

A scientometric review of positive youth development research in China

Zheng Zhou ^a, Ke Wang ^a, Fengrui Hua ^b, Daniel T.L. Shek ^{c,*}, Shaojie Qi ^a

^a Research Institute of Social Development, Southwestern University of Finance and Economics, Chengdu, China

^b School of Social Work and Health Management, Xihua University, Chengdu, China

^c Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong, China

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ABSTRACT

The positive youth development (PYD) approach is increasingly embraced by researchers in China. In this study, we conducted a scientometric analysis of publications retrieved from Web of Science (WOS) and China National Knowledge Infrastructure (CNKI). The initial search yielded a total of 2122 PYD-related publications (2006–2025). After screening, 406 publications from the WOS database and 206 from the CNKI database were finally included in the analysis. The analysis covered both English and Chinese articles, and examined publishing, collaboration networks, research hotspots, and research trends. Several observations are highlighted from this study. First, the study suggests that The Hong Kong Polytechnic University and Beijing Normal University are the core hubs of international and domestic research groups, respectively. Second, through keyword co-occurrence clustering analysis, research themes in WOS and CNKI were identified. Third, this study outlined the trends and hotspots of PYD research in China through keyword co-occurrence analysis, burst detection, and co-citation analysis. Results showed that research from the WOS database focused on intervention evaluation and theoretical exploration focusing on PYD, while the publications in the CNKI database transitioned from conceptual introduction to the combination of basic education and labor education policies. This study systematically synthesizes the characteristics and development of PYD research in China, offering an empirical basis for future research and practical intervention.

1. Introduction

Positive youth development (PYD) research has been conducted worldwide in the past decades (Moore, 2017; Qi et al., 2025; Shek & Dou, 2024). Because adolescents are particularly vulnerable to emotional and behavioral problems, researchers and practitioners have adopted various “pathological” methods to prevent adolescent problem behavior (Brink & Wissing, 2012; Milot Travers & Mahalik, 2021; Moore, 2017). Unlike Hall’s deficit perspective regarding adolescence as a stage with “storm and stress” (Hall, 1904), the PYD approach uses a positive perspective to look at the holistic development of adolescents, emphasizing the strengths of adolescents (Shek et al., 2019), with particular focus on the development potential and competencies of adolescents (Benson et al., 2007).

The term “PYD” can be understood in three ways (Hamilton, 1999). First, PYD can be regarded as a developmental process, particularly highlighting the importance of holistic youth development. Second, PYD can be regarded as an approach or program philosophy, providing the conceptual framework guiding program development. Finally, PYD can

be regarded as programs and organizations aiming at fostering the healthy or positive development of adolescents. In an early article using the term “PYD”, Moore and Gleib (1995) regarded PYD as the positive outcomes of adolescent development, and they aimed to develop measures to assess the positive development of adolescents. After two decades of research and practice, there is accumulative evidence to support “the success of a PYD approach” in achieving positive outcomes of adolescents (Moore, 2017, p. 1).

The number of PYD studies increased rapidly after the first decade of the 21st century (Qi et al., 2021), and this growth marks a fundamental shift from the traditional deficit perspective on adolescent development. In the traditional “mainstream” view, development of adolescents is usually conceptualized in terms of a deficit-oriented perspective, where adolescents are regarded as individuals who are at high risk of problem behavior and mental illness (Hall, 1904). This model largely ignores the inherent positive growth potential of adolescents, and its limitations are increasingly recognized (Ellis et al., 2017; Steinberg & Lerner, 2004). Since the 1990s, the PYD approach has developed, emphasizing the potentials and abilities of adolescents, and advocating promotion of

* Corresponding author.

E-mail address: daniel.shek@polyu.edu.hk (D.T.L. Shek).

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their overall development by cultivating internal and external resources (Catalano et al., 2004; Damon, 2004; Lerner et al., 2005, 2011).

There are many versions of PYD models. The meta-theory of the Relational-Developmental-Systems paradigm (RDSP) emphasizes that development is driven by the dynamics interactions between individuals and their environment (Lerner et al., 2015). Lerner's 5Cs model (Competence, Confidence, Connection, Character, and Caring) and the extended 6Cs model (with the addition of "Contribution") provide a foundational framework for evaluating positive development outcomes (Lerner et al., 2005). Based on a comprehensive evaluation of effective PYD programs, Catalano et al. (2004) systematically identified and synthesized 15 core PYD attributes (e.g., social competence, spirituality), providing a theoretical framework for project design (p. 102). The 40-developmental asset framework proposed by Benson further provides a practical tool for building a supportive ecological environment by focusing on external and internal developmental assets that are critical to adolescent development (Benson et al., 2011). The positive relationship between the 5Cs and developmental assets in promoting optimal development has been supported empirically (Wium & Dimitrova, 2019). In addition, Social-Emotional Learning (SEL) models focusing on psychosocial competencies are also considered to be another conceptual framework of the PYD approach (Taylor et al., 2017). Overall, these frameworks together form a multidimensional support system aiming to promote the overall development of adolescents through coordinated efforts among adolescents, families, schools, and communities.

In the past two decades, a number of researchers have conducted PYD research in China (Shek & Yu, 2011b; Zhu et al., 2025), with particular attention to localized characteristics of Chinese culture and educational policy. As there are similarities and differences between Western and Chinese cultural values regarding youth development (Zhou et al., 2020) and related education policies (Tan & Shek, 2025), there is a need to review PYD research in China. Specifically, there are three justifications for this systematic review.

First, according to the 2023 China Statistical Yearbook, the number of teenagers aged 13–19 in China was 96.38 million, while the number of youths aged 15–24 has reached 130 million, making China the country with the largest youth population in the world. Second, the mental health risks of Chinese teenagers are intensifying. According to the "National Mental Health Development Report (2019–2020)", the prevalence rates of adolescent depression risk had reached 24.6%, with major depression accounting for 7.4%. During the COVID-19 pandemic, Chinese adolescents were exposed to multiple stressors, including fear of infection, drastic changes in daily life, disruption of social support systems, and social isolation due to containment measures (Wang, Lü, & Zhang, 2022), making them vulnerable to depression (Duan et al., 2020). During the COVID-19 pandemic, 34.85% of Chinese college students reported physical symptoms (Liu et al., 2020). Finally, with the emergence of artificial intelligence (AI), it is important to consider what qualities should be cultivated among youth. Indeed, many theorists have emphasized the importance of 21st century skills, leadership agility, and related competencies in the development of individuals (i.e., PYD attributes) so that people can cope with the VUCA (volatile, uncertain, complex and ambiguous) world (Horney et al., 2010).

However, despite the substantial and growing volume of publications on PYD research in China, with annual outputs in both the Web of Science (WOS) and China National Knowledge Infrastructure (CNKI) peaking in 2024, there remains a lack of a comprehensive scientometric review that systematically delineates the intellectual structure, collaborative networks, and thematic evolution with particular focus on China. Such a review could help to identify research gaps and provide pointers for future studies. Besides, prior analyses have largely been constrained by data source limitations, focusing exclusively on either international (WOS) or domestic (CNKI) literature in isolation (Maslow & Chung, 2013; Waid & Uhrich, 2020). This has led to the fragmentation of research understanding and a failure to build a panoramic map

integrating the English-Chinese academic databases that can reveal the whole picture of PYD research in China.

To address the above limitations, this study used CiteSpace to conduct a scientometric review of PYD research in China. Scientometric analysis studies scientific inputs (e.g., researchers, funding), outputs (e.g., publications, patents), and processes (e.g., knowledge dissemination, collaboration networks) through statistical and computational methods. The knowledge graph method combines information visualization with traditional citation analysis to effectively reveal knowledge structure of the subject and its development trajectory (Chen et al., 2008). Through data mining, information processing, and knowledge graph construction, this study attempted to establish a systematic knowledge map for PYD research in China.

Against the above background, we conducted scientometric analysis to answer three questions in this study:

1. What are the most influential research institutions, scholars, and collaborative networks in China's PYD research field? To answer this question, the present study will identify the core drivers of PYD research development in China.
2. What are the characteristics of research themes in this area? To answer this question, we analyzed document co-citation clusters to identify dominant research themes across disciplines.
3. What are the recent research frontiers and emerging research trends? We examined citation bursts and emerging themes to capture the developmental trajectories of this field.

Based on the above research questions, this study has three research aims. This study attempted to: (1) identify core research communities and collaboration networks through institution and author network mapping; (2) reveal research themes of the PYD research in China by keyword co-occurrence clustering analysis; and (3) track research trends through analysis of keyword co-occurrence and burst detection.

2. Methods

2.1. Data extraction

Data of the present study included both English-language and Chinese-language literature, with English literature retrieved from the WOS Core Collection, and Chinese literature retrieved from the CNKI. The WOS Core Collection indexes high-quality academic publications across a wide range of global disciplines and is extensively employed in scientometric studies (Luo et al., 2022; Qi et al., 2022). To ensure authority and representativeness of the literature, this study utilized six major sub-databases within the WOS Core Collection: Science Citation Index Expanded (SCI-EXPANDED, 1900–present), Social Sciences Citation Index (SSCI, 1900–present), Arts & Humanities Citation Index (A&HCI, 1975–present), Conference Proceedings Citation Index-Science (CPCI-S, 1990–present), Conference Proceedings Citation Index-Social Science & Humanities (CPCI-SSH, 1990–present), and Emerging Sources Citation Index (ESCI, 2015–present). As the largest comprehensive knowledge base in China, CNKI covers a large number of Chinese scientific publications (Su, 2012). The CNKI data sets used in this study included core Chinese indexes, such as the Chinese Social Science Citation Index (CSSCI), Peking University Core Journals, and the Chinese Scientific Citation Database (CSCD). This study strictly followed the guidelines for systematic evaluation and meta-analysis of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021). The literature screening process is shown in Fig. 1.

To capture the current state and developmental trends in both Chinese and English literature, the search period was defined from January 1, 2006, to September 25, 2025, when we wrote the original version of the paper from October to November 2025. While it is desirable to add data published from October 2025 to December 2025, we found that there were only 3 eligible publications in CNKI and 13 in WOS in these

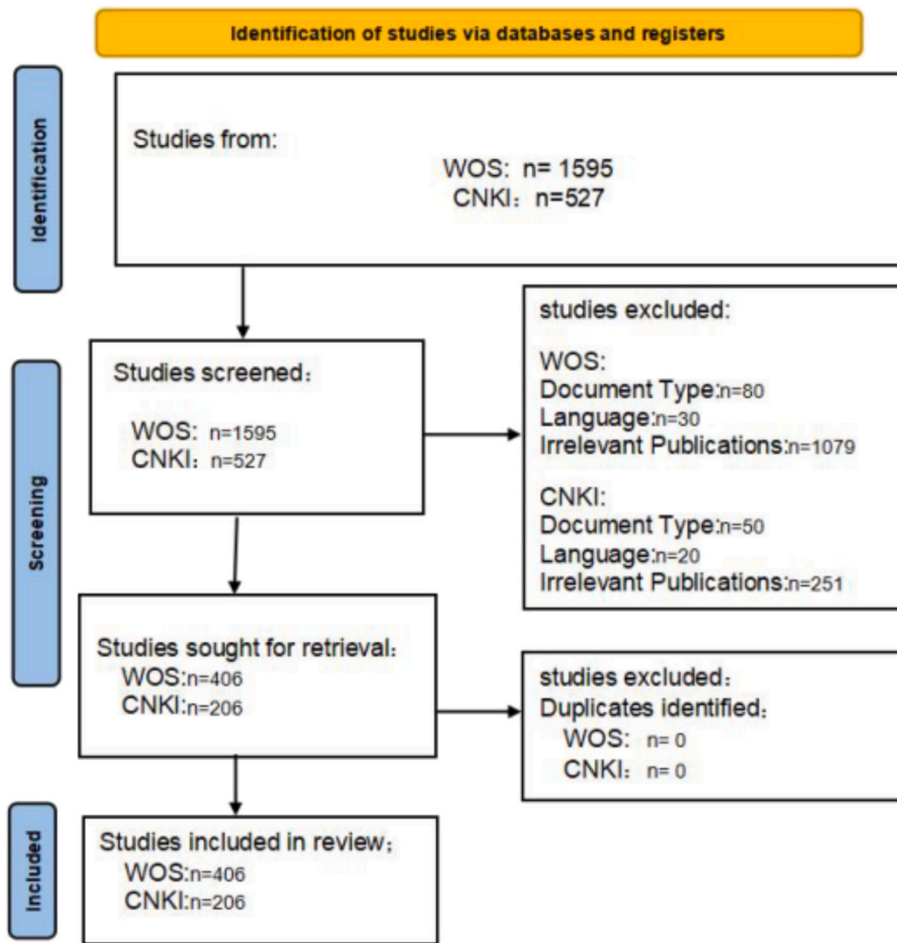


Fig. 1. The Preferred Reporting Items for Systematic Reviews (PRISMA) flow diagram.

three months. As the addition of this small number of studies would not alter the whole picture and it requires much additional effort in re-analyzing the data, we limited the search period from January 1, 2006, to September 25, 2025.

The Chinese-language literature search was conducted on CNKI using the following search string: Subject = (“青少年积极发展 (positive youth development)” OR “正面成长 (positive development)” OR “社会情感学习 (social-emotional learning)”) AND Subject = (“青少年 (adolescent)” OR “儿童 (child)” OR “学生 (student)” OR “高中生 (high school student)” OR “初中生 (junior high school student)”). The English-language literature search was performed in WOS using: TI = (“positive youth development” OR “social-emotional learning”) AND (teenager OR adolescent OR youth) AND (China OR Chinese Hong Kong OR Chinese Macau OR Chinese Taiwan).

The initial search retrieved 2122 publications. These records were screened according to the following inclusion criteria by the first author: (1) studies focusing on PYD, including SEL and the 5Cs framework (Competence, Confidence, Connection, Character, Caring); (2) articles published in English or Chinese and focused on PYD in different Chinese societies, including the Chinese Mainland, Chinese Hong Kong, Chinese Macau, and Chinese Taiwan. This also encompasses Chinese-language journal articles relevant to these places; (3) study participants must include adolescents (aged 10–18) or young adults (aged 18–29), consistent with the PYD theoretical framework that covers the transition to adulthood; (4) eligible publication types included original research articles, reviews, and bibliometric analyses. Subsequently, the second author screened the titles and abstracts of the publications, and any discrepancies were resolved through discussion with the first author.

After using CiteSpace to remove duplicates, 406 English articles and

206 Chinese articles were retained, forming a core dataset for follow-up analysis. Since CNKI does not support the export of reference data, co-citation analysis was only applicable to WOS records. There were 17,031 reference entries extracted from the 406 English articles, forming a dataset for co-citation analysis.

2.2. Data analysis

This study used CiteSpace 6.4.R1, a widely used tool in the field of scientometric and knowledge graphs (Chen, 2006) for data processing and visualization, and VOSviewer to generate supplementary visualization of the bibliometric network. There were three lines of analysis:

- (1) *Performance analysis*: The number of published articles is an important indicator of scientific research activities. This study used the number of publications and influencing factors to identify the time trends and major journals of publications. The “core author” was also determined through the Lotka and Price Law (Price, 1963), whose formula is $m = 0.749 \times \sqrt{n_{max}}$. Against this background, n_{max} is the number of publications of the authors with the highest output, while m is the productivity threshold where core authors emerge.
- (2) *Network analysis*: Research cooperation was analyzed on three dimensions: institution, author, and discipline category. We used Betweenness Centrality (BC) to evaluate the bridge function of nodes and their contribution to the research network. Nodes with a BC index greater than 0.1 indicate that they have an important cooperative contribution to the overall network (Qiu et al., 2014; Van Leeuwen, 2006).

(3) *Trend analysis*: We conducted burst detection and literature co-citation analysis to identify research hotspots and track the development trends. Burst detection discovers emerging research hotspots and frontier directions by identifying keywords with a surge in frequency in a specific period (Qi et al., 2021). Co-citation analysis was also used to identify the frequency with which two documents are cited together, thereby reflecting similar research relationships and tracking the thematic evolution (Chen, Chen, Qi, & Han, 2024; Chen, Chen, Qi, & Shek, 2024; Chen, Lu, Chen, Qi, & Du, 2024).

This study covers the time span from January 2006 to September 2025, divided into 20 annual time slices. Except for the category analysis, which adopts a 5-year slice length, all other analyses use a 1-year slice length. For text processing, title, abstract, author keywords (DE), and keywords plus (ID) were selected as Term Sources.

The node types encompass keywords, cited authors, institutions, categories, and references, with the goal of capturing both the research hotspots and the knowledge base structure within the field. Node selection is performed using the g-index algorithm. To guarantee consistency and comparability across the analyses, a unified threshold is applied to all network analyses, where the scale factor k is uniformly set to 25, thereby dynamically balancing the node inclusion scale across each time slice.

For network pruning, the Pathfinder algorithm was applied in combination with the “Pruning Sliced Networks” strategy, which aimed to preserve the core network structure while removing redundant connections, thereby more clearly revealing the evolutionary pathways and internal logic of research themes. Cluster labels were automatically generated by the system based on the log-likelihood ratio (LLR) algorithm, and the final thematic interpretation was conducted on the basis of algorithm-driven results combined with a review of relevant literature.

3. Results

3.1. Publications in the past two decades

As illustrated in Fig. 2, the annual number of publications in the field of PYD showed a substantial increase from 2006 to 2025. Specifically, publications indexed in the WOS database rose steadily from 6 to 20 from 2006 to 2013, experienced fluctuations after 2013, and peaked at 60 in 2024. In the CNKI database, publication counts grew slowly from 2006 to 2017, entered a phase of rapid growth after 2018, and also reached the highest level in 2024, with 50 articles. As shown in Fig. 2, 2024 became a significant turning point in the volume of publications, with both Chinese and English literature showing exponential growth.

3.2. Collaboration network of PYD research in China

3.2.1. Institutional collaboration network analysis

To address the first research question, this study showed the top 15 institutions with the highest publication output in both English and Chinese literature, respectively. As summarized in Table 1 and visualized in Fig. 3, the institutional collaboration networks within China’s PYD research (2006–2025) revealed distinct patterns in the WOS and CNKI databases.

The overall WOS network consists of 205 nodes and 311 edges, with a density of 0.0149, reflecting a notable cross-regional character. In this network, The Hong Kong Polytechnic University (PolyU; $n = 149$, $BC = 0.12$) led in publication output, with its inaugural publication in 2006 marking the beginning of this research stream. The Chinese University of Hong Kong ($n = 54$, $BC = 0.13$) exhibited the highest betweenness centrality, while City University of Hong Kong ($n = 25$, $BC = 0.29$) showed prominent network connectivity. Beijing Normal University ($n = 27$, $BC = 0.26$) joined PYD research in 2015, Shenzhen University ($n = 15$, $BC = 0.19$) has been active in this field since 2016, and Southwestern University of Finance and Economics ($n = 6$, $BC = 0.02$) has been active in this field since 2020. Taken together, these institutions have formed a core cooperation cluster, in which PolyU’s early initiatives and continuous outputs have made it the pioneering force that has shaped the field. It is worth noting that Daniel T. L. Shek worked at The

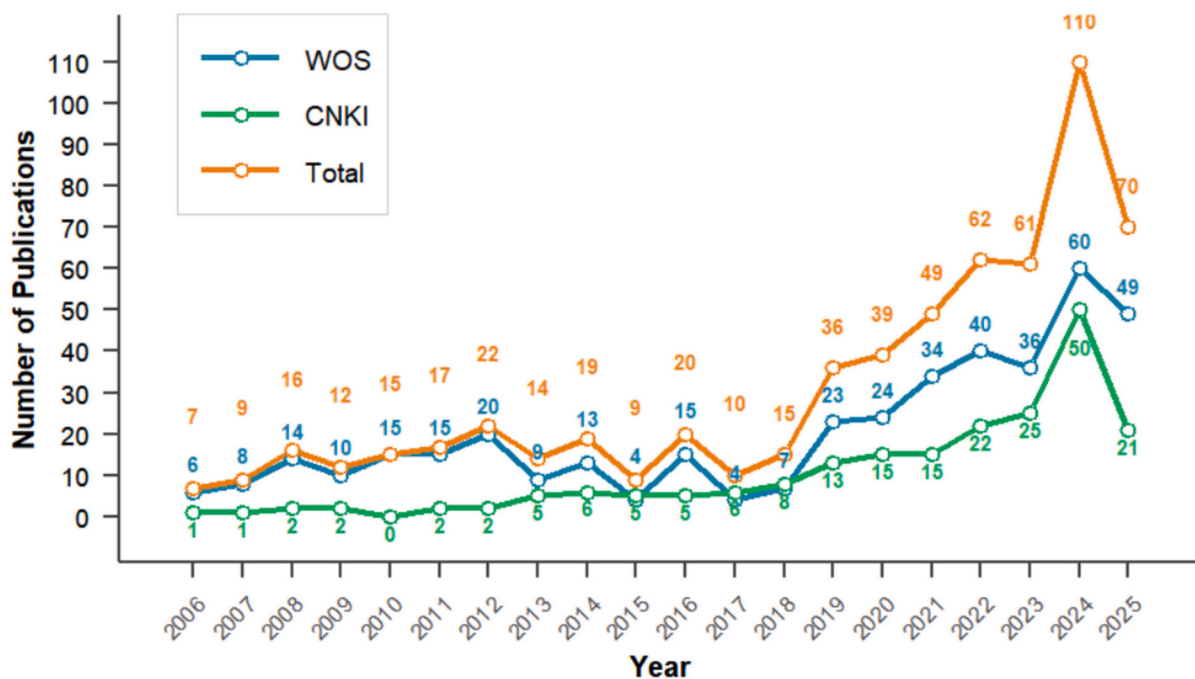


Fig. 2. Trend chart of publications related to positive youth development from January 2006 to September 2025. Note. Data for 2025 is only available through September 25, 2025. The trend line is for reference only.

Table 1
Comparison of top 15 high-output institutions in PYD fields between WOS and CNKI (2006–2025).

Institution	Number	BC	Initial Year of Engagement
WOS			
The Hong Kong Polytechnic University	149	0.12	2006
East China Normal University	63	0.06	2008
Kiang Wu Nursing College of Macau	56	0.00	2007
The Chinese University of Hong Kong	54	0.13	2006
The University of Hong Kong	35	0.10	2007
University of Kentucky	35	0.13	2010
Beijing Normal University	27	0.26	2015
City University of Hong Kong	25	0.29	2006
The Education University of Hong Kong	16	0.08	2009
Shenzhen University	15	0.19	2016
Hong Kong Baptist University	12	0.00	2006
Sichuan University	9	0.01	2021
Yangtze University	8	0.00	2022
Fudan University	7	0.00	2018
Southwestern University of Finance and Economics	6	0.02	2020
CNKI			
Beijing Normal University	29	0.04	2017
East China Normal University	10	0.02	2019
Qingdao University	8	0.00	2017
Southwest University	7	0.00	2021
Dezhou University	6	0.00	2023
Shanghai University	6	0.00	2021
Shenzhen University	6	0.02	2022
Northeast Normal University	5	0.00	2013
Sichuan University	4	0.00	2022
Liaoning Normal University	4	0.00	2011
Hunan Agricultural University	3	0.00	2016
Nanning Normal University	3	0.00	2023
Beijing Academy of Educational Sciences	3	0.00	2019
Tianjin Normal University	2	0.00	2024
Sichuan International Studies University	2	0.00	2022

Chinese University of Hong Kong before July 2009, and then moved to The Hong Kong Polytechnic University in July 2009.

The CNKI network contains 175 nodes and 95 edges, with a density of 0.006. The analysis of Chinese literature from the CNKI database showed that Beijing Normal University ($n = 29$, $BC = 0.04$) was the most productive and influential institution, ranking first in both publication output and betweenness centrality. Shenzhen University ($n = 6$, $BC =$

0.02) had the same publication output as Shanghai University ($n = 6$, $BC < 0.01$), and demonstrated strong bridging capacity in the network. Sichuan University ($n = 4$, $BC < 0.01$) has established its presence in the network since 2022. Beijing Normal University was also one of the earliest institutions to participate in the CNKI data set. Together with other early contributors, such as Qingdao University, it has coordinated a unique research community focusing on local applications.

3.2.2. Author collaboration network

From 2006 to 2025, a number of researchers have contributed to the research field of PYD in China. Prolific authors are often regarded as influential leaders in the academic field and have a considerable impact on the research trajectory. In order to clarify the publication model, the top 15 authors are listed in terms of publication volume in Table 2.

The author cooperation network in the WOS database (Fig. 4a) includes 316 nodes and 448 edges, with a network density of 0.009. The table shows that Daniel T. L. Shek was the author with the most output in the field of PYD, contributing 147 articles, followed by Rachel C. F. Sun ($n = 29$) and Xiaoqin Zhu ($n = 22$). The network diagram further shows that Daniel T. L. Shek occupied the core position and maintained a close collaborative relationship with Cecilia M. S. Ma ($n = 15$), Diya Dou ($n = 12$), Xiang Li ($n = 5$) from Hong Kong, and other scholars such as Zheng Zhou ($n = 4$) from the Chinese Mainland. Research activities of Daniel T. L. Shek since 2006, which are also the earliest in the data collection, have promoted the development of high-quality research for youth in the Chinese context. Other researchers, such as Rachel C. Sun from The University of Hong Kong and Xinli Chi from Shenzhen University, also formed a significant collaboration network.

In the CNKI database, the authors' cooperative network (Fig. 4b) consists of 239 nodes and 186 edges, and the network density is 0.0065. Data analysis showed that Yaqing Mao ($n = 14$) was the most influential author in the network, publishing a total of 14 papers, followed by Danhua Lin ($n = 5$) and Yuan Du ($n = 4$). It is worth noting that internationally renowned scholar Daniel T. L. Shek ($n = 2$) also contributed to the CNKI database. The cooperation network further showed that Yaqing Mao occupied a central position and maintained a close collaborative relationship with scholars, including Chuanli Yang ($n = 4$) of Guangxi Normal University. Since 2018, Yaqing Mao's continuous research has promoted the development of PYD research in China. Other scholars, such as Xiaosong Gai ($n = 3$) from Northeast Normal University and Yunpeng Wu ($n = 3$) from Dezhou University also showed active cooperation in the network, reflecting patterns of cross-institutional and cross-team collaboration.

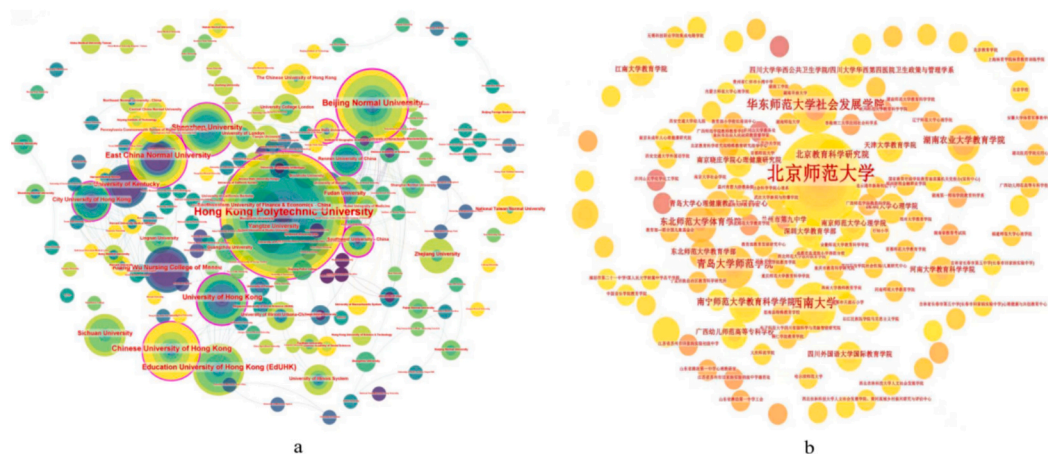


Fig. 3. Institution collaboration network (2006–2025). Note. Each node represents an institution, and the size of the node indicates the number of publications of the institution. Each edge represents the cooperative relationship between the two institutions. Fig. 3a visualizes the data from WOS, while Fig. 3b visualizes the data from CNKI.

Table 2
Comparison of top 15 high-output authors in PYD field between WOS and CNKI (2006–2025).

Author	Institution	Number	Initial Year of Engagement	%
WOS				
Daniel T. L. Shek	The Hong Kong Polytechnic University	147	2006	36%
Rachel C. F. Sun	The University of Hong Kong	29	2006	7.1%
Xiaoqin Zhu	The Hong Kong Polytechnic University	22	2017	5.4%
Lu Yu	The Hong Kong Polytechnic University	17	2010	4.1%
Cecilia M. S. Ma	The Hong Kong Polytechnic University	15	2010	3.7%
Tak Yan Lee	City University of Hong Kong	14	2016	3.4%
Xinli Chi	Shenzhen University	13	2016	3.2%
Diya Dou	The Hong Kong Polytechnic University	12	2020	2.9%
Hing Keung Ma	Hong Kong Baptist University	11	2006	2.7%
Li Lin	Lingnan University	9	2014	2.2%
Danhua Lin	Beijing Normal University	9	2015	2.2%
Xiong Gan	Yangtze University	8	2022	1.9%
Xin Jin	Zhejiang University	6	2022	1.4%
Xiang Li	The Hong Kong Polytechnic University	5	2020	1.2%
Zheng Zhou	Southwestern University of Finance and Economics	4	2020	0.9%
CNKI				
Yaqing Mao	Beijing Normal University	14	2018	6.7%
Danhua Lin	Beijing Normal University	5	2017	2.4%
Yuan Du	Beijing Normal University	4	2018	1.9%
Chuanli Yang	Guangxi Normal University	4	2017	1.9%
Xiaosong Gai	Northeast Normal University	3	2013	1.5%
Yunpeng Wu	Dezhou University	3	2024	1.4%
Daniel T. L. Shek	The Hong Kong Polytechnic University	2	2014	0.9%
Liuyue Huang	Guangdong University of Education	2	2022	0.9%
Shuyun Yang	Zhengzhou Normal University	2	2019	0.9%
Xiaoyan Han	East China Normal University	2	2009	0.9%
Hongxia Wei	Guangxi College for Preschool Education	2	2021	0.9%
Xinli Chi	Shenzhen University	2	2022	0.9%
Ning Chen	Shanghai Normal University	2	2024	0.9%
Xiaoyun Chai	Hubei University of Medicine	2	2017	0.9%
Lizhen Lin	Nanning Normal University	2	2014	0.9%

3.2.3. Disciplinary network analysis

A disciplinary network analysis was conducted to explore the interdisciplinary collaboration on PYD research. We divided the interdisciplinary collaborative trajectory into two phases: the first phase is from 2006 to 2015, and the second phase is from 2016 to 2025. Fig. 5 depicts the interdisciplinary collaboration patterns of China's PYD research across each phase.

During the initial phase (2006–2015), research outputs were primarily concentrated in fields such as multidisciplinary sciences, environmental science, obstetrics and gynecology. Interdisciplinary collaboration during this period displayed a relatively focused structure, with limited cooperation centered on a small set of core disciplines.

In the subsequent phase (2016–2025), the network showed a notable increase in both the number of nodes and the extent of interdisciplinary

collaboration. Psychology (particularly developmental and multidisciplinary psychology) and interdisciplinary social sciences were central nodes in the collaboration network. At the same time, domains such as family studies and education emerged as new and increasingly important nodes in the network. These observations revealed a transition from an initially limited interdisciplinary cooperation to a more diversified and integrated collaborative structure, covering psychology, social sciences, and the medical field.

3.2.4. Co-citation highlights

Fig. 6 shows the 22 most co-cited references from 2002 to 2025. The academic work represents the core node of the reference network. Most of these publications are from Daniel T. L. Shek, while Xiaoqin Zhu, Zheng Zhou, Rebecca D. Taylor and Cecilia M. S. Ma also contributed to these core references. These references cover several key areas, including the evaluation of PYD intervention effectiveness, construction of theoretical models, and empirical research on mental health and adolescent positive development. These studies were published in well-known journals such as the *Journal of Adolescent Health*, *Applied Research in Quality of Life*, and *Children and Youth Services Review*, and have contributed to the methodological and theoretical research on PYD in China.

The analysis of the citation burst showed that there were significant variations in the burst intensity in different periods. For example, Daniel T. L. Shek's 2020 publications had a burst strength of 17.54 during 2020–2025, while his 2006 study recorded a burst strength of 10.08 between 2007 and 2010. Specifically, the research foci from 2006 to 2010 were on PYD intervention evaluation and theoretical modeling; whereas the topics covered from 2011 to 2019 were related to program evaluation and longitudinal studies. From 2020 to 2025, the research focused on children and adolescents, with emerging topics in health and digital intervention.

These highly cited and bursting publications are important indicators of changes in academic focus in PYD research in China. Early foundational research established a solid framework for evaluating the effectiveness of interventions. Mid-term study expanded the scope of research to diverse contexts and populations to examine the causes and consequences of PYD attributes. Recent developments reflect the increasing emphasis on interdisciplinary integration—especially the combination with educational science—and the focus on practical applications and challenges, such as the use of PYD indicators in service leadership and service-learning research. This trajectory provides valuable insights for identifying and tracking the future research frontiers in this field.

3.3. Analysis of themes in PYD research in China

To address the second question regarding the themes of PYD research, the present study analyzed the co-citation analysis and keyword clustering of this field.

3.3.1. Keyword co-occurrence clustering analysis

(1) WOS Keyword Clustering

Keyword clustering was used to map the knowledge structure of the research field as shown in Fig. 7. The cluster module value (Q value) is 0.750, which exceeds the threshold of 0.3, indicating that the network structure is significant. The weighted mean silhouette value (S value) is 0.895, which is higher than the acceptable level of 0.7 showing the high homogeneity and reliability of the clustering. The analysis identified 15 distinct clusters which indicated important research themes including resilience, subjective outcome evaluation, PYD program, loneliness, SEL, randomized group trial, academic satisfaction, secondary school students, family functioning, parental control, impact, process variables, East Asia, developmental trajectories, and client satisfaction approach.

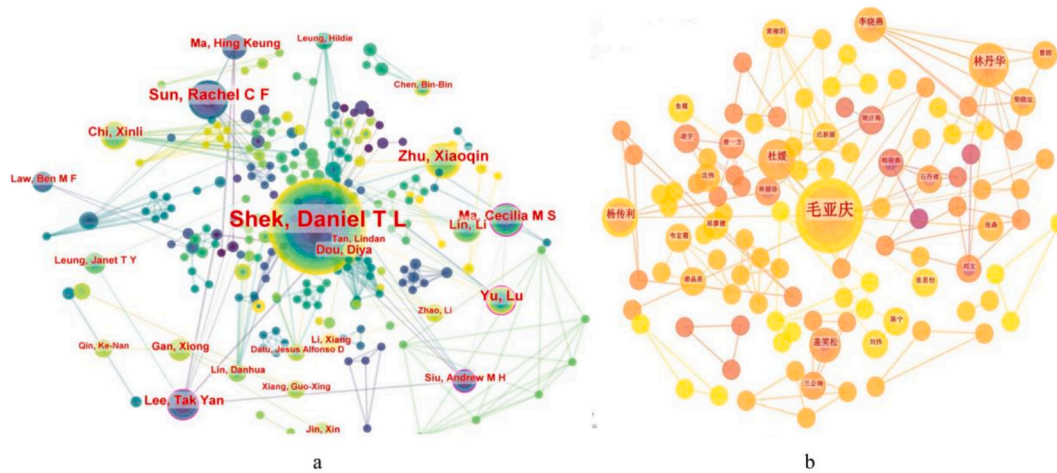


Fig. 4. Cooperation map of core researchers (2006–2025). Note. Each node represents an author, and the size of the node indicates the number of publications of the author. Each edge indicates a collaborative relationship between two authors. Fig. 4a demonstrates data sourced from WOS, while Fig. 4b demonstrates data from CNKI.

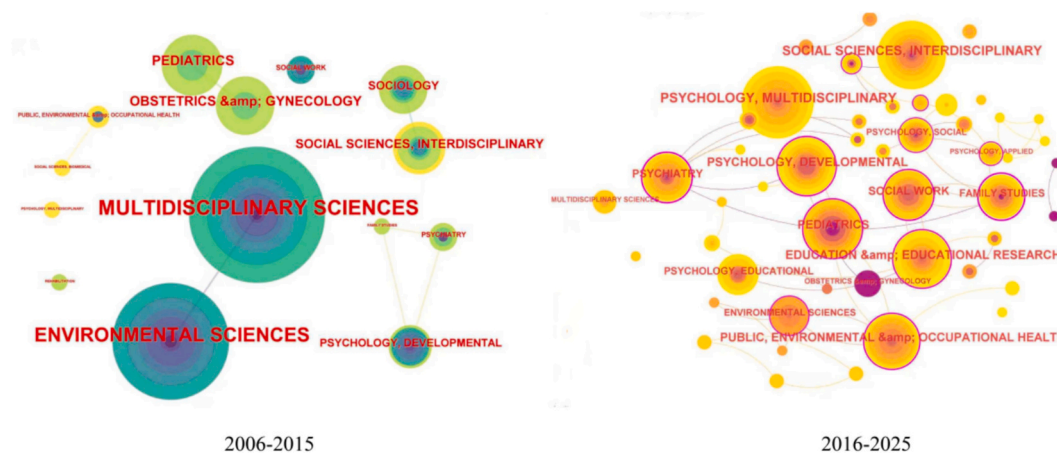


Fig. 5. Category collaboration network. Note. Each node indicates a category, and the larger the node, the more papers were published. Each edge indicates a collaborative relationship between two categories.

The keywords of each cluster with S values are summarized in Table 3 in Appendix A.

(2) CNKI Keyword Clustering

The keyword clustering resulted in the knowledge graph presented in Fig. 8. The obtained cluster module value (Q value) reaches 0.897, much higher than the threshold of 0.3, which indicates that the cluster structure is clear. In addition, the weighted mean silhouette value (S value) was 0.921, far exceeding the standard of 0.7, showing the high consistency and reliability of clustering. The analysis showed a total of 8 clusters with good consistency, including youth (青少年), mental health (心理健康), social-emotional (社会情感), United States (美国), learning environment (学习环境), teacher-student relationships (师生关系), Chinese culture (中国文化), and positive (正面). The keywords of each cluster with S values are summarized in Table 4 in Appendix B.

3.3.2. Co-citation clustering analysis

To further explore the dynamic evolution of research themes, the present study shows the timeline visualization of the results of co-citation cluster analysis from 2006 to 2025 (Fig. 9). It should be noted that co-citation cluster analysis is only applicable to the WOS database, because the reference data used in this analysis could only be extracted from the WOS database, but not from the CNKI database. The identified

thematic clusters could be summarized into three categories: (1) PYD program design and implementation, (2) risk and protective factors of PYD, (3) cross-cultural and social background.

The first category is “PYD program design and implementation” which integrates the following clusters: #0 project path, #1 youth program, #2 service leadership, #5 validation study, #6 social emotional learning program, #8 one-group pretest-posttest design, #9 training worker, and #11 4-year longitudinal study. Representative research shows the development of evidence-based project design: Sun and Shek (2010) used the baseline data of Hong Kong’s P.A.T.H.S. project to explore the relationship between PYD and adolescent problem behavior in the early stage through a structural equation model; Shek and Yu (2011a) examined the initial evaluation data; Zhu and Shek (2020) improved the rigor of methodology through pioneering research in the Chinese Mainland.

The second category is “risk and protective factors for PYD” which includes the following groups: #4 internet gaming disorder, #7 adolescent internet addiction, #13 resilience theory, and #15 youth drug prevention. Studies have conducted to examine youth development with reference to the PYD models (Benson et al., 2007; Lerner et al., 2005). For example, Wang, Zhang, et al. (2022) examined the dynamic relationships between positive development and externalized problem behavior through three years of longitudinal research, which provided empirical support for PYD research on Chinese adolescents.

Top 22 References with the Strongest Citation Bursts

References	Year	Strength	Begin	End	2002 - 2025
Shek Daniel T L, 2006, INT J ADOLESC MED HEALTH, V18, P341	2006	6.88	2006	2011	
Shek DTL, 2007, THESCIENTIFICWORLDJO, V7, P47, DOI 10.1100/tsw.2007.38, DOI	2007	10.08	2007	2010	
Shek DTL, 2006, THESCIENTIFICWORLDJO, V6, P1466, DOI 10.1100/tsw.2006.238, DOI	2006	8.94	2007	2011	
Shek Daniel T L, 2006, INT J ADOLESC MED HEALTH, V18, P299	2006	6.38	2007	2010	
Shek DTL, 2007, THESCIENTIFICWORLDJO, V7, P195, DOI 10.1100/tsw.2007.43, DOI	2007	9.02	2008	2010	
Shek Daniel T L, 2006, INT J ADOLESC MED HEALTH, V18, P315	2006	7.27	2008	2010	
Shek DTL, 2007, THESCIENTIFICWORLDJO, V7, P1024, DOI 10.1100/tsw.2007.161, DOI	2007	7.27	2008	2010	
Shek DTL, 2007, THESCIENTIFICWORLDJO, V7, P686, DOI 10.1100/tsw.2007.126, DOI	2007	6.83	2008	2010	
Shek DTL, 2006, THESCIENTIFICWORLDJO, V6, P2274, DOI 10.1100/tsw.2006.356, DOI	2006	6.53	2008	2009	
Shek DTL, 2008, THESCIENTIFICWORLDJO, V8, P1, DOI 10.1100/tsw.2008.21, DOI	2008	7.31	2009	2011	
Shek DTL, 2009, INT J DISABIL HUM DE, V8, P107, DOI 10.1515/IJDHD.2009.8.2.107, DOI	2009	7.62	2010	2012	
Shek DTL, 2011, THESCIENTIFICWORLDJO, V11, P546, DOI 10.1100/tsw.2011.33, DOI	2011	10.25	2011	2013	
Shek DTL, 2010, THESCIENTIFICWORLDJO, V10, P1509, DOI 10.1100/tsw.2010.122, DOI	2010	9.42	2011	2012	
Shek DTL, 2011, THESCIENTIFICWORLDJO, V11, P253, DOI 10.1100/tsw.2011.6, DOI	2011	7.64	2011	2013	
Shek DTL, 2010, SOC INDIC RES, V98, P41, DOI 10.1007/s11205-009-9515-9, DOI	2010	9.24	2012	2014	
Shek DTL, 2019, ADOLESC HEALTH MED T, V10, P131, DOI 10.2147/AHMT.S179946, DOI	2019	17.54	2020	2025	
Zhu XQ, 2020, CHILD YOUTH SERV REV, V114, P0, DOI 10.1016/j.chilyouth.2020.105022, DOI	2020	11.42	2020	2025	
Zhou Z, 2020, INT J ENV RES PUB HE, V17, P0, DOI 10.3390/ijerph17124457, DOI	2020	8.39	2020	2025	
Taylor RD, 2017, CHILD DEV, V88, P1156, DOI 10.1111/cdev.12864, DOI	2017	8.26	2020	2022	
Ma CMS, 2019, APPL RES QUAL LIFE, V14, P961, DOI 10.1007/s11482-018-9632-1, DOI	2019	7.77	2020	2022	
Shek DTL, 2021, APPL RES QUAL LIFE, V16, P1847, DOI 10.1007/s11482-020-09848-9, DOI	2021	6.32	2021	2023	
Shek DTL, 2021, APPL RES QUAL LIFE, V16, P1, DOI 10.1007/s11482-020-09898-z, DOI	2021	6.73	2022	2025	

Fig. 6. WOS co-citation cluster map.

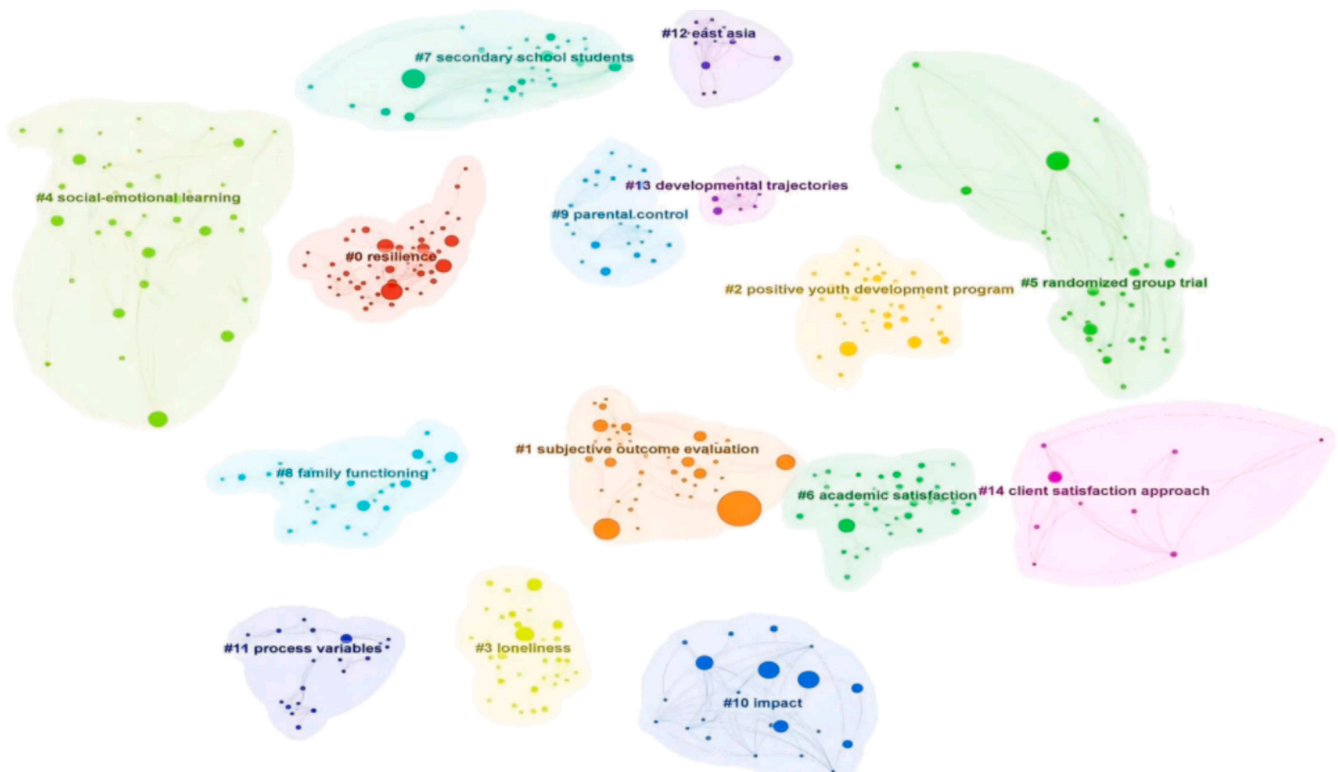


Fig. 7. Keyword clustering for PYD in WOS (2006–2025).

The third category is “cross-cultural and social background”, including groups such as #3 mainland Chinese adolescent, #14 southern China, #16 ethnic minorities, #17 non-intact families, and #19 parental

migration. This research direction focuses on specific groups of teenagers in the transformation of Chinese society, including the study of left-behind children, which is an important branch. Yang et al. (2024)

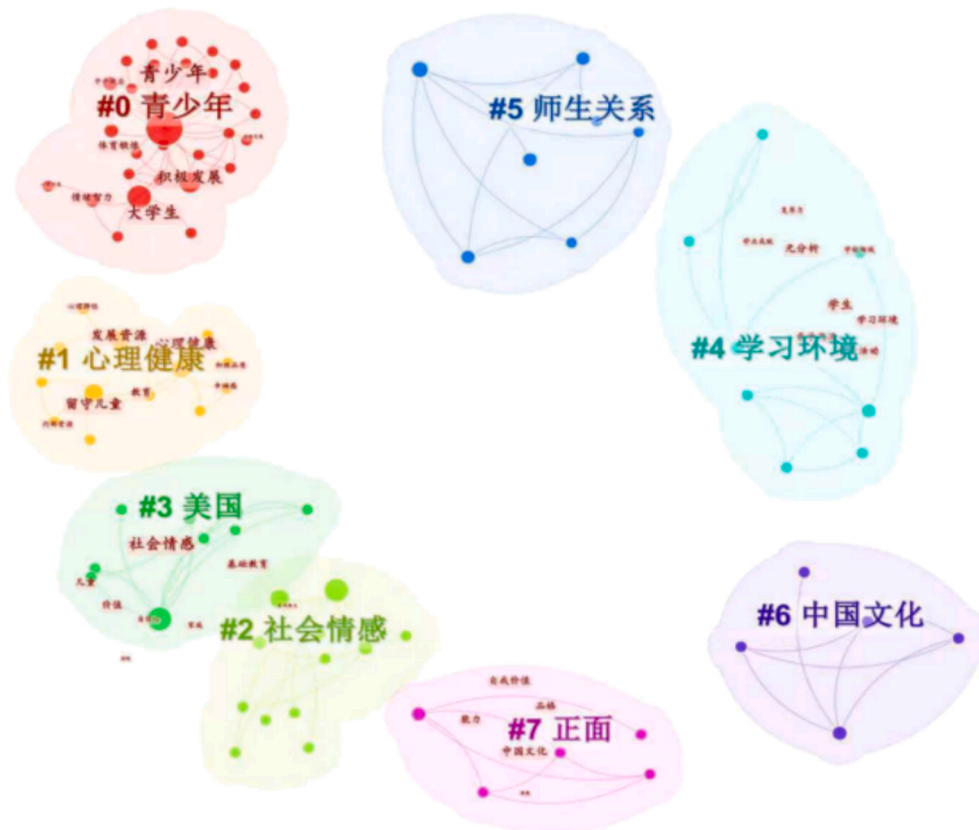


Fig. 8. Keyword clustering of PYD research in CNKI (2006—2025).

examined the social and psychological adaptation of left-behind children in rural areas of China, revealing the unique challenges faced by this group. Lin et al. (2011) discussed the problem of discrimination among rural people (including families of left-behind children) who migrated to urban areas. These studies echo the cross-cultural research of Gómez-López et al. (2022) on the longitudinal relationship between psychological well-being and social competence. These studies jointly emphasized the impact of socio-cultural background on PYD mechanisms, especially the importance of left-behind children in China as a special group in PYD research, reflecting the strong responsiveness of PYD research to social reality in the process of localization.

3.4. Analysis of trends in PYD research in China

To answer the third research question (i.e., to capture the core themes and trends of China's PYD research), a keyword co-occurrence analysis was carried out on the PYD-related literature published between 2006 and 2025, which was sourced from the WOS and CNKI databases. In order to track the evolution of the research focus, the analysis period was divided into three stages: initial, subsequent, and recent stages, targeting each database respectively.

3.4.1. Research trend of WOS database

The three stages of the focus of the WOS database research are shown below (Fig. 10):

(1) Initial Stage.

The prominent keywords and the intensity of their bursts included: subjective outcome evaluation (period: 2006–2014, strength: 14.96), Hong Kong (period: 2006–2009, strength: 5.98), Chinese adolescents (period: 2006–2016, strength: 3.98), objective outcome evaluation (period: 2006–2011, strength: 3.92), and Tier 1 Program (period:

2008–2012, strength: 10.82). This stage was characterized by the development of evaluation tools and the Hong Kong P.A.T.H.S. program, which was supported by the Hong Kong Jockey Club Charitable Trust. These efforts established the methodological basis for the evaluation of PYD interventions through subjective and objective evaluation paradigms. The research during this period also explored the applicability of the international positive development theory in the context of Chinese culture.

(2) Subsequent Stage.

The focus turned to the following keywords: Project P.A.T.H.S. (period: 2008–2010, strength: 15.77), family functioning (period: 2013–2016, strength: 4.79), development scale (period: 2012–2013, strength: 5.65), and substance use (period: 2013–2019, strength: 4.37). Compared with the early stage, the research focused on antecedents and outcomes of PYD (e.g., family function, substance use). The keyword “Project P.A.T.H.S.” showed that a more in-depth study had been carried out on the systematic intervention of PYD characters of Chinese adolescents, while the “development scale” marked progress in the development of measurement tools for assessing PYD.

(3) Recent Stage.

Burst keywords in this phase included: risk (2016–2020, strength: 3.89), life satisfaction (2020–2023, strength: 3.57), validation (2021–2025, strength: 3.69), mental health (2021–2025, strength: 4.50), school (2021–2025, strength: 4.65), scale (2022–2025, strength: 5.16), and social emotional learning (2023–2025, strength: 5.13). The keyword SEL emerged as a central hotspot with the second-highest strength in the network. Concurrently, studies increasingly addressed mental health, life satisfaction, and developmental risks within the context of PYD research in China.

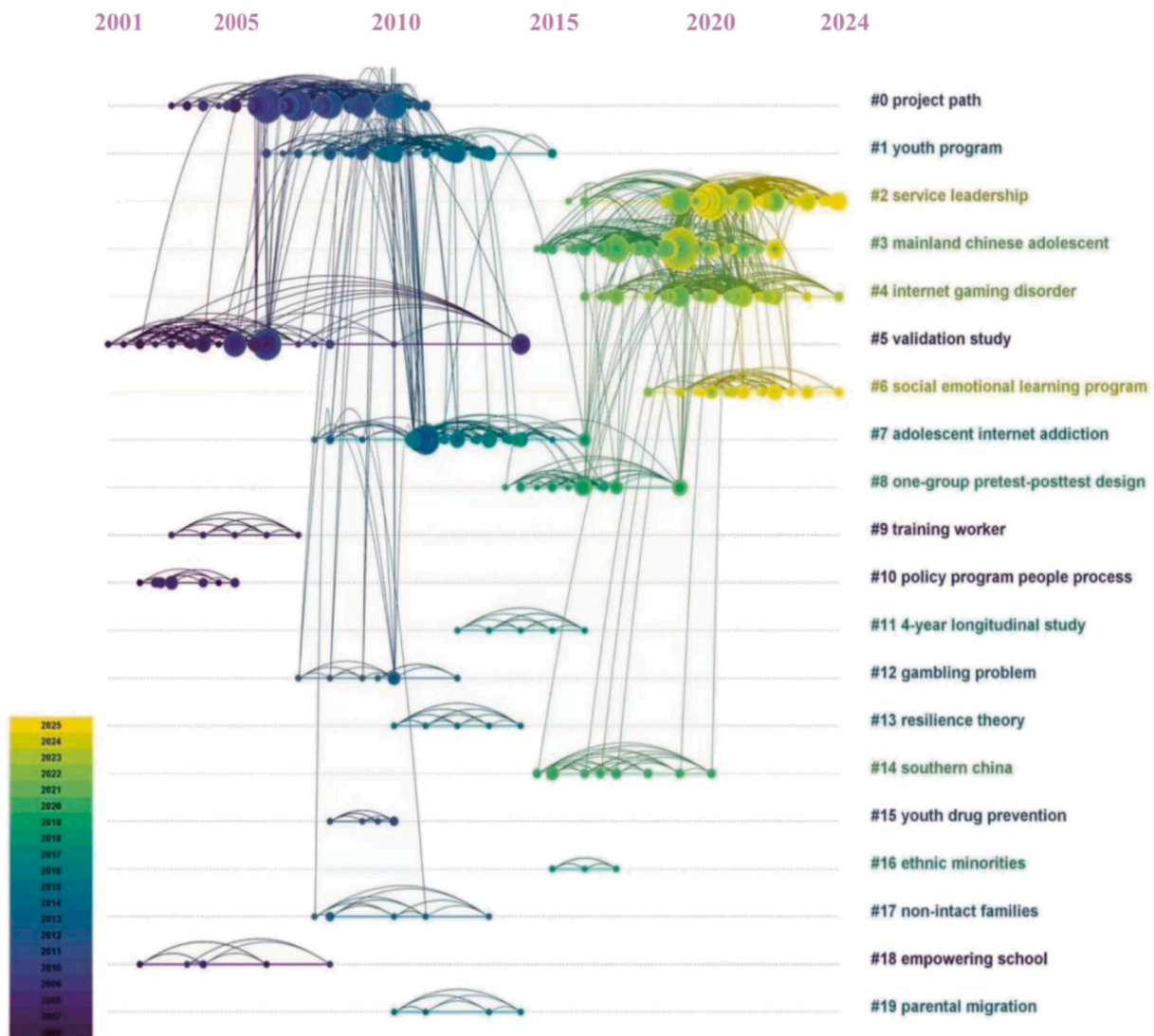


Fig. 9. WOS clusters of document co-citation (2006–2025). Note. A total of 20 clusters are generated in the figure. Each node represents a cited document, and each edge represents a co-citation relationship. Color indicates the publication date: yellow indicates the newly published literature, while green and blue indicate the early published literature. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

3.4.2. Research trend of CNKI database

A parallel analysis was conducted on the CNKI database (Fig. 11), with the following stage-specific trends:

(1) Initial Stage.

Key burst keywords of this stage included social-emotional (2007–2008, strength: 1.26), adolescents (2008–2013, strength: 2.23), left-behind children (2015–2016, strength: 1.12), and positive development (2017–2018, strength: 0.68). This stage involved conceptual clarification of social-emotional competencies focusing on vulnerable groups such as left-behind children, highlighting early attention to the intersection of China's social structure and youth development. The term positive development signified initial efforts to localize PYD theory within the Chinese context. The focus on left-behind children was also a unique feature of the Chinese Mainland when many migrant workers moved to the cities to work, leaving their children in the rural areas.

(2) Subsequent Stage.

The core keywords of this stage included college students

(2018–2019, strength: 0.29), school bullying (2019–2020, strength: 2.18), mental health (2020–2021, strength: 1.47), and teacher-student relationship (2021–2023, strength: 1.28). During this stage, the scope of research expanded from teenagers to college students, paying more attention to the school-based ecosystem. Themes such as campus bullying, teacher-student relationship, and mental health promotion reflected the integration of the concept of PYD in educational practice and promoted the contextualization of PYD theory in China.

(3) Recent Stage.

The most prominent keywords are basic education (2023–2025, strength: 1.15), children (2023–2025, strength: 0.92), and labor education (2023–2025, strength: 0.92). This period is highly compatible with national education policies, such as basic education reform and the inclusion of labor education in the curriculum. The research increasingly linked PYD with children's development and basic education, and explored the role of labor education, a unique component of China's education system, in promoting the comprehensive development of adolescents. The research integrated cultural elements such as collectivism and traditional virtues, which further reflected the localization

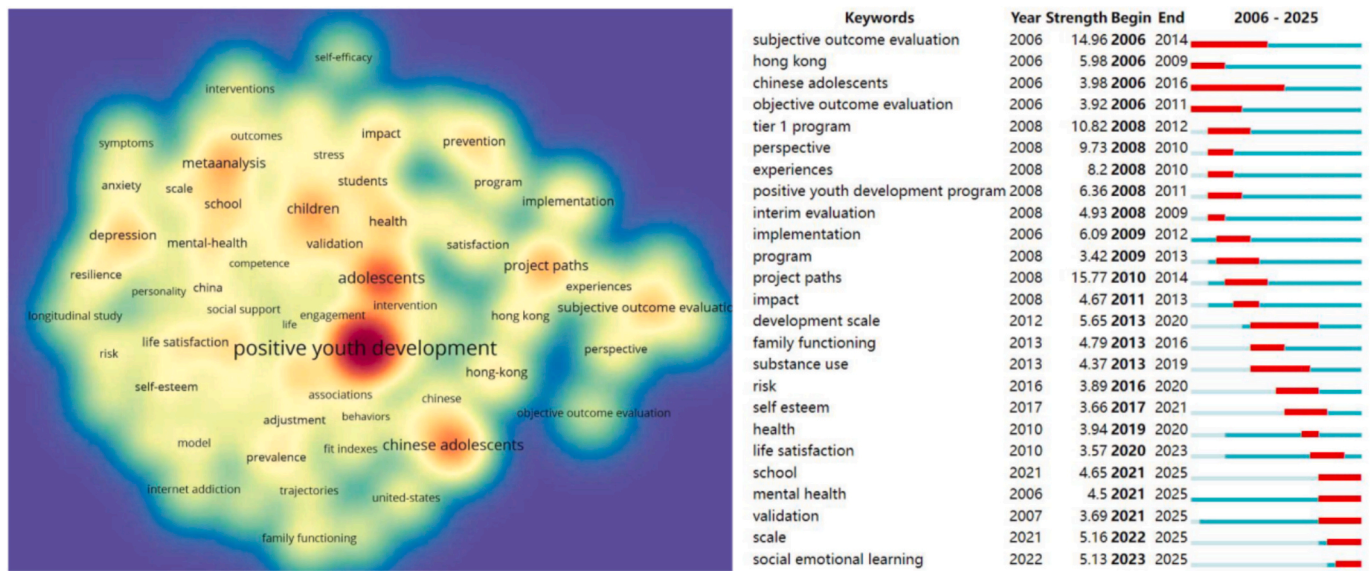


Fig. 10. Keyword co-occurrence and keywords with the strongest bursts (WOS).



Fig. 11. Keyword co-occurrence and keywords with the strongest bursts (CNKI).

and deepening of innovation in Chinese PYD research.

4. Discussion

This study systematically examined China's PYD research by analyzing Chinese and English publications from 2006 to 2025. The study extended previous work in several aspects. First of all, we extended the publication date of the literature to September 2025 to include updated studies. Second, this study focused on PYD research in the Chinese context, aiming to provide a more comprehensive overview of China's PYD research network and research trends, which are relatively neglected in international academic literature. Third, this study integrated Chinese publications from CNKI and English publications from the Web of Science database to achieve comprehensive data coverage, which enables us to understand this field more comprehensively. Finally, both PYD and Social Emotional Learning (SEL) frameworks were incorporated into the analysis, reflecting different theoretical perspectives in this field. Based on this observation, the follow-up discussion will answer the research questions with reference to three issues: the cooperative network, evolution of research topics,

and comparisons of the publication characteristics between Chinese and English journals.

4.1. Collaborative networks of PYD research in China

The collaboration network analysis of PYD research in China showed collaborative ecosystems within the WOS and CNKI databases. In the WOS database, The Hong Kong Polytechnic University served as a core hub, connecting the international academic community with Chinese research through cross-institutional and cross-regional cooperation. The first level was establishing a co-author network with local institutions in Hong Kong, including The Chinese University of Hong Kong, The University of Hong Kong (Sun & Shek, 2010), City University of Hong Kong (Zhu et al., 2024) and Hong Kong Baptist University (Shek & Ma, 2007). Second, The Hong Kong Polytechnic University also carried out cross-regional cooperation with universities in Chinese Mainland, such as Sichuan University, Southwestern University of Finance and Economics (Zhou et al., 2021) and Guangdong University of Technology. Such cooperation not only reflected the importance of individual-level collaboration, but more importantly, through in-depth resource

sharing and research coordination, collectively provided evidence for adapting and validating the international PYD theories in the Chinese context.

In the CNKI database, Beijing Normal University built a unique mainland regional cooperation network as the core node. With Yaqing Mao's team as the center, the network formed a stable core cooperation circle, maintaining close contact with scholars such as Sen Zhang (Zhang & Mao, 2020) of Capital Normal University and Yuan Du (Du et al., 2018) of Beijing Normal University. At the same time, the cooperation network of Beijing Normal University also extended to other institutions such as East China Normal University (Huang et al., 2024) and Shanghai University (He et al., 2019), forming an expansive or radiating collaborative structure. This cooperation model aligns closely with the sustainable development path of China's PYD research proposed by Wei et al. (2021).

In summary, with their first-mover advantage, high scientific research output and core network status, The Hong Kong Polytechnic University and Beijing Normal University have become key promoters of cooperation in the WOS system and CNKI system, respectively. The international network of WOS complements CNKI's domestic-based cooperation system.

The author's cooperative network further highlights the key role of the core research team in promoting the development of this field. In the WOS database, Daniel T. L. Shek and his team, including Xiaoqin Zhu, Lu Yu, and other scholars from The Hong Kong Polytechnic University, were the main driving force for PYD research in China. Their research covered key areas such as PYD intervention evaluation, theoretical model construction and longitudinal analysis, and has established a mature research paradigm through continuous empirical exploration. The contribution of Daniel T. L. Shek's team is not only reflected in their quantitative research output, but also in rigorous methodological design, such as randomized controlled trials and long-term follow-up studies, which have validated the effectiveness of PYD intervention in the context of Chinese culture. As shown by Shek and Chai (2020), culturally adapted PYD intervention has significantly improved the social and emotional competence and mental health of adolescents.

4.2. Research trends and hotspots of PYD research in China

The analysis of keyword co-occurrence, burst detection and co-cited literature shows that the evolution of China's PYD research paradigms has several characteristics: localization of international frameworks, globalization of local practices, and different developmental characteristics shown by different databases. In the WOS database, early PYD research in China focused on the development of evaluation methods for PYD intervention, including the creation and application of subjective and objective outcome evaluation tools. These pioneering studies have established methodological rigor for this field. With the advancement of the research, the focus has turned to systematic intervention design and the exploration of micro-level influencing factors, such as family functioning and parent-child relationships. In recent years, the deep integration of SEL and PYD has become a new research focus, and digital intervention methods have begun to be explored. This developmental trend is consistent with the views of Giovanelli et al. (2020), who emphasized that digital technology provides new opportunities for youth development interventions.

In the CNKI database, PYD research in the Chinese Mainland has gradually developed, paying more attention to solving local practical problems, forming a supplementary path for international research. Early research mainly started from clarifying the concept of "social emotional" ability and paying attention to the development needs of vulnerable groups such as left-behind children, showing a keen awareness of domestic social problems. Subsequently, the research subjects were extended from teenagers to college students, thus extending the theoretical coverage to different age groups. The research in the mid-term stage focused on practical problems in the school environment,

including mental health promotion, teacher-student relationship optimization and campus culture construction. Intervention strategies have increasingly aligned with China's educational ecosystem and policy orientation. Recent studies have deeply explored the reform of the basic education system and labor education policies, combining the concept of PYD with Chinese cultural values, such as collectivism and traditional virtues, and exploring the implementation of PYD with local characteristics. This direction echoes the view of Lin et al. (2017) that PYD research must be fully integrated into the local cultural background and educational policy orientation to achieve theoretical value and practical effectiveness.

With reference to the parallel comparison of WOS and CNKI findings, it is necessary to carefully consider the inherent structural and functional differences between the two databases when interpreting the findings. First, WOS includes English-language international journals, which can more easily capture global mainstream theoretical frameworks, whereas CNKI comprehensively indexes Chinese literature and is more inclined to reflect local Chinese policy orientations. Therefore, differences in research themes presented by the two databases may partially result from their selection preferences rather than fully representing regional differences. Second, the database's different indexing structure also limits the comparability of specific dimensions. Specifically, the data from CNKI do not contain reference information of the publications and co-citation analysis is only carried out through the WOS database, which consequently causes a lack of comparison between the two systems in co-citation analysis. Accordingly, the observed differences in collaboration density may also partly stem from limitations in data coverage rather than fully reflecting actual differences. Nonetheless, it can be argued that as keyword clustering and burst detection are directly derived from the core content of the literature, findings on research topics and evolution of hotspots may be less influenced by the database's indexing structure.

4.3. Publication characteristics: Chinese vs. English journals

A comparative analysis of the WOS and CNKI databases shows that both English and Chinese publications have a common mission: to promote the positive development of Chinese teenagers and address key issues such as mental health. However, there are also some differences in the volume of publications, author networks and research topics.

4.3.1. Publication volume and academic positioning

In the past two decades, China's research on PYD has continued to grow and attracted growing attention from researchers at home and abroad. In 2024, PYD research has showed a significant increase compared to the past years. One possible factor contributing to this observation is the intensive introduction of relevant policies by the Chinese government to promote child and adolescent comprehensive development in recent years. One influential policy is the "Double Reduction" policy. In 2021, the General Office of the Communist Party of China Central Committee and the General Office of the State Council jointly issued the "Double Reduction" policy, requiring nationwide efforts to reduce academic burden and focus on students' healthy and comprehensive development. In 2024, the Ministry of Education and sixteen other departments jointly released the "Home-School-Society Collaborative Education 'Teacher Alliance' Work Plan," aiming at promoting healthy and happy growth for children and adolescents and further expanding youth mental health work from a single educational setting to a systemic intervention framework involving family, school, and society. These policies demonstrate the unprecedented attention paid by the Chinese government to adolescent positive development issues and might consequently foster a surge research in this field in subsequent years.

In terms of output differences, English publications in WOS ($n = 406$) significantly outnumber Chinese publications in CNKI ($n = 206$). One of the main reasons is that the number of journals in WOS is significantly

higher than that in CNKI. Moreover, researchers from top institutions in Hong Kong and the Chinese Mainland usually have a wider network of international cooperation and are influenced by the institutional evaluation system, which prompts researchers to prioritize publishing articles in high-impact English journals to participate in global academic discussions. These studies usually follow the internationally recognized empirical paradigm, emphasizing the rigor of the method and the theoretical contribution. For instance, the research team led by Daniel T. L. Shek from The Hong Kong Polytechnic University has published a series of studies in influential SSCI journals, systematically testing and expanding the applicability of Catalano's model in the context of Chinese culture, and providing important evidence for the cross-cultural universality of PYD models (Shek & Yu, 2011b). Similarly, scholars from the Chinese mainland, such as Yaqing Mao's team, have published a series of studies in authoritative Chinese journals. These publications mostly contribute to addressing local issues in China, reflecting a distinct local practice orientation (Wang & Mao, 2018).

4.3.2. Case analysis of authors' publication strategies

Authors' publication strategies clearly reflect these positioning differences. For example, Xinli Chi from Shenzhen University has published many papers in WOS, but few on CNKI. This is consistent with her focus on global issues such as digital intervention and extensive cross-regional cooperation (Cui & Chi, 2021; Liang et al., 2023). In her CNKI research, she focused on the practical needs of localization, such as using growth hybrid models and network analysis to explore the symptom evolution patterns of adolescents at risk of internet addiction, and provided localized solutions for Internet addiction screening and intervention for domestic primary and secondary schools (Chen et al., 2023). In contrast, the core research results of Yaqing Mao's team at Beijing Normal University are mainly concentrated in CNKI, because their work focuses on the localization of the SEL curriculum system and the practice of educational policies in the context of basic education in China, mainly serving domestic policymakers and front-line educators (Mao et al., 2024; Mao & Yu, 2024).

4.3.3. Divergence in research themes

In terms of research topics, there are obvious differences between the two datasets. English-language studies (WOS) focuses more on testing and improving the universality of the mainstream PYD theoretical model in the context of Chinese culture, aiming to participate in international academic dialogue. For example, the research of Chen et al. (2021) adopted a longitudinal design to verify the applicability of family system theory in the cross-cultural context by examining the relationship between parents' comparison of children and adolescent psychological adjustment. In contrast, Chinese literature (CNKI) may have a stronger connection to Chinese culture and policy responsiveness. The Chinese PYD research topics - such as "labor education" are closely related to the current national education policy and echo the traditional Chinese value system.

The "policy responsiveness" presented by the above CNKI research reflects China's PYD research driven by national policies. For example, CNKI-based research has deeply explored specific local groups, such as "left-behind children", showing unique cultural sensitivity. For example, in the study published in the Chinese Journal of Clinical Psychology, Fan et al. (2024) systematically explored the mechanism of stress and personal growth initiative in the psychological adaptation relationship of left-behind children. Another study of left-behind junior high school students examined the characteristics of their psychological resilience and coping tendencies (Chen et al., 2011). Results showed that compared with non-left-behind students, these students showed a

significantly lower level of psychological resilience in all dimensions. At the same time, they had a weak tendency to respond positively but a stronger tendency to respond negatively, thus highlighting the specific challenges faced by this group during adolescence (Liu et al., 2014).

In terms of PYD research focus, the Chinese Mainland and Hong Kong have some differences in terms of research focus. In terms of research approaches, Daniel T. L. Shek's team in Hong Kong focuses on the development and evaluation of PYD intervention programs. Through rigorous empirical design, this team systematically provided evidence to support the effectiveness of PYD interventions in enhancing adolescents' capabilities and mental health and extended the P.A.T.H.S. program from Hong Kong to Chinese Mainland (Tan et al., 2025), particularly the rural Western regions, conducting cross-regional contextual comparisons and adjustments. In contrast, research in the Chinese mainland represented by Yaqing Mao's team focused on addressing local educational challenges, such as improving school management and fostering students' well-rounded character, with an emphasis on translating research findings into practical application.

Although the research approaches differed, scholars in both regions shared a high degree of alignment in their core pursuits: commitment to introducing the core constructs of international PYD or the SEL theoretical framework into the domestic Chinese context, using localization of theoretical construction and practical exploration to respond to and address the real issues in Chinese education, jointly promoting the deepening and development of positive youth development research in the Chinese context. This two-way interaction, combining a global perspective with local action, not only enriches the theoretical system of youth development in China but also provides an important academic reference for the cross-cultural adaptation and development of PYD theory in non-Western contexts, demonstrating the theoretical inclusiveness and practical feasibility of positive youth development research globally.

4.4. Cultural differences in PYD research

The current finding is important because there are cultural variations in the conceptions of "desired" youth development attributes. For example, resilience, self-regulation, and moral competence emphasized in the Western PYD literature are highly valued by Confucianism, which is a cardinal Chinese social philosophy. A famous Confucian motto underscores the importance of resilience in human development: "故天将降大任于斯人也，必先苦其心志，劳其筋骨，饿其体肤，空乏其身，行拂乱其所为，所以动心忍性，曾益其所不能。" ("when Heaven is about to confer a great office on any man, it first exercises his mind with suffering, and his sinews and bones with toil. It exposes his body to hunger and subjects him to extreme poverty. It confounds his undertakings. By all these methods it stimulates his mind, hardens his nature, and supplies his incompetence") (Chinese Text Project, 2006). Traditional Chinese education also emphasized moral competence highlighted in PYD models, as reflected in "弟子规" ("Standards for a Good Child"), which stresses moral competence, prosocial behavioral, and social norms (Shek & Law, 2019).

However, some PYD constructs, such as self-determination and emotional competence, which are highlighted in Western PYD models, are not strongly emphasized in the traditional Chinese culture (Zhou et al., 2020). Liu et al. (2016) also found that Chinese adolescents scored higher on modesty and self-regulation than on curiosity and humor. Western adolescents showed higher levels of integrity, kindness, and gratitude but lower levels of modesty and self-regulation (Park & Peterson, 2006). Furthermore, in the Chinese culture, "chiku" (吃苦) means experiencing and overcoming hard and adverse situations, which

is highly appreciated. Thus, labor education is regarded as a key channel to cultivate resilience among adolescents, as reflected in an important topic in CNKI databases but less common in WOS research.

There are also differences between China and Western countries with reference to youth development policies and education. [Tan and Shek \(2025\)](#) systematically reviewed China's child and adolescent mental health policies from 1991 to 2023. They found that the number of policies had shown a continuous growth trend, with the Chinese Ministry of Education and the National Health Commission being the main driving forces in policy formulation and dissemination. The study further pointed out that youth development practices in China are deeply rooted in its unique socio-cultural context, with urban-rural disparities and the examination-oriented education system profoundly influencing the design and implementation of child and adolescent education practice and research. The present study also suggests that research on PYD in China is to some extent "policy-driven", which means Chinese PYD research might exert influence on how challenges of urban-rural disparities and other social issues, such as left-behind children, are addressed.

4.5. Contributions, future challenges and directions

The current study makes an academic contribution to the PYD field in China. The contributions of The Hong Kong Polytechnic University and Daniel T. L. Shek's team are particularly noteworthy. By developing large-scale PYD intervention projects, such as Project P.A.T.H.S. and implementing long-term practice in Hong Kong and some mainland areas, Daniel T. L. Shek's team has provided support for the adaptability of international PYD theory in the context of Chinese culture for localized interventions. For example, a recent study examining the network structure of the PYD characteristics of rural adolescents provides an empirical basis for understanding the development characteristics of specific groups ([Chen et al., 2025](#)). In particular, the rural Chinese adaptation of Project P.A.T.H.S. ([Shek & Peng, 2025](#)) has made substantial contributions to advancing the program's implementation in the Chinese Mainland's rural settings. In addition, highly cited academic papers from universities in Hong Kong have become an academic bridge connecting China's and global PYD research, promoting the integration of Chinese research results into international academic discourse.

The contributions of PYD research in the Chinese mainland mainly focus on the practical exploration of localization, specifically the SEL curriculum system led by Beijing Normal University ([Li et al., 2021](#)), PYD intervention programs targeting rural youth ([Zhou et al., 2024](#)), and models for integrating labor education ([Ma & Huang, 2021](#)). These initiatives not only provide empirical support for the application of the international PYD theory in the Chinese cultural context, but also promote the implementation of the PYD concept in basic education through the collaborative model of "multi-party participation", and provide academic support for solving practical problems in the development of domestic youth.

Although significant progress has been made in PYD in the Chinese Mainland, a comprehensive analysis of collaborative networks and the evolution of themes showed that there were still several key challenges that need to be addressed. The first challenge is the lack of integration of research networks. This problem is particularly evident in the PYD research indexed in CNKI. Addressing this challenge requires efforts in two key ways: fostering research collaborations and building PYD research teams in the Chinese mainland through joint project applications and professional training programs, and deepening regular cooperation between Hong Kong and mainland scholars and establishing

cross-regional research communities. This direction is highly consistent with the conclusion of [Qi et al. \(2021\)](#), whose research clearly points out that cross-regional cooperation is the key driving force for the innovative development of global PYD research. It is worth noting that the initiative of Southwestern University of Finance and Economics and The Hong Kong Polytechnic University to jointly establish the Research Center for Child and Adolescent Development in 2025 represents a model of cross-regional research cooperation. This initiative establishes a platform for deepening PYD research integration between Hong Kong and the Chinese mainland through diversified resource sharing.

Second, inadequate cultural adaptation poses another challenge. Although existing research has recognized the importance of localization, cultural adaptation still needs to be further deepened. This problem is mainly manifested in two specific aspects. First of all, in terms of measurement tools, Chinese cultural elements such as collectivist values and family traditions have not been systematically integrated. Secondly, at the level of intervention projects, there is still insufficient consideration for urban and rural youth and regional differences among different ethnic groups. A dual approach is needed to address this challenge. Primarily, evaluation tools should be deeply integrated with Chinese cultural characteristics to develop a more culturally sensitive measurement scale. Besides, it is necessary to design differentiated intervention plans according to the characteristics of different groups of people. This direction is highly consistent with the research results of [Lin et al. \(2017\)](#), which emphasize the key impact of cultural adaptability on the effectiveness of PYD interventions. It is worth noting that the rural adaptation of Project P.A.T.H.S. serves as a successful model of cultural adaptation practice. By incorporating rural-specific cultural contexts, values, and educational practices into the intervention framework ([Shek & Peng, 2025](#)), this project not only validates the effectiveness of cultural adaptation theory but also provides an important model for developing culturally sensitive intervention programs for diverse populations in China.

Third, analysis of current collaboration networks reveals that institutional cooperation is mainly concentrated on academic cooperation between universities, while the participation of key stakeholders, including communities, families, enterprises and policy departments, is still significantly insufficient. This problem is manifested in the disconnection between research practice and the social implementation system, and an effective multisectoral coordination mechanism has not been properly established.

To address the above challenges, two responses should be considered. First, it is necessary to break down the barriers between academic research and practice by promoting the establishment of a PYD support network covering multiple stakeholders, adopting interdisciplinary and transdisciplinary approaches. Second, we should make more effort to translate research results into policy practice and build a systematic institutional support framework. This direction is highly consistent with the ecological systems theory proposed by [Lerner et al. \(2005\)](#), which emphasizes that PYD requires multi-system coordinated support from families, schools, communities and macro policies. Particularly noteworthy is the recent research by [Tan and Shek \(2025\)](#), which proposes to integrate PYD programs into CAMH policy frameworks. This not only establishes a connection between PYD research and policy practice, but also demonstrates the unique value of PYD theory in improving the mental health governance system of Chinese youth through specific policy recommendations. [Shek \(2024, 2025a & b\)](#) and [Tan, Shek and Li \(2025\)](#) also emphasized the importance of implementing the PYD projects during the COVID-19 and post-COVID-19 periods.

In summary, Chinese PYD research has occupied an important

position in the global field. Researchers and institutions from the Chinese Mainland and Hong Kong jointly promote the development of this field. Future work should further strengthen research collaborations, deepen cultural adaptation, and improve the multi-party collaborative ecosystem. This will enable China's PYD research to contribute local wisdom to the global PYD theoretical system, and at the same time provide more effective academic support and practical solutions for the comprehensive and healthy development of Chinese adolescents.

4.6. Limitations of the study

Despite its pioneer nature, this study has some limitations. First of all, as we retrieved the data up to late September 2025, the analysis did not include the data published from October 2025 to December 2025. However, we found that there were only a few studies from October to December 2025, which may not alter the current findings. Second, we only used two main databases (WOS and CNKI) and publication types in the present study only included original research articles, reviews, and bibliometric analyses, but not dissertations and other literature materials. The reason is that dissertations and other literature materials are not included in typical scientometric analysis (Qi et al., 2025) and the quality of these materials is hard to assess. Third, although the search strategy included keywords such as "PYD" and "social emotional learning", some relevant studies using other related terms may be omitted. Therefore, future research should consider using more keywords to search the database.

5. Conclusion

We conducted the first comprehensive scientometric review of PYD research in China based on an integration of English (WOS) and Chinese (CNKI) literature from 2006 to 2025. By answering three core research questions, we systematically revealed the knowledge structure, cooperation network and thematic evolution of this field. There are three main findings of this study. First, The Hong Kong Polytechnic University plays a core hub role in the international network, and Beijing Normal

University is in a leading position in domestic cooperation, forming an important research ecosystem within China. Second, research teams led by Daniel T. L. Shek and Yaqing Mao have played a key role in theoretical modeling, curriculum development and empirical intervention, and have made significant contributions to China's PYD research. Third, research hotspots show different developmental trends between WOS and CNKI publications. Research based on WOS emphasizes psychological and behavioral mechanisms, while research based on CNKI is highly compatible with China's education policy, such as basic education and labor education, reflecting strong local relevance.

CRediT authorship contribution statement

Zheng Zhou: Writing – original draft, Methodology, Conceptualization. **Ke Wang:** Writing – original draft, Formal analysis, Data curation. **Fengrui Hua:** Writing – original draft, Formal analysis, Data curation, Conceptualization. **Daniel T.L. Shek:** Writing – review & editing, Writing – original draft, Supervision, Funding acquisition, Conceptualization. **Shaojie Qi:** Software, Methodology, Data curation, Conceptualization.

Ethical approval

As no human subject is involved, there is no need for seeking institutional ethical approval.

Declaration of competing interest

The authors declare no conflicts of interest.

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Appendix A. WOS keyword co-occurrence network clustering table

Table 3
WOS keyword co-occurrence network clustering.

Cluster ID	Cluster Name	Average Year	Silhouette	Partial Identifiers
0	Resilience	2013	0.788	Positive Youth Development; Parent-child Conflict; Physical Education; Social Adaptation; Suicide Risk
1	Subjective Outcome Evaluation	2011	0.758	Positive Youth Development; Chinese Adolescents; Family Functioning; Developmental Trajectory; Pornography Consumption
2	Positive Youth Development Program	2013	0.915	Positive Youth Development; Chinese Adolescents; Continuous Quality Improvement; Project Implementation; Process Variables
3	Loneliness	2014	0.904	Positive Youth Development; Problem Behavior; Family Functioning; Persistent Depressive Symptoms
4	Social-emotional Learning	2018	0.937	Social-emotional Learning; Teacher Research; Early Childhood Education; Conflict Resolution; Curriculum Policy
5	Randomized Group Trial	2015	0.789	Objective Outcome Evaluation; Group Trial; Family Functioning; Joint Trajectories; Positive Youth Development
6	Academic Satisfaction	2017	0.935	Positive Youth Development; Chinese Athletes; Women's Soccer; Adventure-based Counseling; Tin Ka Ping Paths
7	Secondary School Students	2015	0.769	Positive Youth Development; Parental Control; Parental Beliefs; Life History Strategies; Sexual Behavior Intention
8	Family Functioning	2015	0.840	Family Functioning; Life Satisfaction; Longitudinal Study; Acculturation Trajectories
9	Parental Control	2017	0.896	Behavioral Control; Cognitive Behavioral Therapy; Mental Health; Analytical Models; Family Functioning
10	Impact	2012	0.924	Longitudinal Study; Life Satisfaction; Academic Satisfaction; Academic Stress
11	Process Variables	2008	0.994	Project Implementation; Process Variables; Chinese Adolescents; Continuous Quality Improvement
12	East Asia	2012	0.992	Undergraduate Study; Life Satisfaction; Chinese Students; Civic Engagement
13	Developmental Trajectories	2017	0.991	Intentional Self-regulation; Academic Engagement; Teacher Expectation; Cross-lagged Analyses; Adolescent Development

(continued on next page)

Table 3 (continued)

Cluster ID	Cluster Name	Average Year	Silhouette	Partial Identifiers
14	Client Satisfaction Approach	2009	0.993	Subjective Outcome Evaluation; Chinese Adolescents; Quantitative Data; Positive Youth Development Program; Client Satisfaction Approach

Appendix B. CNKI keyword co-occurrence network clustering table

Table 4

CNKI keyword co-occurrence network clustering.

Cluster ID	Cluster Name	Average Year	Silhouette	Partial Identifiers
0	Youth	2016	0.988	Youth; Positive Development; College Students; Students; Development
1	Mental Health	2019	0.967	Mental Health; Left-Behind Children; Children; Positive Youth Development; Development
2	Social-Emotional	2016	0.950	Social-Emotional Learning; Basic Education; Self-Confidence; Practical Implications
3	United States	2017	0.820	United States; United Kingdom; ESSA; Evaluation Indicators; Australia
4	Learning Environment	2023	0.892	Learning Environment; Family Economic Capital; Parent-Child Communication; School Activities; Parental Involvement
5	Teacher-Student Relationships	2021	0.876	Teacher-student Relationships; Academic Performance; Teaching Transformation; Emotional Governance; Learning Strategies
6	Chinese Culture	2018	0.889	Chinese Culture; Competence; Self-worth; Character; Positive Youth Development
7	Positive	2018	0.991	Moral Education; Co-creation; Social-Emotional Learning; Character Development; Positive Youth Development

Data availability

No data was used for the research described in the article.

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