Journal of Sexual Aggression (n=29) being the sources most likely to publish relevant articles. The same journals, along with Aggression and Violent Behavior, were also the most impactful when measured by their respective h-indices. Publication numbers were minimal until around 2005, which began an exponential increase in the number of articles published in the top journals (Figure 3).

Source	h_index	g_index	m_index	Citations	# of Pubs	First Publication
SEXUAL ABUSE-A JOURNAL OF RESEARCH AND TREATMENT	28	50	1.333	2507	51	2005
JOURNAL OF SEXUAL AGGRESSION	16	25	1	658	29	2010
AGGRESSION AND VIOLENT BEHAVIOR	15	19	0.75	724	19	2006
CHILD ABUSE & NEGLECT	14	21	0.333	469	34	1984
ARCHIVES OF SEXUAL BEHAVIOR	10	13	0.667	613	13	2011
DIGITAL INVESTIGATION	10	16	0.556	282	17	2008
INTERNATIONAL JOURNAL OF OFFENDER THERAPY AND COMPARATIVE CRIMINOLOGY	7	9	0.583	136	9	2014
LAW AND HUMAN BEHAVIOR	7	8	0.467	379	8	2011
CHILD & YOUTH SERVICES	6	6	0.5	95	6	2014
DEVIANT BEHAVIOR	6	9	0.194	426	9	1995
JOURNAL OF CHILD SEXUAL ABUSE	6	11	0.353	135	13	2009
TRENDS AND ISSUES IN CRIME AND CRIMINAL JUSTICE	6	8	0.286	101	21	2005

BEHAVIORAL SCIENCES & THE LAW	5	8	0.313	119	8	2010
CURRENT PSYCHIATRY REPORTS	5	5	0.385	129	5	2013
FRONTIERS IN PSYCHIATRY	5	6	0.714	57	6	2019
INTERNATIONAL JOURNAL OF CYBER CRIMINOLOGY	5	6	0.278	93	6	2008
JOURNAL OF POLICE AND CRIMINAL PSYCHOLOGY	5	6	0.294	277	6	2009
JOURNAL OF SEX RESEARCH	5	5	0.294	299	5	2009
NEW MEDIA & SOCIETY	5	5	0.385	291	5	2013
PSYCHIATRY PSYCHOLOGY AND LAW	5	7	0.5	56	8	2016
PSYCHOLOGY CRIME & LAW	5	8	0.25	241	8	2006
COMPUTER LAW & SECURITY REVIEW	4	7	0.267	62	7	2011
COMPUTERS IN HUMAN BEHAVIOR	4	5	0.235	336	5	2009
FORENSIC SCIENCE INTERNATIONAL	4	5	0.308	55	5	2013
FORENSISCHE PSYCHIATRIE PSYCHOLOGIE KRIMINOLOGIE	4	6	0.235	48	13	2009
FRONTIERS IN PSYCHOLOGY	4	5	0.667	27	6	2020
INFORMATION & COMMUNICATIONS TECHNOLOGY LAW	4	4	0.2	27	6	2006
JOURNAL OF CRIMINAL PSYCHOLOGY	4	4	0.286	62	4	2012
JOURNAL OF DIGITAL FORENSICS SECURITY AND LAW	4	5	0.235	35	6	2009

Table 1: Top publications of CSEM research

Figure 3: Source publication of papers over time

Countries

Sixty five countries contributed to papers in the corpus. The most impactful country by local citations was the United States (n=5419), followed by Canada (n=3368), the United Kingdom (n=2254), Australia (n=1151), and Germany (n=1068) (Table 2). No other countries produced more than 10% of the research. This mapped directly to the number of publications from each country (Table 3).

Country	Number	Percentage of Total
USA	452	45.7%
UNITED KINGDOM	289	29.2%
CANADA	234	23.6%
AUSTRALIA	223	22.5%
GERMANY	156	15.8%
SPAIN	77	7.8%
BRAZIL	64	6.5%
NETHERLANDS	57	5.8%
SWEDEN	36	3.6%
IRELAND	25	2.5%
INDIA	24	2.4%
SWITZERLAND	21	2.1%
FINLAND	20	2.0%
POLAND	20	2.0%
CHINA	19	1.9%
NEW ZEALAND	19	1.9%
FRANCE	17	1.7%
ROMANIA	17	1.7%
ISRAEL	16	1.6%
ITALY	16	1.6%
NORWAY	14	1.4%

BELGIUM	13	1.3%
CZECH REPUBLIC	12	1.2%
TURKEY	12	1.2%
SOUTH AFRICA	9	0.9%

Table 2: Total publications by country

Country	Total Citations	Average Article Citations
USA	5419	21.10
CANADA	3368	34.00
UNITED KINGDOM	2254	17.90
AUSTRALIA	1151	12.40
GERMANY	1068	13.90
IRELAND	545	36.30
NETHERLANDS	365	20.30
SWITZERLAND	280	21.50
BRAZIL	230	10.50
LUXEMBOURG	174	87.00
SPAIN	161	4.40
NEW ZEALAND	129	18.40
ITALY	87	7.90
SINGAPORE	63	10.50
SWEDEN	57	5.20
CHINA	51	6.40
CZECH REPUBLIC	48	9.60
FINLAND	35	5.00
AUSTRIA	33	16.50
TURKEY	32	10.70
INDIA	31	2.60
NORWAY	30	7.50

PAKISTAN	28	28.00
ISRAEL	26	4.30
CROATIA	18	3.60

Table 3: Citations by country

Global collaboration was high, with two primary clusters identified. The largest cluster focused on the United States, United Kingdom, and Australia, with the second cluster made up primarily of continental European countries (Figure 4).

Figure 4: Collaboration by country

Authors

Using fractionalized article counts, the top producers in the field were Michael Seto (n=31, fc=10.87), Ethel Quayle (n=21, fc=7.49), and Kathryn Seigfried-Spellar (n=12, fc=7.17).

Looking at total article counts, along with Seto and Quayle, David Finkelhor (n=21, fc=5.90), Kimberly Mitchell (n=20, fc=5.78), and Janis Wolak (n=15, fc=4.31) represented the remaining top authors (Table 4).

Author	Fractional Count	Articles
SETO MC	10.87	31
QUAYLE E	7.49	21
SEIGFRIED-SPELLAR KC	7.17	12
GILLESPIE AA	7.00	7
STEEL CMS	6.00	12
FINKELHOR D	5.90	21
MITCHELL KJ	5.78	20
RIMER JR	5.48	8
PAQUETTE S	4.84	13

CHRISTENSEN LS	4.83	10
MARTIN J	4.48	7
EKE AW	4.44	13
WOLAK J	4.31	15
ENEMAN M	4.00	4
MCLELLAND M	4.00	4
SALTER M	3.50	9
MERDIAN HL	3.24	12
FORTIN F	3.18	9
SLANE A	3.18	6
BABCHISHIN KM	3.08	12
WOOD H	3.00	3
KRONE T	2.82	7
GEWIRTZ-MEYDAN A	2.70	10
ELLIOTT IA	2.58	8
TAYLOR M	2.58	6

Table 4: Top producing authors

In terms of influence, the median number of local citations for authors was 1, with 45.3% (n=862) of authors having no local citations. Seto was the most influential author based on local citations (83.1%, n=823), followed by Kelly Babchishin (43.3%, n=429) and R. Karl Hanson (n=340) (Table 5).

Author	Local Citations	% of Corpus Citing
SETO MC	823	83.1%
BABCHISHIN KM	429	43.3%
HANSON RK	340	34.3%
QUAYLE E	322	32.5%

EKE AW	299	30.2%
BEECH AR	278	28.1%
ELLIOTT IA	277	28.0%
WOLAK J	259	26.2%
FINKELHOR D	238	24.0%
TAYLOR M	232	23.4%
MERDIAN HL	168	17.0%
CANTOR JM	163	16.5%
BLANCHARD R	155	15.7%
MANDEVILLE-NORDEN R	147	14.8%
HERMANN CA	128	12.9%
VANZUYLEN H	120	12.1%
BEIER KM	119	12.0%
STEEL CMS	118	11.9%
BOURKE ML	112	11.3%
MITCHELL KJ	112	11.3%
CRAISSATI J	109	11.0%
KEEN S	106	10.7%
WEBB L	106	10.7%
NEUTZE J	103	10.4%
SEIGFRIED-SPELLAR KC	95	9.6%

Table 5: Most impactful authors

Author collaboration analysis identified nine primary clusters, with the strongest clustering focused on Michael Seto and Ethel Quayle (Figure 5).

Figure 5: Author collaboration mapping

Institutions

The production of research was distributed broadly, with the highest producing institution, the University of New Hampshire, producing 8.5% (n=84) of the papers, followed by the University of Ottawa (4.3%, n=34), the University of London (2.8%, n=28), the University of New South Wales/Sydney (2.2%, n=22), and the University of Edinburgh (2.1%, n=21) (Table 6).

Affiliation	# of Articles	% of Corpus
UNIVERSITY OF NEW HAMPSHIRE	84	8.5%
UNIVERSITY OF OTTAWA	43	4.3%
UNIVERSITY OF LONDON	28	2.8%
UNIVERSITY OF NEW SOUTH WALES SYDNEY	22	2.2%
UNIVERSITY OF EDINBURGH	21	2.1%
UNIVERSITE DE MONTREAL	19	1.9%
CARLETON UNIVERSITY	18	1.8%
UNIVERSITY COLLEGE LONDON	18	1.8%
UNIVERSITY OF CALIFORNIA SYSTEM	18	1.8%
UNIVERSITY OF BIRMINGHAM	17	1.7%
KAROLINSKA INSTITUTET	16	1.6%
UNIVERSITY OF TASMANIA	16	1.6%
UNIVERSITY OF TORONTO	16	1.6%
AUSTRALIAN INSTITUTE OF CRIMINOLOGY (AIC)	15	1.5%
FREE UNIVERSITY OF BERLIN	14	1.4%
HUMBOLDT UNIVERSITY OF BERLIN	14	1.4%
LEIDEN UNIVERSITY	14	1.4%
STATE UNIVERSITY SYSTEM OF FLORIDA	14	1.4%
PURDUE UNIVERSITY SYSTEM	13	1.3%
UNIVERSITY OF CALGARY	13	1.3%
BERLIN INSTITUTE OF HEALTH	12	1.2%

CHARITE UNIVERSITATSMEDIZIN BERLIN	12	1.2%
DEAKIN UNIVERSITY	12	1.2%
GEORGE MASON UNIVERSITY	12	1.2%
LA TROBE UNIVERSITY	12	1.2%

Table 6: Top producing institutions

The production of the top institutions over time was largely aperiodic, with individual production varying greatly per year. The University of Ottawa had the most consistent production (M=2, Mdn=2), with the University of New Hampshire (M=4, Mdn=2) having the only other median production higher than one over the past twenty years (Figure 6).

Figure 6: Top institutions production over time

Citations

A citation analysis was performed on the corpus to determine the most locally cited works as well as to identify co-citation networks. The paper “Prevalence and Characteristics of Youth Sexting: A National Study”, published in *Pediatrics* in 2012 by Kimberly Mitchell et al. (2012) was the most locally cited in the dataset, with 315 citations and a citations per year count of 24.23. The most cited per year was Michael Seto’s “The Motivation-Facilitation Model of Sexual Offending” (2019), published in *Sexual Abuse* in 2019, with a citations per year of 29.5 and 177 total local citations. The most frequently cited papers are shown in Supplemental Table 1.

Thematic Analysis

Keyword analyses were performed to identify trends in topical areas as well as keyword usage. Looking specifically at the terms used in the abstracts against the key synonyms for CSEM, “child sexual abuse image” and “innocent image” did not appear. The remaining terms (child

pornography, CSEM, indecent images, and CSAM) were graphed for the past 30 years, with the use of the terms “child pornography” and “indecent images” decreasing over time, while the terms CSEM and CSAI increased over time (Figure 7).

Figure 7: Key terminology changes over time

For the keywords provided most frequently by authors in the metadata related to their papers, “child pornography” was the most common (28.7%, n=284), followed by “internet” (9.3%, n=92) and “child sexual abuse” (7.2%, n=71). The top keywords are shown in Table 7 - no other keywords had more than 10 instances of occurrence in the corpus.

Words	# of Occurrences	% of Papers
child pornography	284	28.7%
internet	92	9.3%
child sexual abuse	71	7.2%
child sexual abuse material	55	5.6%
child sexual exploitation material	51	5.2%
pornography	50	5.1%
pedophilia	49	4.9%
sexting	34	3.4%
risk assessment	33	3.3%
cybercrime	29	2.9%
sexual abuse	28	2.8%
child abuse	27	2.7%
digital forensics	25	2.5%
recidivism	21	2.1%

sexual offending	21	2.1%
child sexual exploitation	20	2.0%
law enforcement	17	1.7%
csam	16	1.6%
sex offenders	16	1.6%
children	15	1.5%
age estimation	14	1.4%
indecent images of children	14	1.4%
prevention	14	1.4%

Table 7: Top keywords in the corpus

Co-occurrence network mapping using the author's keywords identified four primary clusters of research. The largest cluster focused on risk assessment, pedophilia, and recidivism. The next largest cluster centered on computer forensics, including dark web and deep learning activities. The remaining clusters centered on youth sexting and cybercrime/law enforcement activities (Figure 8).

Figure 8: Co-occurrence network of keywords

Academic Disciplines

Highlighting the cross-disciplinary fields involved in CSEM research, the most frequent areas publishing papers in the corpus were diverse. Criminology (29.5%, n=292), followed by Law (20.1%, n=199), Clinical Psychology (11.6%, n=115), Multidisciplinary Psychology (8%, n=79), and Computer Science (7.9%, n=78) were the most common subject areas for the journals publishing relevant articles (Table 8).

Web of Science Categories	# of papers	% of papers
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Criminology Penology	292	29.495
Law	199	20.101
Psychology Clinical	115	11.616
Psychology Multidisciplinary	79	7.98
Computer Science Information Systems	78	7.879
Psychiatry	77	7.778
Family Studies	73	7.374
Social Sciences Interdisciplinary	61	6.162
Psychology Social	53	5.354
Social Work	53	5.354
Computer Science Theory Methods	46	4.646
Computer Science Interdisciplinary Applications	38	3.838
Engineering Electrical Electronic	36	3.636
Communication	29	2.929
Computer Science Artificial Intelligence	28	2.828
Sociology	28	2.828
Psychology Applied	26	2.626
Computer Science Software Engineering	25	2.525
Medicine Legal	21	2.121
Telecommunications	21	2.121
Information Science Library Science	16	1.616
Computer Science Hardware Architecture	12	1.212
Multidisciplinary Sciences	12	1.212
Political Science	11	1.111
Pediatrics	10	1.01

Table 8: Top academic disciplines in corpus

Discussion

Publishing papers related to CSEM can be challenging, and most of the top publications identified were in specialized journals dealing with topics related to sexual violence and sexual abuse. Publication of CSEM-related articles in the highest tier journals in the broad, underlying subject areas was infrequent, but the highest-cited publication in the field (Mitchell et al., 2012), which was published in *Pediatrics*, highlights the impact of studies being included in these journals.

The increase in research production has coincided with the growth of the Internet and the corresponding growth of CSEM availability as technology has evolved (Steel et al., 2020). Interestingly, the point of inflection for research production was the work tying the Internet to CSEM by Quayle and Taylor (2001, 2002). Research differentiating online v. contact offending drove additional change (Babchishin et al., 2015), including the development of risk models to address the new offending behaviors (Seto and Eke, 2015). At the same time, legal publications about freedom of speech and child pornography, which had a significant early presence (Adler, 2001; Payton, 1978)), have become less prevalent. As technologies and affordances change, additional topic areas (for example, sexting and dark web) become a focus of interest, including emerging technologies such as the offensive and defensive use of artificial intelligence (Gutfeter et al., 2025; Steel, 2024).

An evolution of terminology is also apparent over time in the research. The term “child pornography” is still the most used, though much of that is related to references to older research and to legal definitions. Both CSEM and CSAM are becoming more frequently used, with CSAM having the greater adoption most recently, consistent with recommendations to utilize more accurate and nuanced terminology (Terminology and Semantics Interagency Working Group on Sexual Exploitation of Children, 2016). Terminology will need to continue to evolve,

particularly with newer categories of content (self-generated images and artificial-intelligence images) that do not map as cleanly to existing terms (Bloxsom et al., 2024; Smith, 2012; Steel, 2024). New terms, such as “Image Based Sexual Abuse” and “Image Based Sexual Exploitation” are potentially more relevant given the rise of newer exploitation modalities (Finkelhor et al., 2023), however they also encompass non-child focused offenses (e.g., revenge imagery) (Powell et al., 2018).

Limitations

The Web of Science Core Collection curates which journals and conference proceedings it includes based on their own quality and impact measures. There may be high quality, high impact articles published in journals that do not meet inclusion standards that were not included in this research (as well as newer journals that are “emerging”). Additionally, 95% of the content indexed by the Web of Science is in the English language (either natively or through a journal translation), and this analysis will have excluded non-English language content that used these or translated terms (*Journal Evaluation Process and Selection Criteria*, n.d.). Citations were measured through local citation information - publications included may have had more significant impacts in other fields where they were referenced that are not reflected in this research.

In addition to journals and conference proceedings, there are other potential high-impact publications in the field. Theses, books, pre-prints, and government/organizational reports all contribute significantly to the body of work relevant to CSEM offending and were not included in the Web of Science dataset.

Because this scientometric analysis is a point-in-time review, the impact of more recent publications cannot be accurately assessed. Which publications from the past decade will become the most impactful over time, which new topics will emerge, and how new technologies will change the research landscape cannot be known except in retrospect.

Finally, the analysis was based on the available abstract and keyword data, which was increasingly sparse in publications earlier than the year 2000. A full text analysis of all paper contents might yield richer information to mine for trends.

Conclusions

The primary conclusion from this research is that there has been an exponential increase in research into CSEM offending, with a primary inflection point around 2002 starting the growth. Both the topics of research focus and terminology have evolved as social and technological changes have occurred. Older, more problematic terminology like “child pornography” have been superseded by other terms that more accurately reflect the content and the nature of its creation and distribution. Since this is a point-in-time review, an additional look at this topic, particularly after a significant period of time has passed (e.g., another ten years), would be needed for continued relevance. Finally, work looking at other types of publications (e.g., the most impactful theses or books) would potentially provide additional insights.

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References

Adler, A. (2001). The perverse law of child pornography. *Columbia Law Review*, 101, 209.

<https://doi.org/10.2307/1123799>

Aria, M., and Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. In *Journal of Informetrics* (Vol. 11, Issue 4, pp. 959–975). Elsevier.

<https://doi.org/10.1016/j.joi.2017.08.007>

Armitage, R., Wager, N., Wibberley, D., Hudspith, L. F., and Gall, V. (2024). “we’re not allowed to have experienced trauma. We’re not allowed to go through the grieving process” - exploring the indirect harms associated with child sexual abuse material (CSAM) offending and its impacts on non-offending family members.” *Victims & Offenders*, 19(5), 915–941.

<https://doi.org/10.1080/15564886.2023.2172504>

Arruda, H., Silva, E. R., Lessa, M., Proença, D., Jr, and Bartholo, R. (2022). VOSviewer and bibliometrix. *Journal of the Medical Library Association: JMLA*, 110(3), 392–395.

<https://doi.org/10.5195/jmla.2022.1434>

Babchishin, K. M., Hanson, R. K., and VanZuylen, H. (2015). Online child pornography offenders are different: a meta-analysis of the characteristics of online and offline sex offenders against children. *Archives of Sexual Behavior*, 44(1), 45–66.

<https://doi.org/10.1007/s10508-014-0270-x>

- Bleakley, P., Martellozzo, E., Spence, R., and DeMarco, J. (2024). Moderating online child sexual abuse material (CSAM): Does self-regulation work, or is greater state regulation needed? *European Journal of Criminology*, 21(2), 231–250.
<https://doi.org/10.1177/14773708231181361>
- Bloxsom, G., McKibbin, G., Humphreys, C., Davidson, J., and Halfpenny, N. (2024). Five forms of coerced “self-produced” child sexual exploitation material: A critical interpretive synthesis. *Trauma, Violence & Abuse*, 25(5), 4230–4244.
<https://doi.org/10.1177/15248380241271376>
- Bolling, G. M., Liddell, H. G., and Scott, R. (1926). A Greek-English lexicon. *Language*, 2(2), 134. <https://doi.org/10.2307/408938>
- Brookes, B. C. (1977). Theory of the Bradford law. *The Journal of Documentation; Devoted to the Recording, Organization and Dissemination of Specialized Knowledge*, 33(3), 180–209.
<https://doi.org/10.1108/eb026641>
- child pornography, n. meanings, etymology and more*. (n.d.). Retrieved May 25, 2025, from https://www.oed.com/dictionary/child-pornography_n?tl=true
- Egghe, L. (2008). Mathematical theory of the h- and g-index in case of fractional counting of authorship. *Journal of the American Society for Information Science and Technology*, 59(10), 1608–1616. <https://doi.org/10.1002/asi.20845>
- Finkelhor, D., Turner, H., Colburn, D., Mitchell, K., and Mathews, B. (2023). Child sexual abuse images and youth produced images: The varieties of Image-based Sexual Exploitation and Abuse of Children. *Child Abuse & Neglect*, 143(106269), 106269.
<https://doi.org/10.1016/j.chiabu.2023.106269>
- Gutfeter, W., Gajewska, J., and Pacut, A. (2025). Detecting sexually explicit content in the

- context of the child sexual abuse materials (CSAM): End-to-end classifiers and region-based networks. In *Communications in Computer and Information Science* (pp. 154–168). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-74627-7_11
- He, Q. (1999). Knowledge discovery through co-word analysis. *Library Trends*, 48(1). <https://www.ideals.illinois.edu/items/8226/bitstreams/28129/data.pdf>
- Hörnle, T., Tetal, C., and Wössner, G. (2024). Reoffending after convictions related to child sexual exploitation material: Data from the German Federal Central Criminal Register. *Child Abuse & Neglect*, 153(106806), 106806. <https://doi.org/10.1016/j.chiabu.2024.106806>
- Hussain, M., Mujahid, S., and Mujahid, M. (2018). Fifty most cited research papers in child pornography. *Art Human Open Acc J*, 2(6), 333–338. https://www.researchgate.net/profile/Mujahid-Hussain-9/publication/330759348_Fifty_most_cited_research_papers_in_child_pornography/links/5c8ddc86299bf14e7e8128db/Fifty-most-cited-research-papers-in-child-pornography.pdf
- Journal evaluation process and selection criteria*. (n.d.). Academia and Government. Retrieved May 17, 2025, from <https://clarivate.com/academia-government/scientific-and-academic-research/research-discovery-and-referencing/web-of-science/web-of-science-core-collection/editorial-selection-process/journal-evaluation-process-selection-criteria/>
- Kleijn, M., Masthoff, E., De Caluwé, E., and Bogaerts, S. (2025). Investigating personality pathology in child sexual offenders: Group comparisons and offense differences. *Journal of Child Sexual Abuse*, 1–21. <https://doi.org/10.1080/10538712.2025.2471799>
- Lessard, M. D. (1997). *Factors affecting student perceptions of child sexual abuse*.

https://search.proquest.com/openview/aae3a3738681fc3bed4df9f89703c275/1?pq-origsite=gscholar&cbl=18750&diss=y&casa_token=ugi9ZU4oFKwAAAAA:wHzaybzyPyMXBnEvHamrXiNkkIvDJqWG8FX8Zk9RfXU-nUQe8n0ewRmIZog1Ctc_1mz0-dpqNnig

LOOKING AT PORNOGRAPHY (the word): (2020, October 14). . panopticonsRus .

<https://panopticonsrus.wordpress.com/2020/10/14/looking-at-pornography-the-word/>

Mehta, M. D. (2001). Pornography in Usenet: a study of 9,800 randomly selected images.

Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society, 4(6), 695–703. <https://doi.org/10.1089/109493101753376641>

Mingers, J., and Leydesdorff, L. (2015). A review of theory and practice in scientometrics.

European Journal of Operational Research, 246(1), 1–19.

<https://doi.org/10.1016/j.ejor.2015.04.002>

Mitchell, K., Finkelhor, D., Jones, L., and Wolak, J. (2012). Prevalence and characteristics of youth sexting: A national study. *Pediatrics*, 129, 13–20.

<https://doi.org/10.1542/peds.2011-1730>

NCMEC. (2025). *CyberTipline Data*. National Center for Missing & Exploited Children.

<http://www.missingkids.org/content/ncmec/en/gethelpnow/cybertipline/cybertiplinedata.htm>

1

Ngo, V. M., Gajula, R., Thorpe, C., and Mckeever, S. (2024). Discovering child sexual abuse material creators' behaviors and preferences on the dark web. *Child Abuse & Neglect*, 147, 106558. <https://doi.org/10.1016/j.chiabu.2023.106558>

Nurmi, J., Paju, A., Brumley, B., Insoll, T., Ovaska, A. K., Soloveva, V., Vaaranen-Valkonen, N., Aaltonen, M., and Arroyo, D. (2024). Investigating child sexual abuse material availability, searches, and users on the anonymous Tor network for a public health intervention strategy.

Scientific Reports, 14. <https://doi.org/10.1038/s41598-024-58346-7>

O'Brien, J. E., Gewirtz-Meydan, A., and Mitchell, K. J. (2024). Emotional wellbeing and cognitive appraisals among law enforcement exposed to child sexually explicit materials. *Criminal Justice and Behavior*, 51(3), 420–439.

<https://doi.org/10.1177/00938548231224815>

Oosterbaan, A. G. (2009). Global symposium for examining the relationship between online and offline offenses and preventing the sexual exploitation of children. *Washington, DC: Law Enforcement Projects Sub-Group (LEPSG), US Department of Justice.*

Page, R. A. (1981). Constitutional law-child pornography is outside the scope of first amendment protection. *Mem. St. UL Rev.*

https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/umem12§ion=25

Payton, J. M. (1978). Child pornography legislation. *J. Fam. L.*

https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/branlaj17§ion=27

Pons, P., and Latapy, M. (2005). Computing communities in large networks using random walks.

In *Computer and Information Sciences - ISCIS 2005* (pp. 284–293). Springer Berlin

Heidelberg. https://doi.org/10.1007/11569596_31

Powell, A., Henry, N., and Flynn, A. (2018). Image-based sexual abuse. In *Routledge Handbook of Critical Criminology* (pp. 305–315). Routledge.

<https://doi.org/10.4324/9781315622040-28>

Quayle, E., and Taylor, M. (2001). Child seduction and self-representation on the Internet.

Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society, 4(5), 597–608. <https://doi.org/10.1089/109493101753235197>

Quayle, E., and Taylor, M. (2002). Child pornography and the Internet: perpetuating a cycle of

- abuse. *Deviant Behavior*, 23(4), 331–361. <https://doi.org/10.1080/01639620290086413>
- Quayle, E., and Taylor, M. (2003). Model of problematic Internet use in people with a sexual interest in children. *Cyberpsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, 6(1), 93–106.
<https://doi.org/10.1089/109493103321168009>
- Schoettle, U. C. (1980). Child exploitation: a study of child pornography. *Journal of the American Academy of Child Psychiatry*, 19(2), 289–299.
[https://doi.org/10.1016/s0002-7138\(09\)60704-4](https://doi.org/10.1016/s0002-7138(09)60704-4)
- Seto, M. C. (2019). The motivation-facilitation model of sexual offending. *Sexual Abuse: A Journal of Research and Treatment*, 31(1), 3–24.
<https://doi.org/10.1177/1079063217720919>
- Seto, M. C., Cantor, J. M., and Blanchard, R. (2006). Child pornography offenses are a valid diagnostic indicator of pedophilia. *Journal of Abnormal Psychology*, 115(3), 610–615.
<https://doi.org/10.1037/0021-843X.115.3.610>
- Seto, M. C., and Eke, A. W. (2005). The criminal histories and later offending of child pornography offenders. *Sexual Abuse: A Journal of Research and Treatment*, 17(2), 201–210. <https://doi.org/10.1177/107906320501700209>
- Seto, M. C., and Eke, A. W. (2015). Predicting recidivism among adult male child pornography offenders: Development of the Child Pornography Offender Risk Tool (CPORT). *Law and Human Behavior*, 39(4), 416–429. <https://doi.org/10.1037/lhb0000128>
- Smith, S. (2012). *Study of self-generated sexually explicit images and videos featuring young people online*. Internet Watch Foundation.
- Steel, C. M. S. (2024). Artificial intelligence and CSEM - A research agenda. *Child Protection*

and Practice, 2, 100043. <https://doi.org/10.1016/j.chipro.2024.100043>

Steel, C. M. S., Newman, E., O'Rourke, S., and Quayle, E. (2020). An integrative review of historical technology and countermeasure usage trends in online child sexual exploitation material offenders. *Forensic Science International: Digital Investigation*, 33, 300971. <https://doi.org/10.1016/j.fsidi.2020.300971>

Terminology and Semantics Interagency Working Group on Sexual Exploitation of Children. (2016). *Terminology guidelines for the protection of children from sexual exploitation and sexual abuse*. ECPAT International.

Web of Science Core Collection Search Fields. (n.d.). Retrieved May 25, 2025, from <https://webofscience.help.clarivate.com/en-us/Content/wos-core-collection/woscc-search-fields.htm>

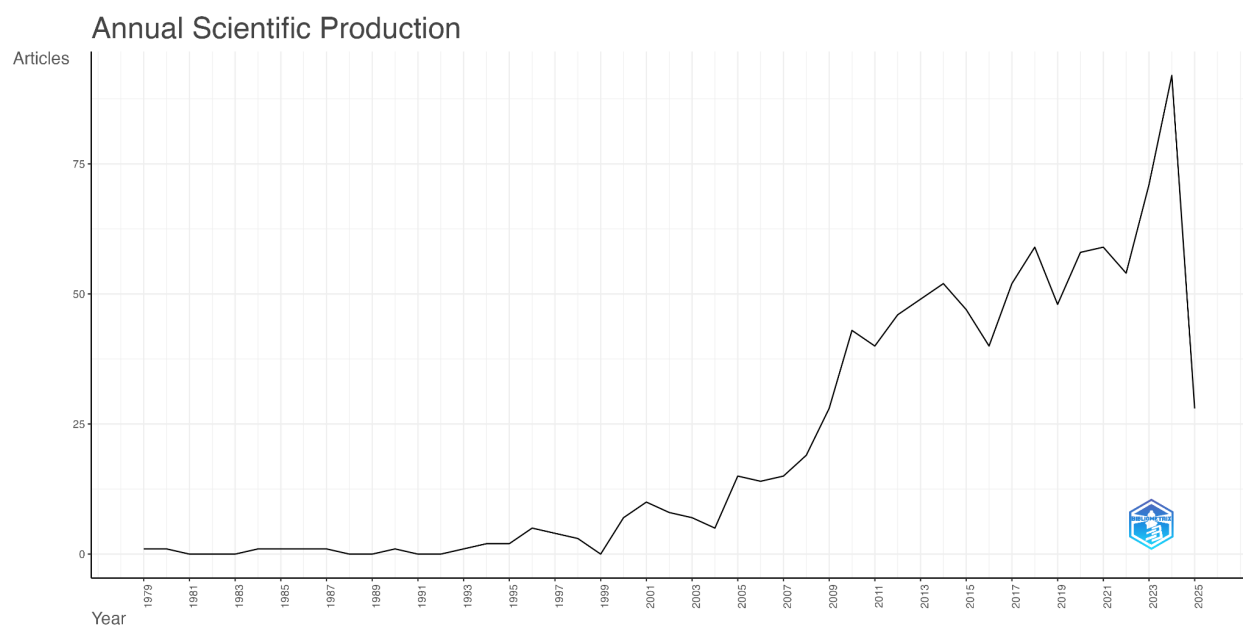


Figure 1

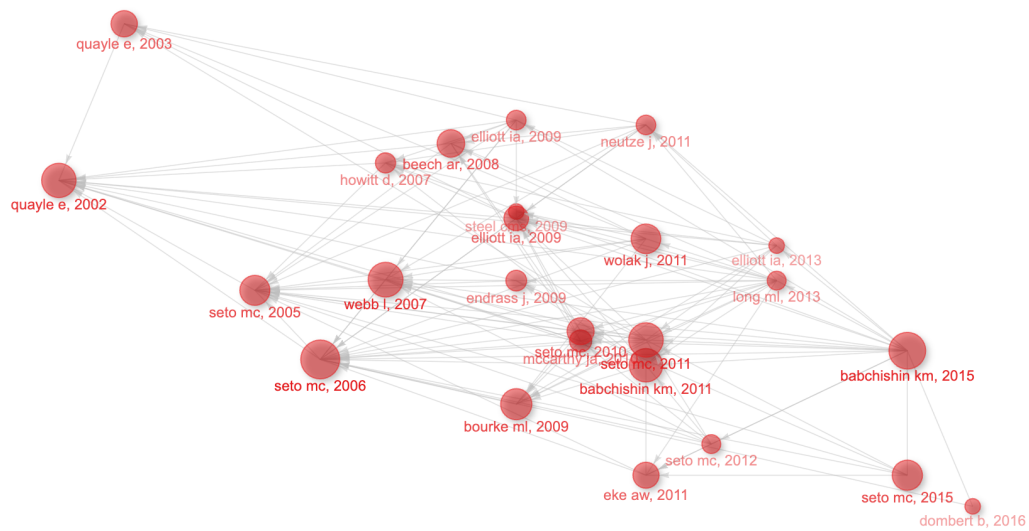


Figure 2

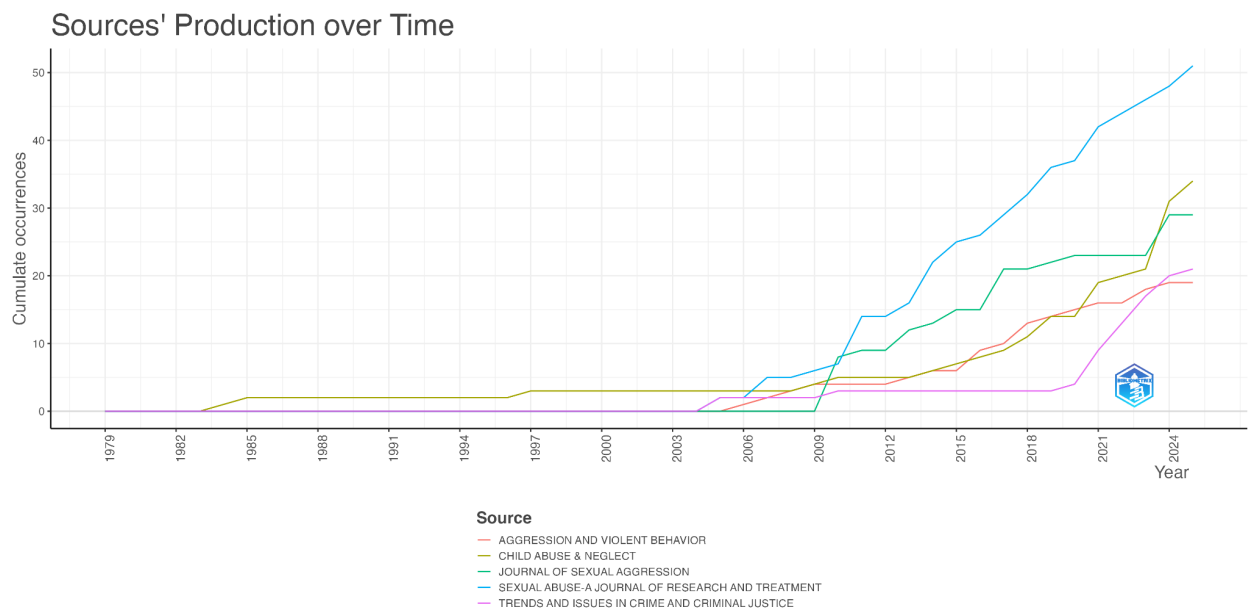


Figure 3

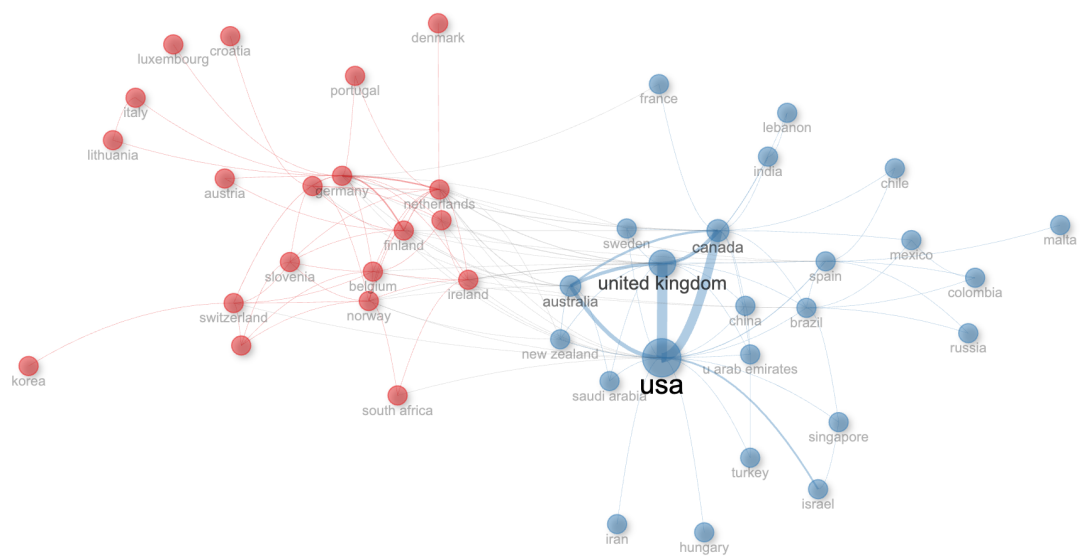


Figure 4

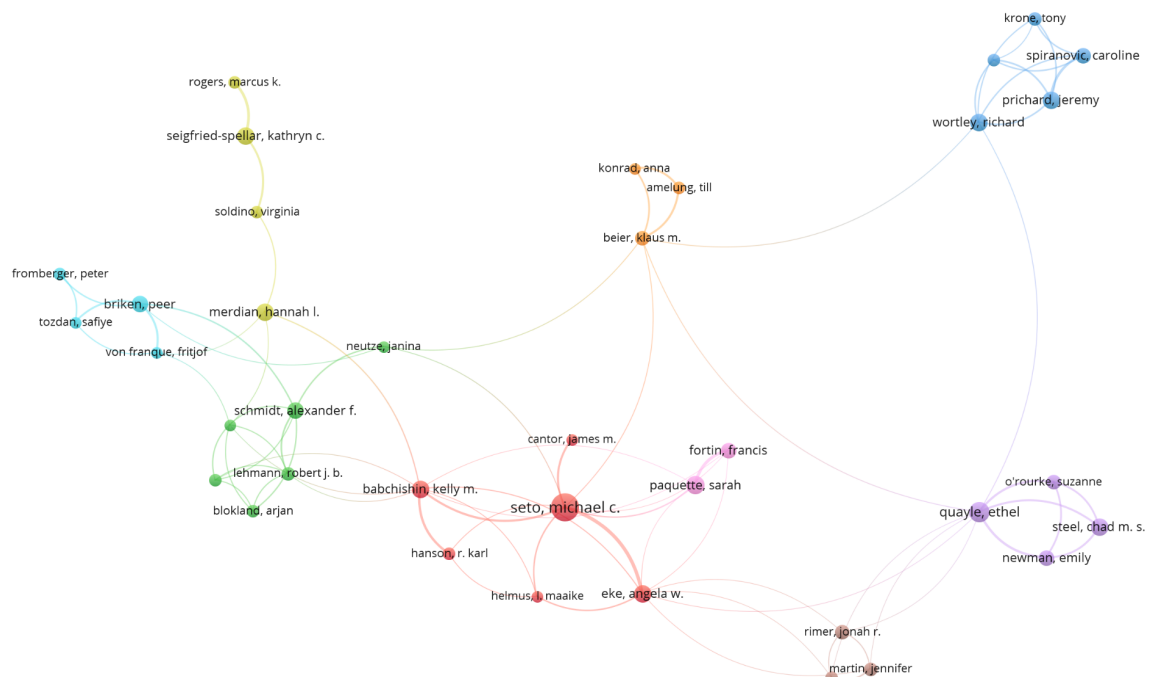


Figure 5

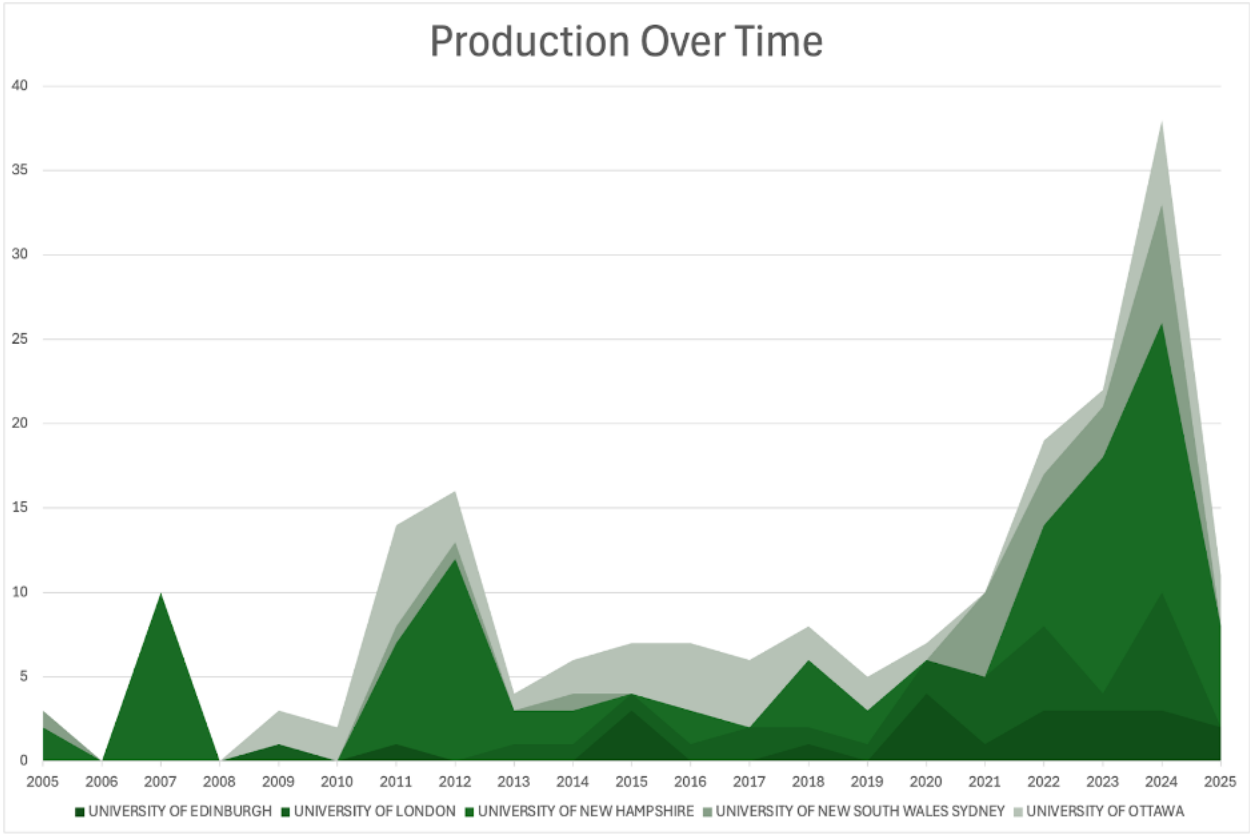


Figure 6

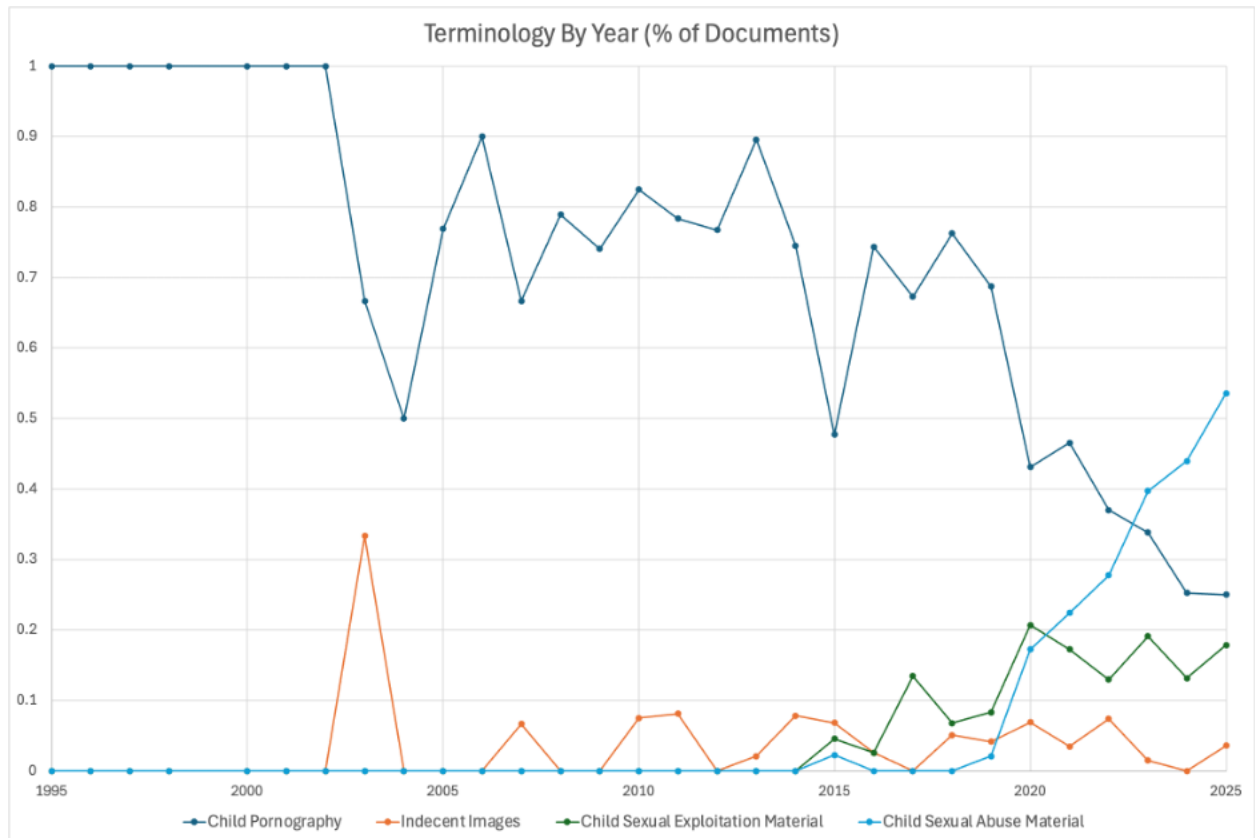


Figure 7

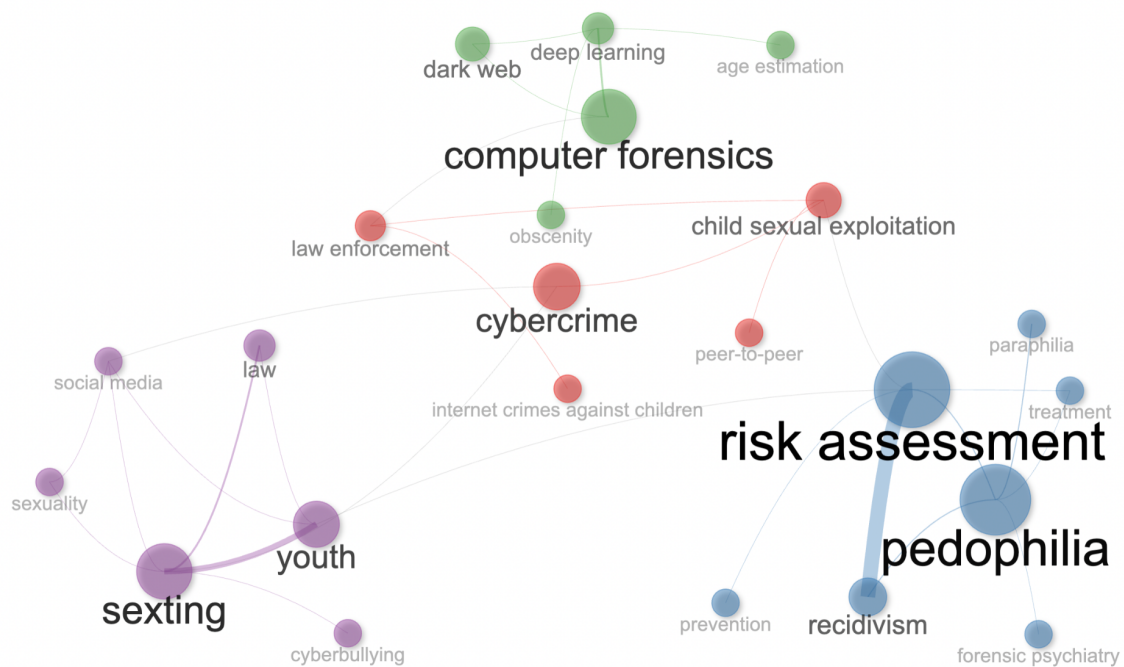


Figure 8