

ARTICLES/ARTÍCULOS

Digital, Media and Parental Competence: A Bibliometric Analysis of Training in the Family

La competencia digital, mediática y parental:
análisis bibliométrico sobre la formación en la familia

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ABSTRACT

Families must navigate their relationship with a society heavily shaped by technology, in which children represent a particularly vulnerable group when parents lack adequate training. Accordingly, the primary objective of this study is to characterise the scientific literature on family training in parental, media and digital competences, using various bibliometric indicators to produce a visual map of the current state of the field. A bibliometric analysis was conducted, following the PRISMA protocol, covering the period from 2000 to 2022. The findings reveal an exponential increase in scholarly interest regarding the training provided to families in these three areas of competence, a growing volume of publications on the topic and the interdisciplinary nature of the research. Notably, research in Spain demonstrates a particularly high level of quality in this field. In conclusion, scientific evidence can contribute to identifying the most effective training approaches and the academic disciplines from which such training should be informed.

KEYWORDS: families; digital competence; media competence; parental competence; bibliometric review.

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RESUMEN

Las familias han de afrontar competentemente su relación con una sociedad muy marcada por la tecnología en la que los menores constituyen un colectivo vulnerable si sus progenitores no se encuentran lo suficientemente formados. Por esto el principal objetivo es caracterizar mediante distintos indicadores bibliométricos la producción científica sobre la formación de las familias en competencias parentales, mediáticas y digitales, permitiendo elaborar un mapa visual del estado de la cuestión. Se ha llevado a cabo una investigación bibliométrica, siguiendo el protocolo PRISMA, en el periodo de análisis 2000-2022. Los resultados evidencian el incremento exponencial del interés científico sobre la formación que ha de ofrecerse a las familias en estas tres competencias, el creciente número de documentos que se publican sobre la misma y la interdisciplinariedad de la temática. Se ha mostrado que en España esta investigación goza de muy buena calidad. En conclusión, la ciencia puede ayudar a identificar la mejor formación posible y desde qué ámbitos de conocimiento enfocarla.

PALABRAS CLAVE: familias; competencia digital; competencia mediática; competencia parental; revisión bibliométrica.

1. Introduction

The family constitutes the first social context in which an individual participates. As such, Martínez-Vasallo (2015) defined it as the primary sphere of social organisation in the life of any minor. Similarly, Benítez (2017) noted that although the family is a universal institution, its development does not occur in isolation but is closely linked to wider society.

Positioning the family within the broader social framework, particularly in relation to internet use in Spain, the *Social Networks Study* (IAB Spain, 2024) reports that 94% of the Spanish population aged between 12 and 74 (approximately 35.5 million people) are internet users, and 86% are active on social media. According to the *Digital News Report Spain* (Amoedo, 2023), seven in ten internet users (67%) use their mobile phones to access information online. Furthermore, the use of smart TVs (30%) is approaching that of computers (33%) as a device for consuming news.

In a society so deeply influenced by technology, the importance of the parental role is particularly salient. As Rubio (2022) argues, being a parent today is increasingly complex due to the challenges posed by a media-saturated and digitised environment. In this context, the exercise of parental competences is inextricably linked to the media and digital competence of parents.

Regarding media competence, UNESCO recognises the essential role that information – and particularly the media – plays in the everyday lives of individuals. Media and information literacy (MIL) is defined as “the process of learning technical, cognitive, social, civic and ethical skills and abilities to analyse content more critically and develop an active stance towards it” (Cucarella and Fuster, 2022, p. 11).

MIL entails enabling “people’s ability to engage critically with information, navigate the online environment safely and responsibly and ensure there can be trust in our information ecosystem and in digital technologies” (UNESCO, n.d.).

Concern among political leaders, educators and parents has grown in relation to strategies for fostering media and information literacy in children.

Various studies (Chen *et al.*, 2020, Song, 2021) highlight how the presence of different digital devices in the home environment – such as televisions, tablets, computers and smartphones – can influence the family’s effectiveness in implementing media literacy practices. In this way, parents can either contribute to or hinder the development of media literacy in their children.

Digital competence refers to “the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society” (Council of Europe, 2018, p. 9). At present, national and international bodies are implementing public education policies aimed at enhancing digital competence and fostering digital citizenship (Paredes-Labra *et al.*, 2021).

At the international level, organisations such as the Joint Information Systems Committee (JISC) in the United Kingdom have undertaken pedagogical initiatives to promote digital literacy (McDougall *et al.*, 2018). Similarly, universities across the globe have developed frameworks to support the advancement of digital literacy (Walton, 2016). These developments underscore the significance of media and digital competences in the lives of minors – competences that must be nurtured not only through formal education, but also via non-formal and informal learning environments, particularly within the family unit.

2. Competence development in the family

2.1. Parental competences and positive parenting

The role of parenting is increasingly perceived as a complex and demanding task, presenting numerous challenges linked to the social, political and technological transformations that have taken place in recent decades. As a result, it is common for parents to experience uncertainty and frequently question how best to respond to various situations encountered in the upbringing of their children (Rubio, 2022). This complexity is further heightened by the growing need to train parents in media and digital competences.

Parental competence is defined by Barudy and Dantagnan (2010) as the “know-how” or practical skills that parents activate in caring for, educating and protecting their children to support their healthy development. Similarly, Gómez and Muñoz (2014) conceptualise it as the continuous acquisition and evolution of knowledge, skills and attitudes that guide parental behaviour in the context of family life and child-rearing. This includes responding to the diverse developmental needs of minors – physical, cognitive, communicative and socio-emotional – with the ultimate aim of ensuring their well-being and the full exercise of their human rights. These authors identify four core domains of parental competence: emotional bonding, educational guidance, protection and reflective capacity.

With regard to family policies, the Council of Europe (2006) issued the Recommendation of the Committee of Ministers to member states on policy to support positive parenting, which outline four key areas of focus: 1) care and protection, addressing children’s need for love and safety; 2) structure and guidance, providing security and predictability by helping children understand rules and accept responsibility for their actions through clear and reasonable limits; 3) recognition, ensuring that children are seen, heard and valued as individuals; and 4) training, understood as fostering the autonomy and independent development of minors.

2.2. Media competence and literacy in the family

According to Ferrés and Piscitelli (2012), media competence encompasses the mastery of knowledge, skills and attitudes across six dimensions: languages, technology, interaction processes, production and dissemination processes, ideology and values, and aesthetics. These are applied within two specific areas – analysis and expression – and are essential for 21st-century citizens, given the continuous and daily exposure to media via platforms such as radio, television and social networks.

The benefits of fostering media and information literacy within the family environment have been widely documented. For instance, Kotrla Topić *et al.* (2020) found that lower use of tablets or smartphones by children for entertainment during a typical week, higher maternal educational levels and more frequent parental engagement in interactive reading were positively associated with improved letter recognition in children.

Similarly, Wang and Xing (2018) emphasised that parental involvement and socio-economic status are significant predictors of children's digital citizenship. This study highlights the importance of fostering positive social change by equipping both parents and educators to promote online safety and digital citizenship.

In a cross-national study, Guess *et al.* (2020) evaluated a media literacy campaign conducted across fourteen countries, which equipped participants with tools to detect fake news. The results indicated a measurable improvement in participants' ability to distinguish between true and false news headlines.

Likewise, Austin *et al.* (2020) assessed a family-centred media literacy intervention designed to empower parents and children aged 9 to 14 to use media critically in order to reduce the influence of marketing, enhance nutritional knowledge, improve food choices within the home and encourage the consumption of fruits and vegetables. The findings underscored the importance of parental and youth media literacy and highlighted the role of family communication dynamics regarding nutrition. Positive outcomes included improved use of nutritional labels by parents and increased fruit and vegetable consumption among children.

2.3. Digital competence development in the family

Digital competence is defined as:

[...] the set of knowledge, skills, attitudes, strategies and values that are put into action when we use ICT and digital media to perform tasks, solve problems, communicate, process information, collaborate, create and share content and create knowledge in an effective, efficient, appropriate, critical, creative, autonomous, flexible, ethical and reflective way for work, leisure, participation, learning, socialisation, consumption and empowerment (Ferrari, 2012, p. 30).

Although access to information and communication technologies (ICT) appears to be largely resolved due to their ubiquity, a phenomenon known as the triple digital divide persists. This divide comprises three dimensions: access (physical, motivational and literacy-related), use (including device type, frequency, duration, location and associated skills) and appropriation, which refers to meaningful use and the actual benefits ICT offers in everyday life (Gómez-Navarro *et al.*, 2020).

According to Paredes-Labra *et al.* (2021), it is not sufficient to possess basic ICT skills; instead, a comprehensive mastery is required – one that integrates new technological environments into the daily lives of citizens. This broader vision enables the full development of digital citizenship, encompassing dimensions such as social justice, emancipatory and alternative technologies, and collective identities, as also suggested by Fernández-Prados *et al.* (2021).

In this regard, the European Commission undertook the task of mapping the components required for the meaningful use of ICT, culminating in the European Digital Competence Framework for Citizens (DigComp) (Ferrari, 2013). The objective of DigComp is to guide the development of digital competence from an early age, in order to enable individuals to derive benefits from the internet across social, economic, political, health and cultural domains (Van Deursen, 2010). DigComp adopts a comprehensive perspective, identifying five core areas of digital competence: 1) information, 2) communication, 3) content creation, 4) safety and 5) problem solving (European Commission, 2014; Ferrari *et al.*, 2014; European Commission, 2016).

As a result of this initiative, and through various regulatory developments recognising digital competence as a basic skill within compulsory education, Spain formally integrated it into its educational legislation in 2006 (Paredes-Labra *et al.*, 2021).

Furthermore, a study conducted among education degree students at the International University of Valencia (Cuevas *et al.*, 2020) found that participants viewed the family as more responsible than the school for promoting digital competence, identifying it as a key agent in the development of minors.

2.4. Parent training programmes

The interrelation between parental, media and digital competences is widely acknowledged, as is the imperative for specific training for parents. In response, various online initiatives have been developed to support families in enhancing these competences. One such initiative is *Media Detective Family*,¹ an online programme aimed at protecting young children against the persuasive effect of tobacco and alcohol marketing. Through structured activities and media analysis tasks, families are encouraged to uncover hidden advertising messages. According to its developers, the

programme effectively reduces underage drinking and tobacco use, and is described by participating families as engaging, age-appropriate and easy to use.

Scull *et al.* (2020) evaluated the use of *Media Detective Family* in a sample of 83 families, confirming its effectiveness as an online prevention strategy to reduce substance use in minors.

Similar initiatives include the *Parent-Based Media Literacy Education and Parent-Child Communication Program for the Prevention of Substance Use Among Middle School-Aged Students*², which provides self-paced, interactive training for parents. This programme integrates media literacy and mediation skills with knowledge of child development and substance use, while also promoting effective parent-child communication through a customisable software application.

Focusing on sexual health, the *Media Aware Parent programme*³ offers an interactive online learning environment that supports parents in communicating with adolescents around issues of media influence and sexual health. It aims to improve communication and mediation skills and offers medically accurate, evidence-based information on sexual health. Scull *et al.* (2020) evaluated the *Media Aware Parent programme* in a study involving 56 parents of seventh and eighth-grade students in the United States. Their findings indicated that the programme fostered new conversations around sexual health and reinforced the importance of open parent-adolescent dialogue.

*Innovation Research & Training (iRT)*⁴ is a behavioural science research organisation that focuses on identifying and resolving important real-world problems for children, families, communities and organisations. By applying scientific theories, empirical findings and methodological approaches, iRT researchers design and evaluate behavioural, educational, psychological, social and community-based assessment, prevention and intervention programmes and services. Key initiatives include online media literacy programmes for families, substance use prevention projects targeting primary school pupils and workshops for families addressing the same issue.

At the national level in Spain, the National Cybersecurity Institute (INCIBE)⁵, under the Ministry of Economic Affairs and Digital Transformation, provides further support for families. The primary aim of this institute is to strengthen digital trust, enhance cybersecurity and resilience, and contribute to the digital economy by promoting the safe use of cyberspace in Spain. INCIBE offers a dedicated section for families on its website, which includes educational resources on digital literacy, parental mediation, cybersecurity and tools for parental control.

2.5. Parental training in scientific research

As previously discussed, various training initiatives have been developed to support families. In the context of Spain, Ramírez-García and Aguaded-Gómez (2020) identified seventeen programmes aimed at family training, using the WoS, Scopus and Dialnet databases as reference sources. According to several authors (Carneiro-Barrera *et al.*, 2019; Cabrera, 2020), it is essential to conduct studies that examine publications addressing a specific topic over a defined period. To this end, bibliometric studies, understood as a branch of scientometrics, are necessary (Marín-Aranguren and Trejos-Mateu, 2019).

Bibliometrics functions as a tool for analysing research activity through indicators derived from scientific output (Mingers and Leydesdorff, 2015). These indicators capture diverse dimensions of scientific production, such as the generation of new knowledge, its impact as reflected in citation analysis (Waltman, 2016), its multidisciplinary nature (Arencibia-Jorge *et al.*, 2022) and the formation of collaborative networks (Ding *et al.*, 2014). When applied appropriately, these indicators can be used to characterise institutions, countries, disciplines or fields of study (Van Raan, 2005), offering valuable insights for the development of scientific policies and research strategies aligned with societal and scientific demands and challenges.

A notable precedent for bibliometric studies related to family training can be found in the work of Ruiz-Marín and Hernández-Prados (2016), who emphasised the importance of coordinated, professional approaches to family education. Nevertheless, there remains a notable scarcity of bibliometric studies specifically focused on the family – particularly those addressing the intersection of digital, media and parental competences. This gap highlights the relevance and timeliness of the present research. The objective of this study is therefore to provide a foundational characterisation of the scientific literature on family training in parental, media and digital competences. Using a range of bibliometric indicators, the analysis will be conducted at both the international level and with special attention to Spain. The findings will enable the development of a comprehensive map of the current state of research on the topic, allowing for the quantification of scholarly output, the identification of under- and over-researched areas and the mapping of patterns and networks of scientific collaboration.

3. Methodology

The present study employs bibliometrics as a methodological approach to analyse scientific production. To ensure clarity and transparency in the presentation of the research process, the PRISMA 2020 protocol was followed (see Figure 1).

Regarding the metric data, the Scopus database was selected as the primary data source, in line with the criteria established by Visser *et al.* (2021). Data were retrieved during the period from 1 to 15 September 2023. The timeframe of analysis spans from the year 2000 to 2022. This range was deliberately chosen based on a preliminary review, which revealed that documents published prior to 2000 significantly skewed the results, as their content was largely unrelated to the focus of the present study. The search strategy was designed in consultation with experts in the relevant field, aiming to strike a balance between comprehensiveness and precision. Care was taken to avoid retrieving articles that, although methodologically related, diverged substantially from the core subject of the research.

A total of 4,316 documents were retrieved, of which 4,294 were successfully imported. The loss of 22 documents was due to technical issues and connection errors between the tools used (Scopus and SciVal). However, this minor data loss did not affect the overall integrity of the analysis. The data exported from Scopus consisted of the full metadata associated with the scientific publications.

To process and visualise the large volume of data and their interrelationships, network analysis was employed, providing visual insight into the structure of the dataset. A further advantage of this approach is the use of clustering techniques, which group nodes according to the strength of their interrelations.

For the analysis of co-word, category and international collaboration networks, the visualisation software VOSviewer (version 1.6.19) was used.

Initial graph outputs revealed the presence of ambiguous terminology, as well as the use of plurals, synonyms and indexing terms generated by the Scopus algorithm. Based on a preliminary analysis of the keywords extracted from VOSviewer, a thesaurus was constructed using occurrence and relevance data to inform the layout process. This enabled the refinement of the visual maps by focusing on the top 1,000 terms with an occurrence threshold of ≥ 5 , while excluding non-significant or redundant terms.

Figure 1
Methodological indicators of the study

Indicator	Description	Justification
Eligibility criteria	<ol style="list-style-type: none"> 1. Study period: 23 years (2000–2022) 2. Document typology: all types encoded in the database 	<ol style="list-style-type: none"> 1. Start of search: beginning of the millennium. 2a. Address each of the possible disciplines involved 2b. Different publication and citation patterns according to researchers' area of knowledge
Sources of information	<ol style="list-style-type: none"> 1. Scopus 2. SciVal (metrics) 	<ol style="list-style-type: none"> 1a. Greater journal coverage 1b. Higher total citation count 1c. Greater coverage by scientific discipline 1d. Greater categorisation
Search strategy	<p>TITLE-ABS-KEY ("digital skills" OR "media skills" OR "parenting skills" OR "parenting competence" OR "parental media use" OR "media education" OR "positive parenting" OR "digital competence" OR "media competence" OR "media information literacy") AND (TITLE-ABS-KEY ("traini*") OR TITLE-ABS-KEY ("program*")) AND PUBYEAR > 1999 AND PUBYEAR < 2023</p>	<p>General search of terms representing main area of interest</p>
Study selection process	<ol style="list-style-type: none"> 1. Consultation date: 01/09/2023–15/09/2023 2. Search field: "Title", "Abstract" and "KeyWords" 3. Selection: whether or not the work is indexed in the database 	<p>Article textual content fields commonly used in bibliographic information retrieval</p>
Data extraction process	<ol style="list-style-type: none"> 1. Exported in CSV format for processing in Microsoft Access database and analysis via SciVal 2. Post-processing conducted in Microsoft Excel 3. Use of VOSviewer software version 1.6.19 4. List of journals indexed in Scopus downloaded and integrated into the ad hoc system 	<ol style="list-style-type: none"> 1. Analysis and generation of indicators 2. Production and category data exported to generate graphs 3. Information processing (co-word, category and country collaboration networks) 4. Categorisation of retrieved works: 27 major scientific areas and 334 thematic categories
List of data	<ol style="list-style-type: none"> 1. Scopus, N = 4,316 – 22 documents (N = 4,294) 2. SciVal. Metrics: N works, N citations, % works cited at least once, average citation per work, % works published in Q1 and D1 journals according to the SJR indicator, % of works in D1 by global citation volume, normalised impact by category vs world average, and % of works produced in international collaboration 	<ol style="list-style-type: none"> 1a. Snowball Metrics, n.d.

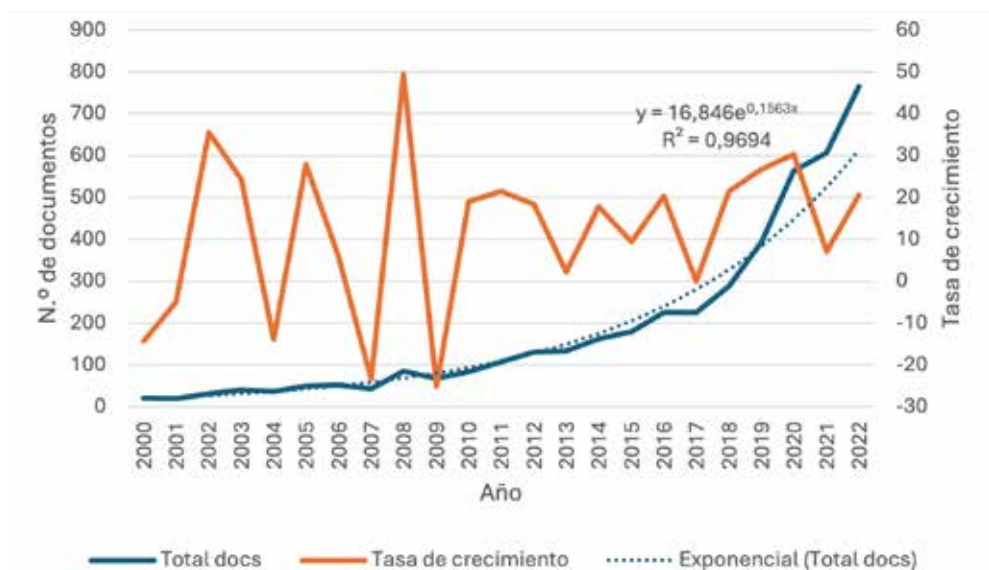
Source: own research.

4. Results

By analysing the production data, a continuous and growing interest in the subject under study is evident, as can be seen in the sustained growth rate and the stable upward trend in production since 2010. Notably, a marked increase in output is detected from 2018 onwards, which may be attributed to various public initiatives in the previous two years – such as the key documents published by the European Commission in 2014 and 2016 (see Figure 2).

Figure 2

Evolution of scientific production



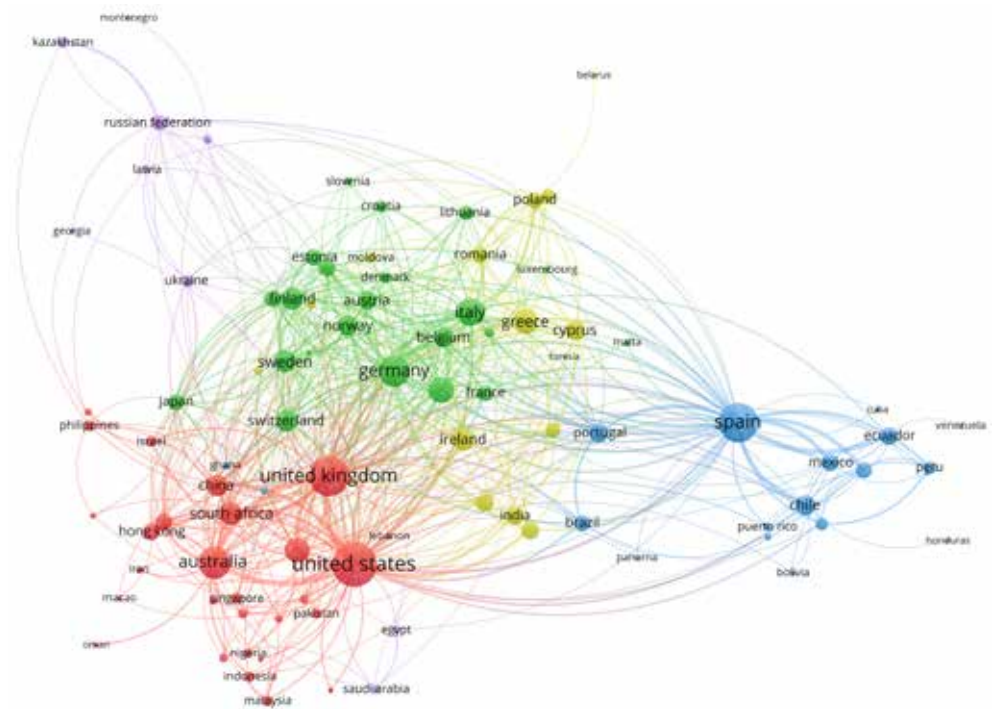
Source: own research.

The results indicate that 120 countries contribute to the scientific production related to the study's focus, with 75.32% of the output concentrated in just 10 countries, each producing at least 100 documents. These leading countries, ranked by production volume, are the United States, Spain, United Kingdom, Australia, Germany, Russia, Canada, Italy, the Netherlands and Portugal. It is important to note that collaborative relationships can sometimes cause inflated counts due to co-authorship between countries. Figure 3 presents a social network analysis of country-level collaboration, where nodes represent countries and illustrate the structure of their existing collaborative relationships. The colour clusters formed reveal a clear tendency to group countries based on geographical proximity – such as within the European

Union – and/or shared cultural or linguistic ties, for example, the United Kingdom with its former colonies, and Spain with Latin America. Additionally, the research interest in this topic across different regions may reflect the influence of public policies implemented in those areas.

Figure 3

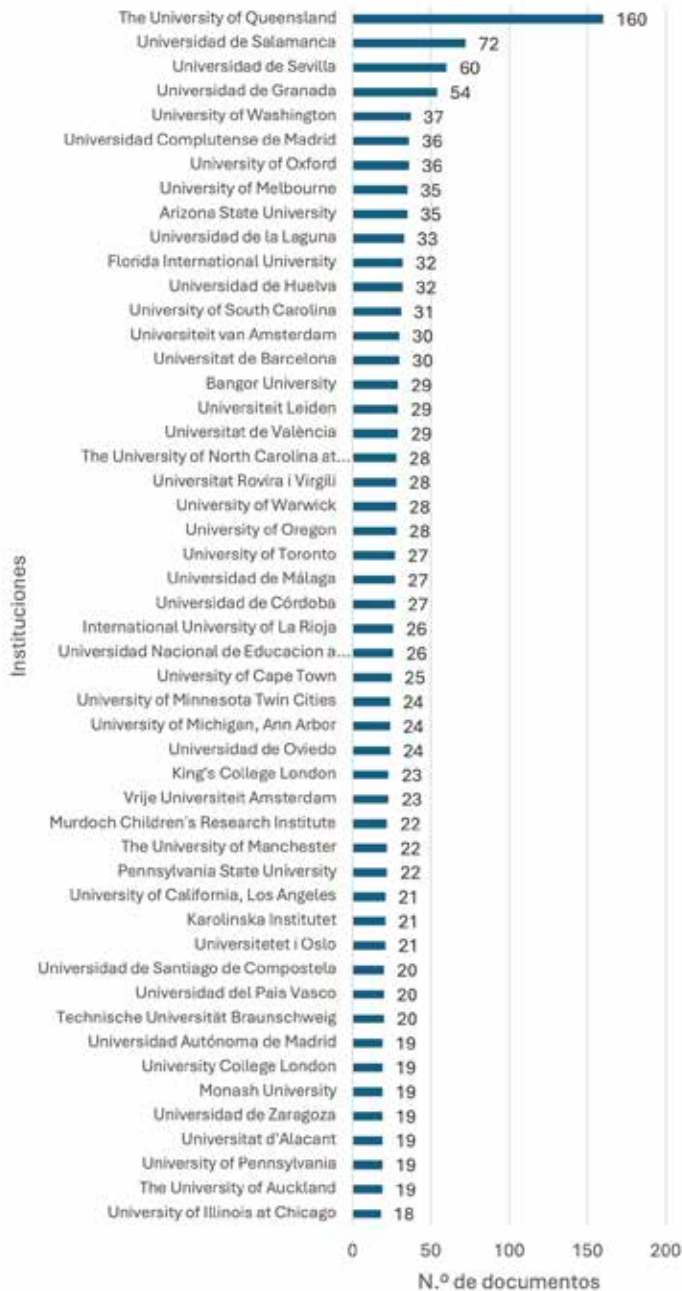
Structure of relationships between countries



Source: own research.

The analysis of the leading institutions (Figure 4) highlights that Spain is notably represented, with 19 universities among the top 50 producers. Overall, Spain has 32 universities with a production of 10 or more documents included in the international ranking.

Figure 4
Main producing institutions (number of documents)

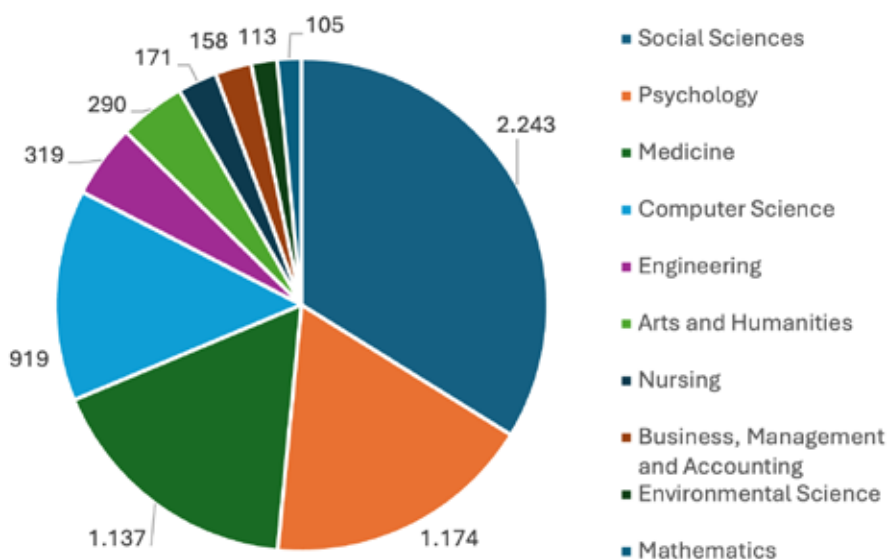


Source: own research.

The analysis of document typologies provides insight into how scientific knowledge is communicated across disciplines. While “Article” dominates the dataset with 3,124 documents, other types such as “Conference article” (597), common in engineering-related fields, and “Book chapter” (250), “Reviews” (236) and “Book” (29), which are more prevalent in the humanities, also hold significant presence. As illustrated in Figure 5, the majority of retrieved documents (≥ 100) are classified within major areas such as social sciences, psychology, medicine and computer science. Scopus categorises scientific knowledge into 27 broad areas, with this dataset covering 26 of them. Some documents appear in categories distant from the study topic due to retrieval noise – unavoidable without manual filtering – but these outliers do not significantly affect the overall counts or the interpretation of subsequent visualisations.

Figure 5

Main thematic areas (≥ 100 documents)



Source: own research.

In addition to the major areas, Scopus classifies knowledge into 334 more specific categories. Analysing the categories assigned to journals provides a more detailed insight into specific content. Due to imperfect matching between Scopus document

titles and the indexed journal list in the database, some documents are lost in this process. On this occasion, the losses consist mainly of conference articles, books and book chapters, totalling 476 documents from 396 sources. This represents an effective pairing of 88.97% of the documents, which is sufficiently significant to carry out a categorisation analysis (see Figure 6). The results show that education, psychology and health are the primary focuses, followed by technology-related fields.

Figure 6

Production by categories (≥ 100 documents)

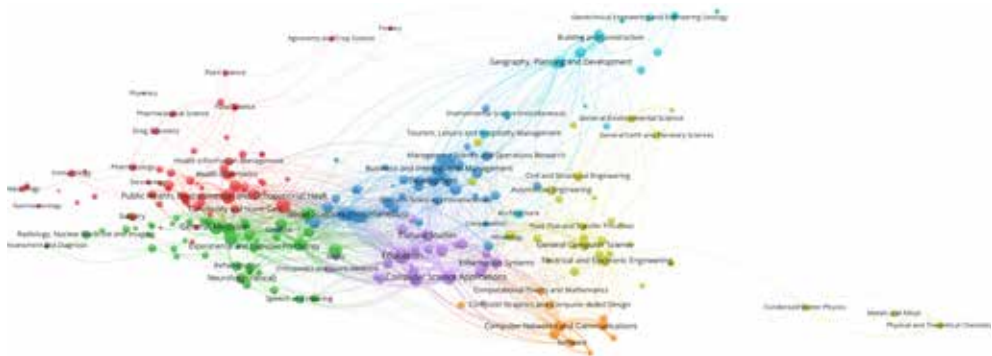


Source: own research.

The complete study based on the network analysis of category relationships supports the above, as shown in Figure 7 and detailed further in Annex 1. In this case, the representation was created from a relationship matrix where the nodes (Scopus categories) are connected by lines (edges) based on their co-occurrence in documents.

The centrality of social and educational perspectives in studies on training in the competences examined is justified by the intermediation of categories in the blue and violet clusters (Figure 7). Notably, there is a clear connection between health and behavioural sciences, including medicine and psychology. Links also exist between education sciences (purple cluster) and computer sciences (orange cluster), engineering (green cluster) and social sciences (blue cluster). Finally, relationships among education sciences (purple cluster), social sciences (blue cluster) and behavioural sciences (green cluster) are evident.

Figure 7
Category co-occurrence map



Source: own research.

On the other hand, Table 1 presents a broad overview of the data set. While the overall data offer insights into the quality of the research analysed in this study, a comparative analysis with Spain across different thematic areas reinforces this view. For example, by examining a sample of the five main categories by production volume (Table 2), it is evident that nearly all relative indicators in our data set exceed those of the corresponding categories in Spain. The only exception is the percentage of international collaboration, which is lower in our data set; however, this is justified by the more localised nature of these research lines and training programmes developed within the country.

Table 1

Metrics of the analysed documents

Indicator	Description	Documents
Docs	Documents	4294
Citations	Citations	84552
C x D	Citations per document	19.7
% Q1	% documents in Q1 (according to SJR)	43.7
% D1	% documents in D1 (according to SJR)	18.7
% docs cit.	% documents cited	83.9
% docs 10%	% documents within the 10% most cited worldwide	12.3
FWCI	Field-weighted citation impact (FWCI)	1.27
% inter. collab.	% international collaboration	17
% nat. collab.	% national collaboration	34.1

Source: own research. SJR: SCImago Journal Rank.

Table 2

Indicators of the main categories by volume of production

	Docs.	Citations	C x D	% Q1	% D1	% docs cit.	% docs 10%	FWCI	% inter. collab.	% nat. collab.
Education										
Study data	1275	19945	15.6	28.3	10.1	87.8	13.3	1.55	16.2	27.9
Spain	37781	443045	11.7	24.4	9.1	82.7	5.9	1.05	22.8	21.3
Developmental and Educational Psychology										
Study data	635	22254	35	25.5	14.2	93.7	18.7	1.33	18.1	40.3
Spain	9380	179389	19.1	23.5	7.9	90.4	10.1	1	31.7	25.2
Psychiatry and Mental Health										
Study data	391	18989	48.6	53	28.8	93.4	23.5	1.39	19.4	47.1
Spain	21127	615809	29.1	54.9	25.5	89.5	16.8	1.27	42.4	33.3
Paediatrics, Perinatology and Child Health										
Study data	328	12472	38	57.4	34	93	20.4	1.46	14	49.1
Spain	21397	249881	11.7	24.8	9.6	70.2	5.4	0.78	19.2	35.8
Public Health, Environmental and Occupational Health										
Study data	309	9011	29.2	50.5	17.1	92.6	17.2	1.21	25.2	45.6
Spain	29303	613852	20.9	35.2	17	87.5	12.6	1.09	40.1	32.6

Source: own research.

5. Discussion of results and conclusions

The objective of this study is to provide a foundational characterisation of the scientific literature on family training in parental, media and digital competences using a range of bibliometric indicators at both the international level and with special attention to Spain. The result is the creation of a visual map outlining the current state of research on the topic.

The findings reveal an exponential growth in scientific interest in training families across different competences – media, digital and parental. The data indicate a steady increase in the number of publications addressing this subject. This growth may be linked to regulatory frameworks and initiatives such as those by the Council of Europe (2006) and the European Commission (2014, 2016) promoting positive parenting and digital competence and UNESCO's advocacy for media and information literacy.

The fact that countries such as Spain, Germany, Italy, the Netherlands and Portugal rank among the top ten producers in this field further supports this assumption, especially considering Europe's DigComp framework for digital competence development.

Regarding document typologies, journal articles dominate the dataset, reflecting standard scientific dissemination practices. However, there is also a significant presence of conference articles, reviews, books and book chapters, highlighting the interdisciplinary nature of this research area. This interdisciplinarity is further supported by the analysis of the main thematic areas of these publications, which include social sciences, psychology, medicine, computer science, engineering, arts and humanities, nursing, management and business, among others. Network analysis of subject categories also confirms this broad interdisciplinary approach.

Scientific collaboration is increasingly essential in contemporary research, as it enhances visibility through citations (Guerrero–Bote *et al.*, 2013) and fosters interdisciplinarity – especially critical for parental training, given the family's fundamental societal role.

Regardless of theoretical considerations and the literature on measuring interdisciplinarity in science (Ávila–Robinson *et al.*, 2021), this research demonstrates that the topic spans nearly all thematic areas defined by Scopus.

Through various bibliometric indicators, we have successfully mapped and visualised the scientific production related to family training in digital, media and parental competences.

Nevertheless, a key limitation of this study lies in the need for deeper analysis of each document selected to determine whether they describe institutional training programmes specifically aimed at developing families' digital, media or parental competences or researcher-led initiatives and proposals. Future work could also scrutinise the strengths and weaknesses of these programmes, identifying those with the greatest potential for success. Additionally, it would be beneficial to categorise the thematic focus of these programmes, such as nutrition, fake news detection, environmental issues or violence prevention.

Despite its interdisciplinary scope, the metric analysis of the dataset compared to Spain in the main categories confirms the high quality of this research. Nearly all bibliometric indicators for this dataset exceed those for Spain in the corresponding categories. Citation data in particular illustrate the visibility and impact of these works on subsequent research. Fields such as education, developmental psychology, psychiatry, paediatrics, child health and public health stand out, with field-weighted impact values (FWCI) consistently above both the global and Spanish averages. Similarly, the proportion of works within the top 10% most cited globally underscores the excellence of the science produced.

Furthermore, as a continuation of this research, we propose comparing the results with emerging metric frameworks derived from the interaction between scientific communication and social media, which enable the study of science's behaviour in academia in relation to society at large. Altmetrics, although still in early stages with varying data source reliability (Ortega, 2018), are gaining recognition as indicators of the social impact of research and represent a promising avenue for future studies.

In short, families must be well equipped to navigate a screen-dominated society where children are particularly vulnerable if their parents lack sufficient training. Scientific research can help identify the most effective training approaches and the disciplines best suited to develop them.

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