


Bibliometric Analysis of Studies on the Relationship Between Positive Childhood Experiences and Mental Health Outcomes

Olumlu Çocukluk Yaşantılarının Ruh Sağlığı ile Olan Etkileşimi Üzerine Yapılan Araştırmaların Bibliyometrik Analizi

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ABSTRACT

Objective: Positive Childhood Experiences (PCEs) emerged as a new field following the introduction of the concept in 2018 and have demonstrated rapid growth in research publications. The purpose of this study is to systematically map the emerging research landscape of PCEs through early 2025, identify key research trends, and provide a comprehensive overview of the field's development to guide future research directions.

Method: Using Web of Science (WoS) as the data source, 208 studies were retrieved. Publication and citation trends, research areas and disciplines, main research clusters, the most influential researchers, and collaboration networks were analyzed and visualized using WoS analytics and VOSviewer.

Results: Findings revealed sudden growth beginning in 2020, with 87% of all publications appearing since then. The field spans multiple disciplines, primarily psychiatry (21.64%), family studies (19.71%), and social work (19.71%). Seven distinct research clusters emerged from keywords: Trauma and Adversity Measurement, Risk Factors and Exposure, Positive Developmental Outcomes, Contextual and Epidemiological Factors, Psychological Functioning, Protective Mechanisms and Development, and Interventions and Support Systems. Temporal analysis identified three developmental phases: early phase (pre-2020), intermediate phase (2020-2022), and recent phase (2022-present). International collaboration network analysis positioned the United States as the central research hub, with distinct collaboration patterns across North America, Europe, and Asia-Pacific.

Conclusion: This study revealed the developmental trajectory of PCEs research, highlighting the importance of integrated approaches in the field and demonstrating a significant research gap in prevention and intervention studies.

Keywords: Positive childhood experiences, adverse childhood experiences, mapping, mental health, bibliometric analysis

ÖZ

Amaç: Olumlu Çocukluk Yaşantıları (OÇY) kavramı, 2018 yılında tanıtılmasının ardından yeni bir alan olarak ortaya çıkmış ve araştırma yayınlarında hızlı bir büyüme göstermiştir. Bu çalışmanın amacı, 2025 yılının başlarına kadar OÇY'nin gelişmekte olan araştırma alanını sistematik olarak haritalamak, temel araştırma eğilimlerini belirlemek ve gelecekteki araştırma yönelimlerini şekillendirmek için alanın gelişimine kapsamlı bir bakış sağlamaktır.

Yöntem: Web of Science (WoS) veri kaynağı kullanılarak 208 araştırma elde edilmiştir. Yayın ve atıf eğilimleri, araştırma alanları ve disiplinleri, temel araştırma kümeleri, en etkili araştırmacılar ve işbirliği ağları WoS'un analitik araçları ve VOSviewer kullanılarak analiz edilmiş ve görselleştirilmiştir.

Bulgular: Sonuçlar, 2020'den itibaren ani bir artış olduğunu ve tüm yayınların %87'sinin o zamandan beri yayımlandığını ortaya koymuştur. Bu araştırma alanı başta psikiyatri (%21,64), aile çalışmaları (%19,71) ve sosyal hizmet (%19,71) olmak üzere birçok disiplini kapsamaktadır. Anahtar kelimelerden yedi farklı araştırma kümesi ortaya çıkmıştır: Travma ve Zorluk Ölçümü, Risk Faktörleri ve Maruz Kalma, Olumlu Gelişimsel Sonuçlar, Bağlamsal ve Epidemiyolojik Faktörler, Psikolojik İşlevsellik, Koruyucu Mekanizmalar ve Gelişim, ve Müdahaleler ve Destek Sistemleri. Zamansal analiz üç gelişim evresini belirlemiştir: erken evre (2020 öncesi), orta evre (2020-2022) ve güncel evre (2022-günümüz). Uluslararası işbirliği ağı analizi, Kuzey Amerika, Avrupa ve Asya-Pasifik'teki farklı işbirliği modelleriyle birlikte Amerika Birleşik Devletleri'ni merkezi araştırma merkezi olarak konumlandırmıştır.

Sonuç: Bu çalışma OÇY araştırmalarının gelişim sürecini ortaya koyarak alandaki bütüncül yaklaşımların önemini vurgulamış ve önleme ile müdahale çalışmalarında önemli bir araştırma boşluğu olduğunu göstermiştir.

Anahtar sözcükler: Olumlu çocukluk yaşantıları, olumsuz çocukluk yaşantıları, haritalama, ruh sağlığı, bibliyometrik analiz

Introduction

Childhood experiences influence developmental trajectories across the lifespan. While the negative impacts of adverse childhood experiences (ACEs) on psychological health and well-being have been extensively documented since the ACE study by Felitti et al. (1998), there has been growing recognition of the importance of positive childhood experiences (PCEs) in promoting resilience and positive outcomes (Ungar and Liebenberg 2011, Masten 2014, Merrick et al. 2019, Yule et al. 2019).

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PCEs provide a comprehensive framework for understanding how childhood experiences influence child development. On one side of the coin, ACEs include childhood maltreatment and other negative experiences such as having an incarcerated parent, witnessing domestic violence, parental divorce, mental health issues among family members, and community and collective violence (Felitti et al. 1998, WHO 2018). On the other side of the coin, PCEs are not just the absence of adversity; instead, they are distinct assets that actively contribute to development. PCEs include benevolent, supportive, and nurturing early life experiences, including personal skills such as self-regulation and interpersonal sources such as having supportive relationships with caregivers and other adults (Narayan et al. 2018, Çiçek and Çeri 2021, Bayar and Doğan 2024). Feeling safe at home, connecting with peers, feeling a sense of belonging, and having opportunities to learn new skills are also considered PCEs (Narayan et al. 2018, 2023).

Studies have shown that PCEs universally help promote healthy development and build resilience. In other words, these beneficial experiences work both as promotive factors independent of ACEs exposure and as protective factors that counteract the negative effects of ACEs (Hou et al. 2022). Emerging studies have shown that PCEs promote better mental health and lower psychopathological symptoms (Powers et al. 2009, Bethell et al. 2019, Crouch et al. 2024), as well as higher resilience and improved psychological and social functioning (Crandall et al. 2019).

Research on resilience, which is defined as the process of positive adaptation in the context of significant adversity (Smith et al. 2008), has increasingly recognized that resilience outcomes emerge from complex interactions across multiple systems, from biological and psychological to social and cultural (Masten 2014, Cicchetti and Toth 2016). Within this framework, PCEs can be understood as important factors that may operate at various ecological levels, from the microsystem of family relationships to the macrosystem of community and cultural contexts (Masten 2014). Understanding how these positive experiences contribute to positive or negative outcomes has important implications for universal prevention and intervention efforts aimed at promoting positive development and mitigating the effects of adversity.

Several reviews and meta-analyses investigating the effects and outcomes of PCEs have been identified in the literature (Leung et al. 2022, Han et al. 2023, Bayar and Doğan 2024, Cunha et al. 2024, Raghunathan et al. 2024, Kallapiran et al. 2025, Sousa et al. 2025). However, despite growing research interest and subsequent review efforts, PCEs research has not yet been systematically mapped.

A bibliometric analysis is particularly valuable for this research field because it can identify conceptual frameworks and reveal interdisciplinary knowledge transfer (van Eck and Waltman 2010, Ellegaard and Wallin 2015). This approach is especially suited to PCEs research because it illuminates collaboration patterns across the multiple disciplines this field spans (psychology, public health, social work, medicine), provides temporal analysis of shifting research priorities, and identifies knowledge clusters that can accelerate progress toward evidence-based interventions. Unlike traditional reviews, bibliometric mapping offers a quantitative, visual representation of the field's intellectual structure (Cobo et al. 2011). Bibliometric analyses use mapping and clustering techniques that provide a rigorous way to reveal the main research topics in a field, how these topics connect to each other, and how the research has evolved over time (van Eck and Waltman 2010). Such an analysis helps identify key researchers, influential publications, and emerging trends, as well as gaps and opportunities for future research (Pritchard 1969, Donthu et al. 2021). Specifically for this study, mapping PCEs research may enable scholars to gain a comprehensive overview, identify knowledge gaps, understand novel research directions, and strategically position their contributions within this research field. By answering the following research questions (RQ), the current study aims to provide a comprehensive overview of recent research:

RQ1: What are the publication and citation trends in PCEs research and their mental health outcomes?

RQ2: What are the primary research areas and disciplines represented in the studies?

RQ3: What are the main research clusters that guide this research field?

RQ4: Who are the most influential researchers, and what collaboration networks exist in this field?

RQ5: How has the field evolved, and what emerging trends and future directions can be identified?

Method

Data Source, Search Strategy, and Data Extraction

This study did not require ethics committee approval as it involves bibliometric analysis of previously published

research available in the public domain. No human subjects, personal data, or unpublished materials were used in this research. This study adopted bibliometric analysis, which is a technique that enables scholars to provide an extensive overview of relevant literature (Pritchard 1969). Clarivate Analytics' Web of Science (WoS) was selected as the data source for this study. WoS is one of the most important databases with extensive interdisciplinary coverage and an established position as the premier research tool for bibliometric analysis (Cobo et al. 2011, Li et al. 2018).

We developed search terms based on frequently used keywords in peer-reviewed literature on childhood experiences and mental health outcomes. Our keyword selection process was informed by a preliminary review of pioneering papers in the field and consultation with two experts to ensure comprehensive coverage of relevant terminology. The search strategy incorporated two complementary keyword categories. The first category included terms related to positive experiences such as "benevolent childhood experiences," "positive childhood experiences," "protective factors," "childhood resilience," "positive parenting," and "childhood centeredness." The second category encompassed outcome-related terms including "mental health," "resilience," "adult health," "well-being," "psychological distress," "depression," "anxiety," "trauma," and "intergenerational transmission." This approach ensured comprehensive coverage of research examining the relationships between PCEs and various outcomes. The complete search terms are presented in the Table 1.

Table 1. The complete search terms in Web of Science

"benevolent childhood experience*" OR "positive childhood experience*" OR "protective childhood factor*" OR "counter-ACEs" OR "childhood protective factor*" OR "nurturing childhood" OR "supportive childhood environment*") AND Topic Search (TS) = ("mental health" OR "well-being" OR "wellbeing" OR "resilience" OR "resilien*" OR "psycholog* adjust*" OR "life satisfaction" OR "depress*" OR "anxi*" OR "stress" OR "trauma" OR "coping" OR "adult function*" OR "adult outcome*" OR "development*" OR "protective factor*" OR "health outcome*" OR "quality of life" OR "thriving" OR "flourishing")

The search used the aforementioned terms in the topic field, which means that these terms were detected if they appeared in the title, abstract, and/or keywords. The search was conducted in March 2025 and covered the period from inception until early 2025. It was limited to English-language publications. This search strategy yielded 249 publications, including all types of publications. A total of 41 studies were excluded based on the following criteria: early access (f= 23), open publisher invited review (f = 1), editorial material (f= 4), meeting abstract (f= 2), letter (f= 2), proceedings paper (f= 2), and book chapters (f= 1). In line with the scope of this bibliometric review, 208 articles and review articles were included in the study. The 208 records were exported to Excel from the WoS interface. For all publications, we extracted bibliographic information including author names, title, publication source, publication year, citation counts, abstract, keywords, and WoS categories.

Data Analysis and Visualization

We used the VOS (Visualization of Similarities) technique to analyze and visualize influential authors, collaborations, and research fields (van Eck et al. 2010, Waltman et al. 2010). VOSviewer software (version 1.6.16) enabled the mapping and clustering of bibliometric data, with related topics grouped into color-coded clusters (van Eck and Waltman 2010). This approach identified the overall structure and related concepts of PCEs research. WoS analysis provided information about prominent authors, countries, affiliations, journals, publication years, and research categories. Additionally, VOSviewer was used to analyze and visualize relationships between authors, countries, co-citations, and terms. The software facilitated the visualization of keyword co-occurrence networks, revealing the conceptual structure of the field. We analyzed 87 keywords (with a minimum occurrence threshold of 5) from both author keywords and KeyWords Plus to identify distinct research clusters. Temporal analysis of keywords helped distinguish foundational concepts from emerging research directions.

Results

RQ1: What are the publication and citation trends in research on PCEs and their mental health outcomes?

Our analysis revealed 208 publications on PCEs and mental health outcomes spanning nearly three decades. The field shows a distinct developmental pattern: after emerging in 1997, it remained largely inactive until 2015, with only occasional publications (single papers in 2004, 2007, 2011, 2014, and 2015). Research output increased dramatically after 2017, with exponential growth beginning in 2020. The most productive years were 2024 (61 publications, 29.33%), 2023 (37 publications, 17.79%), and 2022 (35 publications, 16.83%). Notably, 87.01% of all research has appeared since 2020, confirming that PCEs research represents an emerging field.

This rapid expansion aligns with psychology's broader shift from deficit-focused models toward strength-based approaches that examine factors promoting positive development despite adversity.

Table 2. Distribution of publications on positive childhood experiences and mental health outcomes

Publication Year	Record Count	% of 208
2025 (Until March)	12	5.769
2024	61	29.327
2023	37	17.788
2022	35	16.827
2021	24	11.538
2020	18	8.654
2019	8	3.846
2018	3	1.442
2017	3	1.442
2016	1	0.481
2015	1	0.481
2014	1	0.481
2011	1	0.481
2007	1	0.481
2004	1	0.481
1997	1	0.481

Note. The research in 2025 only includes the first quarter of the year.

Analysis of citation patterns revealed several highly influential works within the field. The most cited publications in the records are presented in Table3.

Table 3. Most cited publications in positive childhood experiences research

Rank	Authors (Year)	Title	Journal	Key Contribution
1	Bethell et al. (2019)	Positive Childhood Experiences and Adult Mental and Relational Health in a Statewide Sample: Associations Across Adverse Childhood Experiences Levels	JAMA Pediatrics	Established the independent association between PCEs and adult mental health
2	Narayan et al. (2018)	Positive childhood experiences predict less psychopathology and stress in pregnant women with childhood adversity: A pilot study of the benevolent childhood experiences (BCEs) scale	Development and Psychopathology	Introduced the BCEs scale as a counterpart to the ACEs questionnaire
3	Crandall et al. (2019)	ACEs and counter-ACEs: How positive and negative childhood experiences influence adult health	Child Abuse and Neglect	Established the compensatory role of PCEs in relation to ACEs and adult health outcomes
4	Merrick et al. (2019)	Benevolent Childhood Experiences (BCEs) in Homeless Parents: A validation and replication study	Journal of Family Psychology	Extended the validation of the BCEs scale to a specific population
5	Baglivio and Wolff (2021)	Positive Childhood Experiences (PCE): Cumulative resiliency in the face of adverse childhood experiences	Youth Violence and Juvenile Justice	Demonstrated the potential for PCEs to mitigate the effects of ACEs on juvenile justice outcomes

RQ2: What are the primary research areas and disciplines represented in the studies?

The analysis of WoS categories revealed that PCEs research spans multiple disciplines, with strong representation in the psychological and social sciences. The dominant research areas were Psychiatry (45 publications, 21.64%), Family Studies (41 publications, 19.71%), Social Work (41 publications, 19.71%), Public Environmental Occupational Health (37 publications, 17.79%), and Social Psychology (35 publications, 16.83%). Other significant research areas included Multidisciplinary Psychology (32 publications, 15.39%), Pediatrics (20 publications, 9.62%), and Developmental Psychology (17 publications, 8.17%).

This distribution highlights the field's interdisciplinary nature, bridging mental health, family dynamics, social welfare, public health, and developmental psychology. Most publications appeared in the Social Sciences Citation Index (71.15%) and Science Citation Index Expanded (33.17%), with fewer appearing in the Emerging Sources Citation Index (15.87%) and Arts and Humanities Citation Index (0.48%).

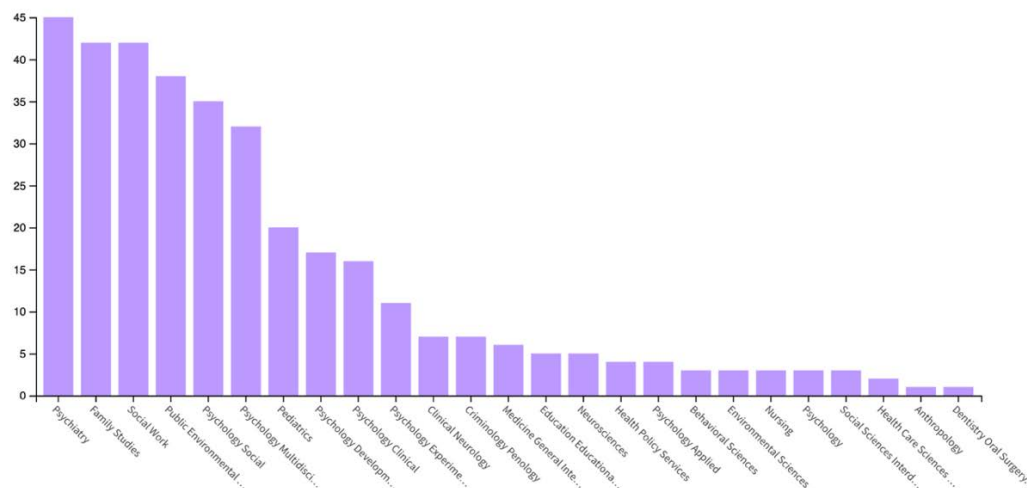


Figure 1. Distribution of research areas and disciplines in studies on positive childhood experiences.

RQ3: What are the main research clusters that guide the PCEs research field?

VOSviewer analysis revealed seven distinct research clusters that map the conceptual landscape of PCEs research (Figure 2). The network visualization in Figure 2 depicts the interconnected research clusters in the PCEs literature. Node size indicates term frequency, and connections show co-occurrence relationships. The complete items related to clusters are listed in Table 4.

Table 4. The complete items related to clusters

Cluster 1 (19 items): Adverse, adverse childhood experiences (ACEs), childhood adversity, childhood experiences, delinquency, disorders, experiences, inventory, mothers, posttraumatic-stress-disorder, pregnancy, psychological distress, psychometric properties, PTSD, trauma, trauma exposure, validity, violence, women.
Cluster 2 (14 items): Abuse, adversity, behaviors, childhood, consequences, depressive symptoms, developmental psychopathology, exposure, household dysfunction, life, maltreatment, risk, victimization, youth.
Cluster 3 (13 items): Adverse childhood experiences, children, competence, context, family, flourishing, health, outcomes, positive childhood experiences, school, symptoms, well-being, young adults.
Cluster 4 (11 items): Adolescents, associations, covid-19, families, impact, mental health, prevalence, scale, socioeconomic-status, substance use, United-States
Cluster 5 (10 items): Adolescence, anxiety, behavior, benevolent childhood experiences, depression, framework, psychopathology, self-esteem, trajectories, validation.
Cluster 6 (9 items): ACEs, adults, attachment, BCEs, child development, disorder, intergenerational transmission, protective factors, resilience.
Cluster 7 (6 items): Association, care, intervention, mental health, social support, stress.

The following clusters were identified:

Cluster 1 (red): Trauma and Adversity Measurement - Located in the lower left portion, this cluster focuses on trauma assessment and adversity experiences, including terms such as "post-traumatic stress disorder (PTSD)," "mothers," "childhood adversity," "delinquency," "psychometric properties," and "validity." Research in this cluster explores measurement validation and trauma impacts across generations. Terms related to pregnancy and women correspond to the initial BCEs psychometric development by Narayan et al. (2018), which represents groundbreaking work in PCEs research.

Cluster 2 (green): Risk Factors and Exposure - Positioned in the left-center, this cluster focuses on developmental risk through keywords such as "adverse childhood experiences," "risk," "exposure," "consequences," and "youth." Studies in this cluster investigate how adverse experiences affect developmental pathways.

Cluster 3 (dark blue): Positive Developmental Outcomes - Spanning the right side of the figure, this cluster includes terms such as "positive childhood experiences," "flourishing," "well-being," "school," "family," and "outcomes." Research aims to foster positive developmental pathways through strength-based approaches.

Cluster 4 (yellow): Contextual and Epidemiological Factors - Visible in the lower right of the figure, this cluster represents broader contextual considerations through terms such as "impact," "United States," "families,"

"COVID-19," and "socioeconomic status." Studies in this cluster examine how social and environmental contexts influence the impact of PCEs.

Cluster 5 (purple): Psychological Functioning - Located in the center-right of the figure, this cluster covers mental health aspects through terms such as "depression," "anxiety," "behavior," "self-esteem," and "adolescence." Research in this cluster explores the role of PCEs in the context of psychopathological symptoms and behavioral issues.

Cluster 6 (light blue): Protective Mechanisms and Development - Stretching across the upper portion, this cluster includes "ACEs," "BCEs," "resilience," "protective factors," "child development," and "adults." Studies in this cluster examine how adverse and benevolent experiences interact throughout developmental processes.

Cluster 7 (orange): Interventions and Support Systems - Located in the upper center, this cluster represents supportive interventions through terms such as "care," "association," "social support," and "stress." Research in this cluster investigates how supportive relationships and PCE-related interventions can foster resilience.

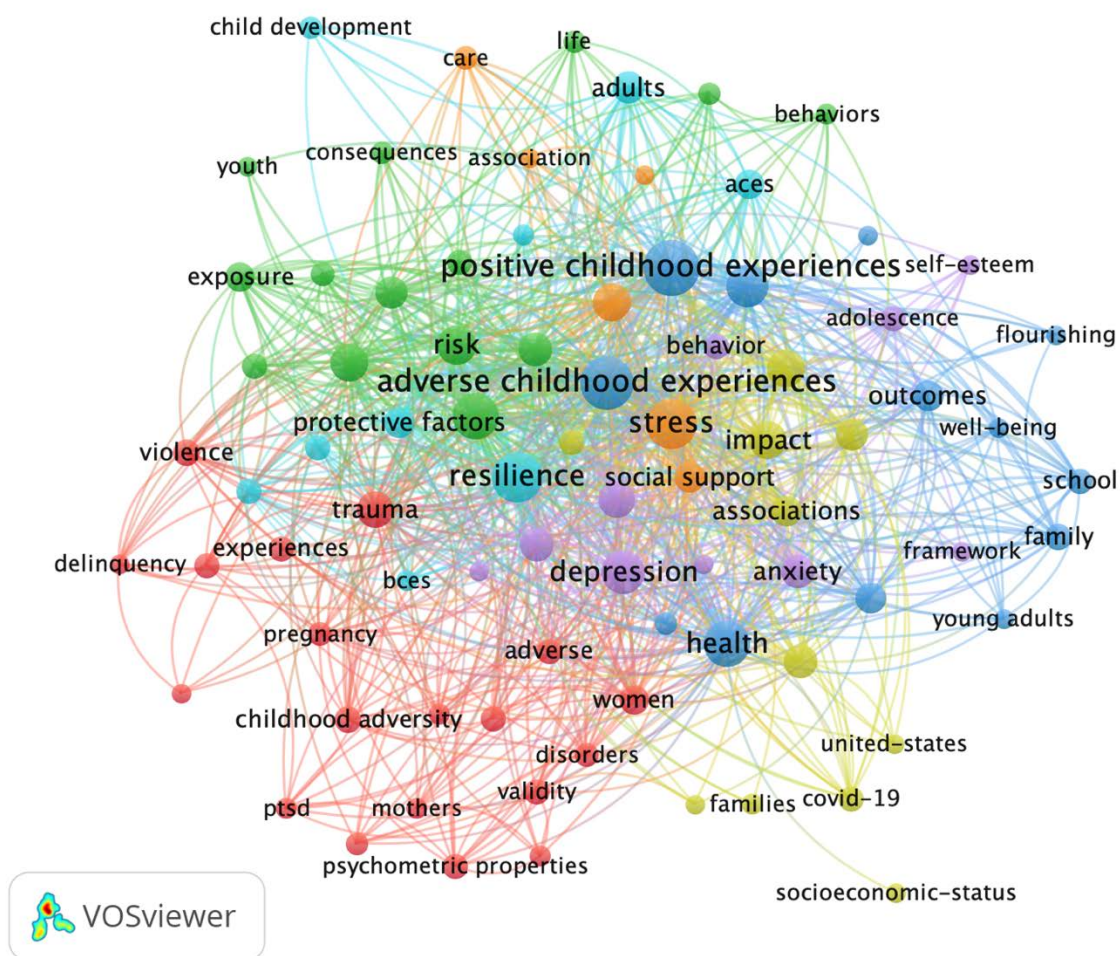


Figure 2. Keyword co-occurrence network visualization of positive childhood experiences research showing seven thematic clusters

RQ4: Who are the most influential researchers, and what collaboration networks exist in this field?

The analysis identified key researchers who have conducted pioneering work in the PCEs field. The most published scholars were Elizabeth Crouch and Angela J. Narayan (each with 13 publications, 6.25%), followed by Alice Ann Crandall (10 publications, 4.81%). Other major contributors included Elizabeth Radcliff (9 publications, 4.33%) and several researchers with 5 publications each (2.40%): Mark Shevlin, Carl L. Hanson, Jillian S. Merrick, Brianna M. Magnusson, Telma Catarina Almeida, and Pei-Yin Hung.

The bibliographic coupling network of key authors was visualized using VOSviewer (Figure 3). Three distinct scholarly communities were detected. Cluster 1 (Red) consists of Narayan, Hanson, Crandall, and Shevlin—leading scholars who created core assessment tools for PCEs, notably the BCEs scale. Cluster 2 (Green) comprises Radcliff, Crouch, and Brown, representing a research group focused on public health applications and population-level impacts of PCEs research. Cluster 3 (Blue) features Wang as a separate entity potentially representing cross-cultural perspectives. Almeida functions as a connector between the foundational measurement group and other research clusters.

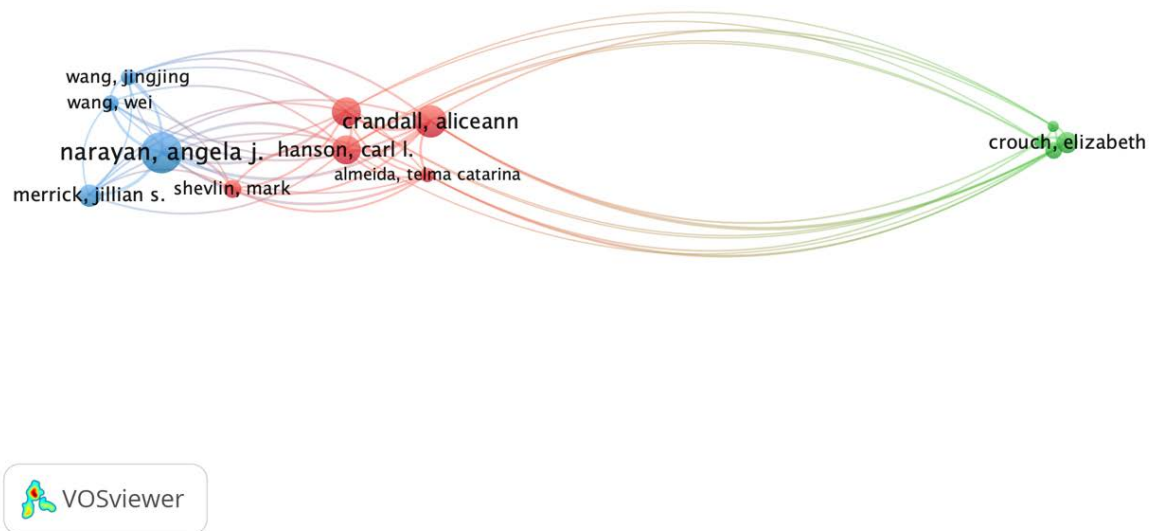


Figure 3. Bibliographic coupling network of key authors in positive childhood experiences research

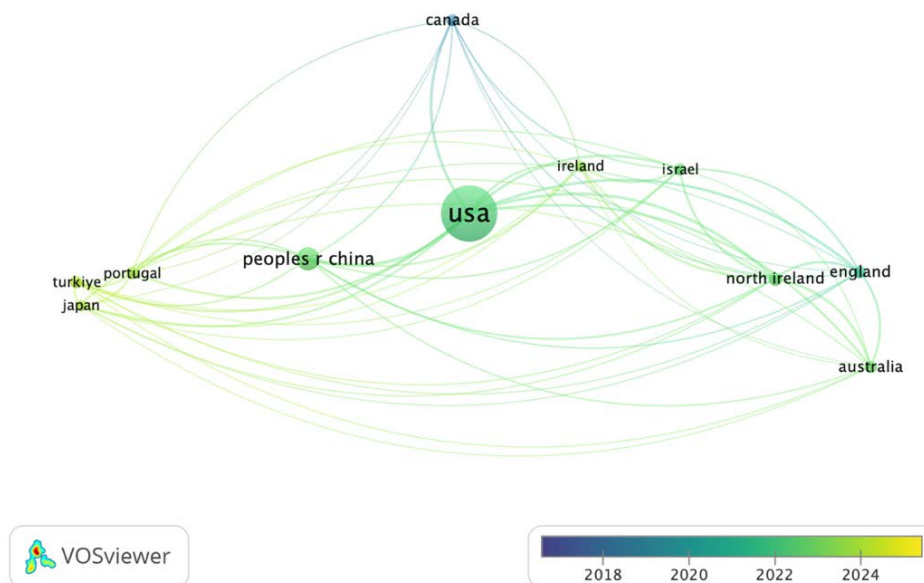


Figure 4. International collaboration network in positive childhood experiences research by year

Note. The figure above shows international research collaboration patterns in PCEs research. Node size represents the average publication number. Connection lines show collaborative relationships between countries, while colors indicate the timeline of collaborations (dark blue for earlier collaborations around 2018, yellow/green for more recent collaborations in 2023-2024).

The international collaboration network in PCEs research (2018-2024) identifies the United States as the primary research hub, evidenced by its central position and notably larger node size. The network shows several clear collaboration patterns. First, there are strong North American connections between the United States and Canada. Second, a European research group links England, Ireland, and Northern Ireland, with these countries also connected to the United States. Third, an Asia-Pacific network connects Australia, China, and Japan. Finally, new partnerships are emerging with Middle Eastern and Southern European countries, including Israel, Türkiye, and Portugal. The different colors in the network represent when these partnerships were formed over the six-year period, with each color showing connections made at different times. This visualization clearly shows how

PCEs research has spread worldwide, highlighting both long-standing collaborations and new international partnerships that have developed recently.

RQ5: How has the field evolved, and what emerging trends and future directions can be identified?

The evolution of the field was examined through the temporal evolution of research keywords in the PCEs literature from 2018 to 2024. The results are visualized in Figure 5. Upon examination of Figure 5, different developmental phases of the field were identified. These phases are designated as the Early phase, Intermediate phase, and Recent phase.

Early Phase of PCEs Research (pre-2020)

This phase represents the conceptual foundation of the construct. The lighter nodes represent foundational concepts that established the field's theoretical framework. Early research focused on measurement development and validation, family contexts, and basic conceptual positioning. Notably, terms such as "pregnancy" appear in the upper left quadrant, indicating early interest in maternal contexts and intergenerational impacts. This aligns with the work by Narayan et al. (2018), which examined PCEs in pregnant women with histories of childhood adversity.

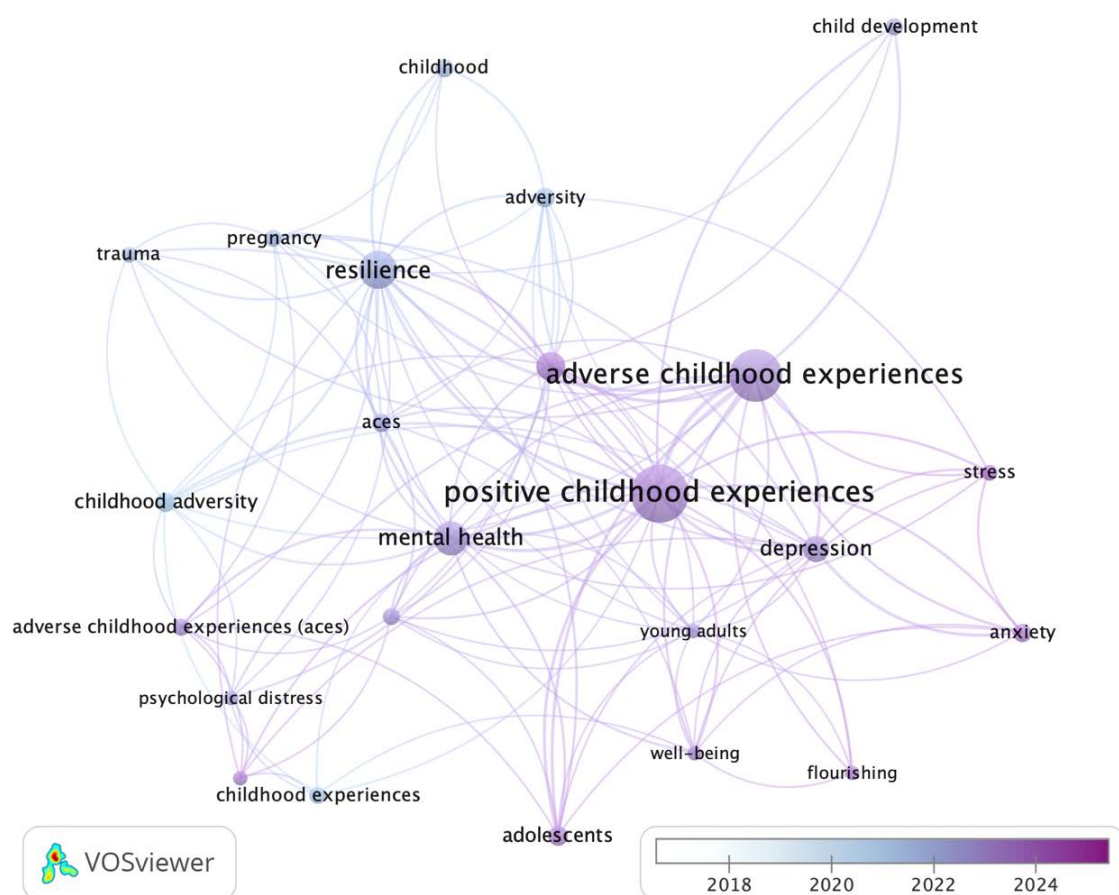


Figure 5. Temporal evolution of research keywords in positive childhood experiences research (2018-2024)

Note. The figure shows the conceptual evolution of PCEs research from 2018 to 2024. Node sizes indicate term frequency, and color represents the average publication year. The lighter purple/blue color represents earlier work; deeper purple represents recent research.

Intermediate Phase of PCEs Research (2020-2022)

This phase is characterized by medium-toned nodes that show the field's expansion across various disciplines. During this phase, researchers connected PCEs to established frameworks in developmental psychopathology, mental health, and trauma studies. Keywords like "resilience," "mental health," and "ACEs" gained prominence, reflecting increased emphasis on clinical applications and the interactions between PCEs and ACEs in healthy development.

Current Phase of PCEs Research (2022-present)

During this phase, the darkest purple nodes represent the field's current focus on specific contexts and mechanisms. Recent work investigates developmental periods ("adolescents," "young adults"), specific outcomes ("anxiety," "depression," "stress"), and positive outcomes ("well-being," "flourishing"). As shown in Figure 5, "positive childhood experiences" and "adverse childhood experiences" occupy central positions among the research keywords.

Discussion

The present study analyzed 208 publications on Positive Childhood Experiences (PCEs) and mental health outcomes from 1997 to early 2025. Our bibliometric analysis revealed a dramatic evolution in this field, with research output surging dramatically after 2017 and exponential growth beginning in 2020. Strikingly, 87.01% of all research has appeared since 2020, confirming that PCEs research represents an emerging field at the forefront of developmental science (Narayan et al. 2018, Bethell et al. 2019, Crandall et al. 2019). The field's rapid development also represents potential challenges. The related but differently worded constructs (BCEs, PCEs, counter-ACEs, protective factors, promotive factors) may create conceptual confusion without careful integration. A recent meta-analytic study echoed the same issue with the confusing naming of protective factors in the context of adversity (Yule et al. 2019).

Our analysis revealed the interdisciplinary nature of PCEs research, spanning multiple academic domains including Psychiatry, Family Studies, Social Work, Public Environmental Occupational Health, and Social Psychology. This distribution highlights how the field bridges mental health, family dynamics, social welfare, public health, and developmental psychology. Most publications appeared in the Social Sciences Citation Index (SSCI) and Science Citation Index Expanded (SCIE), confirming the field's grounding in social science (Cobo et al. 2011, Li et al. 2018).

Our keyword co-occurrence analysis revealed seven distinct research clusters mapping the PCEs literature, each representing key conceptual domains that collectively define this emerging field. Our results provided a comprehensive topography of the intellectual structure of PCEs research. The visualization (Figure 5) demonstrates the critical finding that "positive childhood experiences" and "adverse childhood experiences" occupy central positions with strong interconnections across clusters. This centrality empirically confirms the field's pivotal conceptual shift from exclusively deficit-focused models toward integrated approaches that recognize the dynamic interplay between risk and protective factors. In other words, this paradigm shift, advocated by influential scholars (Narayan et al. 2018, Bethell et al. 2019, Crandall et al. 2019, Hamby and Yoon 2024), is not merely theoretical but clearly manifested in the structure of PCEs research.

Notably, Cluster 1 (Trauma and Adversity Measurement) contains the highest number of items (19), showing the field's strong focus on measurement development. This emphasis on measurement tools makes sense as a first step in studying PCEs (Narayan et al. 2018, 2023), like how the original ACEs research began (Felitti et al. 1998). New areas of study typically need to establish valid and reliable ways to measure concepts before advanced theories can develop. The large number of measurement-related keywords shows how researchers have prioritized creating valid assessment tools to establish PCEs as a legitimate scientific concept.

In contrast, Cluster 7 (Interventions and Support Systems) contains the fewest items (6), revealing a significant gap in practical applications of PCEs research. This imbalance between measurement and intervention research points to an important opportunity for future work. While researchers have made visible progress in defining and measuring PCEs, there are still few studies focusing on how to use this knowledge to create effective programs. This suggests that developing and testing the effectiveness of the interventions that promote positive experiences should be a priority for future research.

Our temporal analysis further revealed three developmental phases: an Early Phase (pre-2020) establishing the field's theoretical framework, an Intermediate Phase (2020-2022) connecting PCEs to established frameworks in developmental psychopathology and trauma studies (Crandall et al. 2019, Merrick et al. 2019), and a Recent Phase (2022-present) examining specific contexts, developmental periods, and outcomes (Baglivio and Wolff 2021). The sudden expansion in publications can be explained from several perspectives. The research clearly flourished after efforts to conceptualize and measure PCEs. As mentioned earlier, Narayan et al.'s study (2018) introduced the BCEs-Scale which has been adapted and used dominantly in PCE research since then (Cunha et al. 2024). The widespread adoption of this scale also coincides with a broader paradigm shift in developmental science from deficit-focused models toward strength-based approaches, as reflected in resilience research (Hamby et al. 2018, Hamby and Yoon 2024). As Masten (2014) noted, this "ordinary magic" of resilience

represents the need for moving from risk factors to protective and promotive mechanisms. This conceptual evolution has created a ground for PCEs research to broaden. Secondly, the global pandemic starting in 2020 caused many challenges and distress for families and children (Panchal et al. 2023) which required urgent attention to children's mental health. During the pandemic adverse experiences (isolation, family stress, educational disruption) and positive experiences (increased family time, digital connection with peers) simultaneously altered children's life (Ellis et al. 2020). This context created urgent demand for research to holistically investigate the interplay between ACEs and PCEs in real-time as families navigated the crisis. While we can identify these distinct phases, it's important to know that PCEs research remains a relatively new field, and it is still actively evolving. Thus, emerging studies may rapidly reshape the developmental patterns we explored.

In our review, the international collaboration network shows the United States as the main research hub for PCEs studies, with several clear partnership patterns: strong connections with Canada, collaboration with European countries, partnerships across the Asia-Pacific region, and newer collaborations with Middle Eastern and Southern European countries. This shows that, in recent years, PCEs research has become more global as researchers build international partnerships. This worldwide approach reflects how PCEs exist in different contexts like family, school, and community settings across cultures (Bethell et al. 2019, Crandall et al. 2019, Sever et al. 2024). The field has clearly grown beyond its North American origins to include diverse cultural perspectives on positive experiences (Merrick et al. 2019, Baglivio and Wolff 2021).

Conclusion

The findings demonstrate exponential growth in PCEs research in recent years. The integration of adverse and positive childhood experiences into more holistic developmental models represents a significant advancement in understanding how early life experiences shape development across the lifespan (Narayan et al. 2018, Bethell et al. 2019, Crandall et al. 2019). As research on PCEs continues to evolve, addressing the identified gaps and pursuing emerging directions will be crucial for advancing understanding of how positive experiences contribute to positive mental health development and resilience outcomes (Baglivio and Wolff 2021). This knowledge has profound implications for how we conceptualize child development, design interventions, and create policies that support positive developmental trajectories even in the context of significant adversity (Merrick et al. 2019).

Several promising directions for future PCEs research can be identified. There is a need for more cross-cultural applications to understand how PCEs may vary across diverse contexts. Our study showed that the research relied heavily on social sciences, therefore, other sciences such as health sciences can be an area for expansion, particularly in understanding how PCEs are associated with overall well-being. The development and evaluation of PCE-focused interventions represents a critical research gap, as indicated by the smaller size of the Interventions and Support Systems cluster. Specifically, research is needed on how to translate PCEs knowledge into evidence-based programs for families, schools, and communities. Lastly, qualitative and mixed-methods research can be adopted to deepen the understanding of the lived experiences of individuals regarding PCEs.

The current bibliometric analysis has several limitations that need to be considered. The search strategy, while comprehensive, may have missed relevant publications using alternative terminology or conceptual frameworks. As mentioned earlier, the term PCEs is not new construct and has been studied under different terminology (for instance, youth resiliency, Ungar and Liebenberg 2011). However, the term PCEs was introduced to the field only after pioneering research that examined the construct retrospectively and labeled it as PCEs. Also, the sole focus on WoS represents a substantial constraint, as it excluded publications indexed only in other databases (such as Scopus, PsycINFO, or ERIC). This exclusion may have caused alterations in patterns and conclusions drawn in this research. Additionally, the analysis was limited to English-language publications, potentially focusing on Western cultures and consequently introducing a cultural bias. Despite these limitations, this study provides valuable insights into the development, status, and future directions of PCEs research.

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