

Exploring Research Trends in Developmental Psychology: A Bibliometric Study with Vosviewer

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Abstract

The field of developmental psychology has undergone significant evolution over the years, reflecting diverse theoretical frameworks, methodological approaches, and research interests. As this discipline continues to grow, it becomes important to understand the trends and shifts that characterize its development. The purpose of this study is to explore research trends in developmental psychology over the past two decades using literature review through bibliometric analysis. This study utilizes 200 articles related to developmental psychology, published between 2004 and 2024, from international journals indexed in Scopus. The research trends in developmental psychology are visualized using the *VOSviewer* software version 1.6.20. The results indicate that research trends in developmental psychology have been declining over the past 20 years. It is recommended that future research in developmental psychology explore underrepresented topics, such as the relationship between friendship and grit or personality and trauma, to diversify and deepen the field's understanding. Finally, by studying research trends in developmental psychology across different periods, this study identifies key research hotspots and their evolution within the field. We hope that these findings will contribute and support the continued advancement and growth of developmental psychology field.

Keywords: Developmental psychology, Bibliometrics, Citation Measurements

Introduction

The scientific discipline of psychology emerged with the establishment of Wundt's Laboratory in Leipzig in 1879, marking the end of the nineteenth century (Harper, 1950). However, since the origins of psychology as a field, general psychology and developmental psychology have had distinct and independent pathways (Airenti, 2019). General psychology is the comprehensive study of the fundamental principles, issues, and methodologies that form the foundation of the field of psychology (APA Dictionary of Psychology, 2018). In contrast, developmental psych is a scientific field that explores the mind and behavior by focusing on

how these change during the entire lifespan of individuals (Daum & Manfredi, 2023). Thus, this specialization focuses on studying the complex mechanisms of growth, adaptation, and change that occur from infancy to adulthood, emphasizing how biological, cognitive, and social factors interplay across different stages of development.

Throughout the years, the publication trends in the field of developmental psychology show a dynamic interaction between theoretical innovation, methodological advances, and practical application as the discipline continues to evolve. The continuous advancement in this field highlights the significance of developmental psychology in comprehending and tackling the complexities of human development across lifespan. Integrating previous research findings is essential to develop a particular field of research (Zupic & Čater, 2014). In order to accomplish this, we choose the scientific mapping method, which relies on a quantitative approach and is increasingly used to illustrate the development within study areas.

Several review techniques, including meta-analysis, systematic literature review, and bibliometric analysis, can be utilized for handling the literature database. Bibliometric analysis is a valuable approach for studying the progress of academic disciplines that are important in assessing scholarly output (Ambhore & Ofori, 2023). Bibliometric analysis assists in minimizing the interpretation bias that is present in systematic literature reviews, which require a defined scope of study, and meta-analysis, which requires the homogeneity of a research field (Behl et al., 2022; Fernandes et al., 2022; Kaur et al., 2024). Therefore, this research provides the need for bibliometric studies on developmental psychology. It aims to identify any emerging problems or gaps in the field that should be addressed in future research.

In this study, we will use a software called *VOSviewer* for visualization. This software will assist in data processing to create a visual representation based on the mapping focus. *VOSviewer* is used to construct and visualize bibliometric networks. Using the results from *VOSviewer*, a descriptive overview of the analysis of scientific publication trends in the field of developmental psychology will be created. The research questions in this study are as follows: (1) What are the trends in publication of articles in the field of developmental psychology from 2004 to 2024? (2) What are the most cited articles in developmental psychology during the period from 2004 to 2024? (3) What are the trends in author keywords in articles within the field of developmental psychology? (4) How have abstract terms in the field of developmental psychology evolved from 2004 to 2024?.

Therefore, this study seeks to enhance the area of developmental psychology by offering a thorough examination of the trends in publications, patterns of citations, author keywords, and abstract terms within the last twenty years. A 20-year timeframe in bibliometric analysis provides a comprehensive view of developmental psychology's evolution, capturing both foundational theories and emerging trends. This extended period allows researchers to observe gradual shifts in focus, methodology, and theoretical frameworks, which may be missed in shorter analyses. It also highlights sustained influences and responses to societal or technological changes, offering a balanced perspective essential for identifying long-term patterns, persistent topics, and new research opportunities in the field. Moreover, it will identify important patterns and areas for future research. The findings will not only improve our comprehension of the present condition of the discipline but also

guide future research endeavors, guaranteeing that new issues and deficiencies are successfully tackled.

Materials and Methods

This study implemented a quantitative descriptive method to depict the research data. The review focused on articles from international scientific journals indexed in Scopus, using the keyword "Developmental Psychology" for the 20-year period from 2004 to 2024. The data were analyzed using the VOSviewer application. Several sources have outlined five essential steps for conducting a bibliometric analysis (Fahimnia et al., 2015; Setyaningsih et al., 2018). These steps are illustrated in Figure 1.

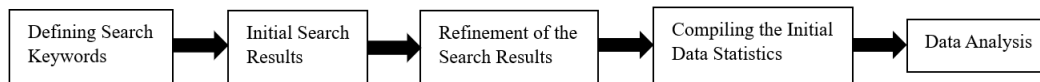


Figure 1. The steps of bibliometric analysis

Results

Based on data obtained using the Publish or Perish software, a search was conducted for a maximum of 200 articles with the keyword "Developmental Psychology," published in journals over the past 20 years, from 2004 to 2024. Table 1 presents the data for the most cited articles on the topic of Developmental Psychology. The number of keywords related to the research topic was then linked to the VOSviewer software. Subsequently, the dataset of research articles was compiled to analyze the relationships between these terms.

Table 1

The Most Cited Articles in Developmental Psychology

No.	Citation	Title	Publication	Year
1	3367	The lifelong effects of early childhood adversity and toxic stress	Pediatrics	2012
2	2986	Understanding and sharing intentions: The origins of cultural cognition	Behavioral and Brain Sciences	2005
3	2769	Applying the rasch model: Fundamental measurement in the human sciences	Psychology Press, second edition	2007
4	2103	The functional architecture of human empathy	Behavioral and cognitive neuroscience reviews	2004
5	1708	Group-based trajectory modeling in clinical research	Annual Review of Clinical Psychology	2010
6	1624	A Developmental Perspective on Executive Function	Child Development	2010
7	1595	The age of adolescence	The Lancet Child and Adolescent Health	2018
8	1521	Development of cognitive control and executive functions from 4 to 13 years: Evidence from manipulations of memory, inhibition, and task switching.	Neuropsychologia	2006

9	1491	Simulating Minds: The Philosophy, Psychology, and Neuroscience of Mindreading	Oxford University Press	2006
10	1482	The adolescent brain	Annals of the New York Academy of Sciences	2008

Discussion

Based on Table 1, it can be seen that the most frequently cited topics within the scope of developmental psychology are early childhood diversity (Shonkoff et al., 2012), origins of cultural cognition (Tomasello et al., 2005), measurement in the human sciences (Bond & Fox, 2007), empathy (Decety & Jackson, 2004), group trajectory modeling in research (Nagin & Odgers, 2010), developmental perspective on executive function (EF) (Best & Miller, 2010), adolescence (Sawyer et al., 2018), cognitive control development (Davidson et al., 2006), minds (Goldman, 2006), and cognitive development of adolescents (Casey et al., 2008).

Furthermore, one way to assess the quality of a scientific publication is by counting how many times the work has been cited by other researchers (Herawati et al., 2022). Additionally, the citation of a scientific work signifies its usefulness in the field of knowledge. In this study, the citation analysis results indicate that the number of citations per year from internationally accredited Scopus journals from 2004 to 2024 is 7,156.15 citations.

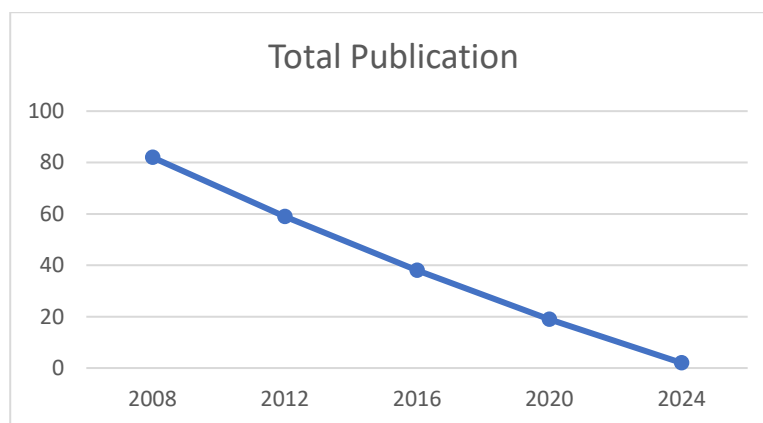


Figure 2. The Trend of Publications in Developmental Psychology

Moreover, Figure 2 shows the graph of the development of research in developmental psychology published in journals indexed by Scopus. The highest number of publications occurred in 2009 with 20 publications. In contrast, as of 2024, no articles in the field of developmental psychology have been published. Additionally, the number of publications in developmental psychology has been significantly declining year by year. The analysis of research areas in developmental psychology reveals 12 clusters, as shown in Table 2 below:

Table 2

Cluster Analysis of Developmental Psychology

Cluster	Items
Cluster 1 (29 items)	Adolescence, adolescents, aggressiveness, attachment, authoritarian, children, classroom environment, communication between parents and children, emotion regulation, ex post facto study, family communication, family environment, friendship quality, influence, interpersonal communication, parent-child relationship, parental

- phubbing, parenting styles, perspective taking, problematic mobile phone use, psychosocial functioning, questionnaire development, reactive and proactive aggression, relational aggression, relational communication, school aggression, self-control, self-report questionnaire, social-emotional functioning.
- Cluster 2 (21 items)** Adjustment disorders / epidemiology, adjustment disorders / psychology*, adolescent behavior / psychology*, child, child behavior / psychology*, child behavior disorders / psychology, crime victims / psychology*, female, friends / psychology*, internal-external control, male, parent-child relations, parent-child relations*, parenting / psychology, peer group*, personality disorders / epidemiology, personality disorders / psychology*, regression analysis, social behavior, social support, united states.
- Cluster 3 (18 items)** Adjustment, aggressive behavior, aggressive trauma, attitudes toward the future, brain, drug, high school students, instrumental aggression, interpersonal relationships, meta-analysis, proactive aggression, psychobiology, reactive aggression, research synthesis, school burnout, self management, structural equation model, subjective well-being.
- Cluster 4 (17 items)** Adolescent behavior*, adolescent*, aggression*, attitude, bullying, communication, depression / epidemiology, educational status, empathy, family relations, loneliness, personal satisfaction, psychological / epidemiology, psychology, self concept, stress, surveys and questionnaires.
- Cluster 5 (17 items)** Adolescent, aggression, anxiety, behavior, girls, infants, intellectual and developmental disabilities, interpersonal communication, relational, revised children's manifest anxiety scale, self-injurious behavior, stereotyped behavior, students, the aggression questionnaire, toddlers, verbal, verbal aggression.
- Cluster 6 (17 items)** Adult, aggression / psychology, anger, anxiety / psychology, choice behavior, educational status*, emotional regulation*, emotions, humans, intelligence*, internal-external control*, mental health, middle aged, personality assessment, self efficacy, social adjustment*, young adult.
- Cluster 7 (16 items)** Antisocial, borderline, collectivism/individualism, cross-cultural, dynamic transactionism, friendship, happiness, health, ofstede's cultural dimensions, longitudinal studies, peer relations, personality, personality disorders, social network approach, violence, world values survey (wvs).
- Cluster 8 (15 items)** Adolescent behavior / ethnology, black of African American / psychology, black of African American / statistics & numerical data, cross-sectional studies, emotions*, mental health services / organization & administration, school health services / organization & administration, self efficacy*, sex factors, south Carolina / epidemiology, violence / ethnology, violence / psychology*, weapons, white people / psychology, white people / statistics & numerical data.
- Cluster 9 (13 items)** Aggressive, compassionate care, emotional intelligence, grit, keyword: emotional intelligence, nurses, nursing, nursing education, nursing education, nursing students, relationship, self-compassion, the pearson product moment correlation methodology, university students.
- Cluster 10 (11 items)** Aggression / psychology*, behavioral symptoms / epidemiology, behavioral symptoms / etiology, behavioral symptoms / psychology,

- human development / physiology*, infant, interpersonal relations, intimate partner violence, popular culture*, preschool, risk factors.
- Cluster 11 (9 items)** Cognition, crime victims / psychology, interpersonal relations*, peer group, peer influence*, schools, social problems, social theory, students / psychology*.
- Cluster 12 (7 items)** Age factors, armed conflicts / psychology*, culture*, ethnicity / psychology, individuality, politics*, psychological / complications.

The aim of this stage of analysis is to examine the content, patterns, and trends of the document collection by measuring the strength of terms and counting the number of keywords that co-occur in the articles studied (Chen, 2003; Russell & Rousseau, 2015). Using a minimum occurrence threshold of 1 term, 190 relevant items were identified. There are 12 clusters: cluster 1 contains 29 items, cluster 2 has 21 items, cluster 3 consists of 18 items, cluster 4 includes 17 items, cluster 5 also has 17 items, cluster 6 has 17 items, cluster 7 comprises 16 items, cluster 8 has 15 items, cluster 9 includes 13 items, cluster 10 contains 11 items, cluster 11 has 9 items, and cluster 12 includes 7 items.

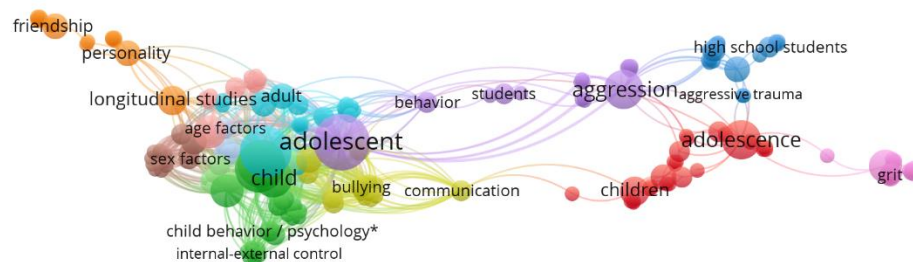


Figure 3. Network Visualization

The map of publication development and the relationships between terms based on the search keywords in Scopus is shown in Figure 3. In the visualization of network relationships, the connections between terms are represented by networks or lines linking one term to another (Fitria et al., 2023). Using a minimum occurrence of 1, the term 'adolescent' is the most frequently used by authors with 105 links, followed by the term 'humans' with 100 links. The term 'influence' is the least used, with only 2 links.

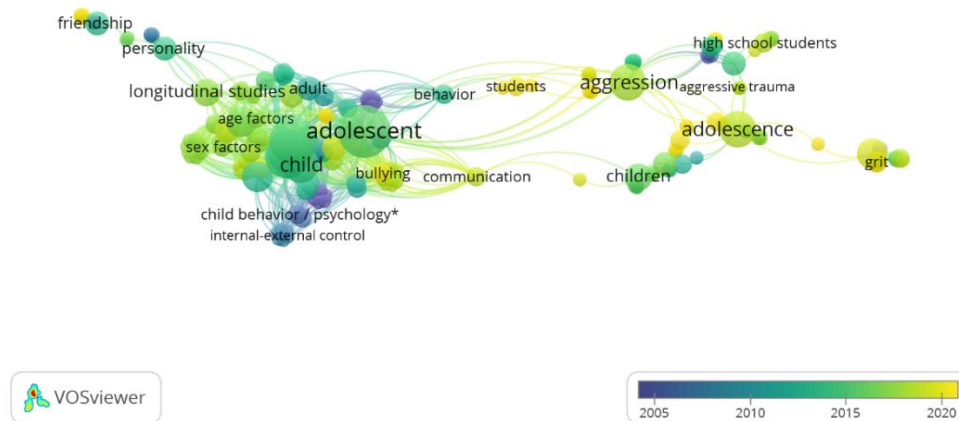


Figure 4. Overlay Visualization

Figure 4 illustrates the trends in developmental psychology research over the years. Based on Figure 4, the analysis covers publications in developmental psychology over the past 20 years, from 2004 to 2024. The figure shows that recent research in developmental psychology has extensively explored topics such as grit, aggression, bullying, and anger. In contrast, earlier research, indicated by darker colors, focused more on areas such as child behavior disorders, collectivism/individualism, and antisocial behavior.

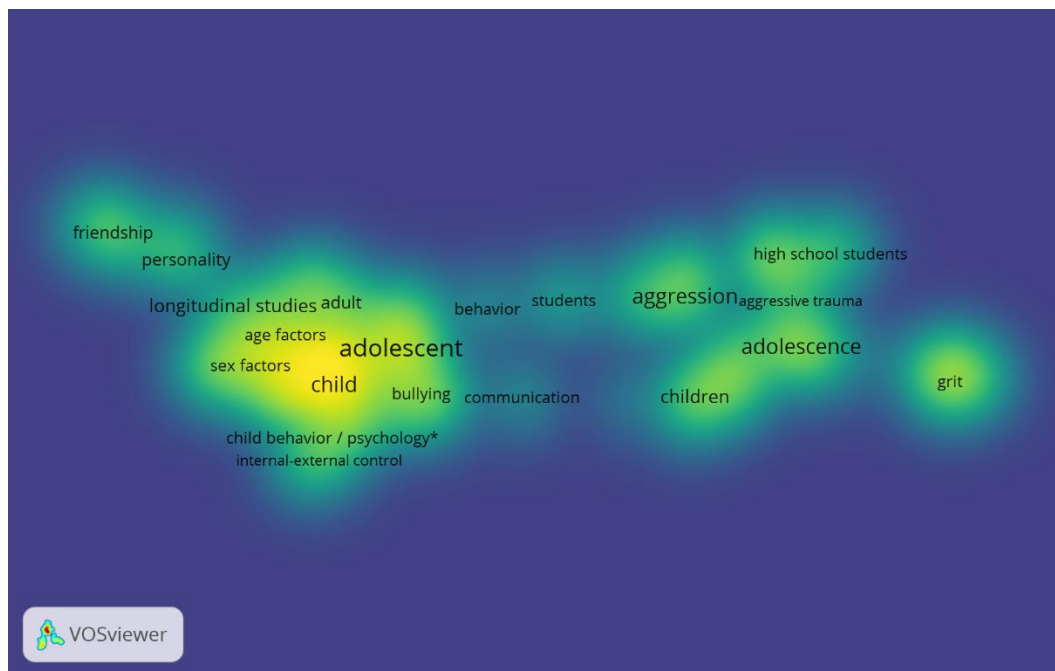


Figure 5. Density Visualization

Figure 5 shows that the brighter the yellow color and the wider the circle, the more densely packed the keywords are. This indicates that the topic has been extensively researched. Conversely, if the color fades and blends with the green background, it suggests that the topic has been less studied, making it a potential reference for future research (Iriyani et al., 2023). Based on Figure 5, topics that have been extensively researched in the field of

developmental psychology include child, adolescent, sex factors, and age factors. In contrast, topics that have not been widely studied include communication, personality, and behavior.

Conclusion

Bibliometric analysis provides several benefits for modern researchers. It offers a quantitative method for evaluating research output, assisting scholars in identifying the most influential studies, authors, and journals within their discipline. By mapping trends and patterns in research, bibliometric analysis helps researchers stay informed about emerging topics and changes in scientific focus, ensuring their work stays relevant and significant. Furthermore, understanding these trends is vital for academics, researchers, practitioners, and policymakers who rely on evidence-based practices. This bibliometric analysis not only maps the trajectory of developmental psychology but also identifies key contributors and potential gaps for future research.

Based on the results and discussion, it can be concluded that publications within the field of developmental psychology during the period from 2004 to 2024 showed the highest Scopus index in 2009, with a total of 20 publications. The term keywords analysis revealed 12 clusters. The most frequently used term in developmental psychology articles was 'adolescent,' with a total of 105 links. From this study, the authors suggest the need to explore topics that are not directly related, such as the relationship between friendship and grit, or personality and aggressive trauma. These findings highlight the necessity of broadening research efforts to enhance the understanding of the complex interplay of factors influencing developmental psychology.

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