Assessment of Emotional and Behavioral Disorders in Children Based on Developmental Sensitivity: Systematic Literature Review and Bibliometric Analysis

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Abstract
The prevalence of emotional and behavioral disorders in children has exhibited a significant quantitative escalation, with recent data showing a rise of up to 20% in developmental risk cases globally and locally, thereby demanding precise evaluation mechanisms. This study aims to synthesize scientific literature concerning development-sensitive assessments for emotional and behavioral disorders in children, further mapping research trends, assessment instrument characteristics, and future development directions within the educational context. Utilizing a Systematic Literature Review (SLR) approach following PRISMA guidelines complemented by bibliometric analysis via Biblioshiny, data were retrieved from Scopus, Web of Science, PubMed, and Google Scholar databases covering the period 2016–2026. The results indicate a shift in assessment toward holistic and development-sensitive approaches. Bibliometric analysis reveals an upward trend in publications focusing on emotional behavioral disorders, developmental screening, and children's mental health, although international instruments still exhibit cultural limitations within local contexts. The limitation of this study lies in the restricted number of articles and timeframe, which constrains the generalizability of the findings. Practically, this research encourages practitioners to implement the Emotional Behavior Adaptive Developmental Assessment Pyramid Tool (EB-ADAPT) and the Developmental Function Index (DFI) to align behavior indicators with children's actual developmental stages. The social implication of this development-sensitive assessment is minimizing the risks of over-labeling and stigma, ensuring that children receive timely and context-appropriate early interventions. The originality of this study lies in bridging the gap between clinical psychometrics and educational development, integrating developmental sensitivity directly into emotional and behavioral assessment instruments.

1. Introduction

Children's ability to regulate emotions and demonstrate adaptive behavior constitutes a major determinant of academic and social success within contemporary educational contexts. Inappropriate emotional regulation not only affects social relationships but also directly influences children's learning engagement and academic achievement at school. Nevertheless, numerous studies indicate that emotional and behavioral disorders among school-aged children remain a significant developmental concern globally, with prevalence rates ranging from 5–10% and showing an increasing trend alongside the growing complexity of social change, family dynamics, and digital environments (Voltmer & Salisch, 2022). The term Emotional or Behavioral Disorder (EBD) refers to a range of conditions and symptoms that interfere with learning, social functioning, safety, and behavioral health among children and adolescents (Marlina, 2015). According to the Individuals with Disabilities Education Act (IDEA), emotional and behavioral disorders are defined as conditions exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects educational performance: an inability to learn that cannot be explained by intellectual, sensory, or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; a pervasive mood of unhappiness or depression; and a tendency to develop physical symptoms or fears associated with personal or school problems (Marlina, 2025).

Teachers and parents need to understand that children's academic difficulties are not solely related to intellectual ability but are also closely associated with emotional and behavioral disorders (Marlina, 2019). In educational settings, more complex challenges emerge because symptoms of emotional and behavioral disorders are often not accurately identified. Studies conducted in inclusive schools indicate that children at risk of emotional and behavioral disorders frequently display behaviors perceived as "normative," leading to under-identification and delayed educational intervention (Simanjuntak, 2022). This condition highlights a gap between the need for early detection and the effectiveness of assessment instruments currently used in practice.

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Clinically and developmentally, emotional and behavioral disorders are generally classified into internalizing problems (such as anxiety, depression, and social withdrawal) and externalizing problems (such as aggression, impulsivity, and hyperactivity). These two dimensions do not exist independently but rather interact with one another and often present comorbidity, thereby requiring assessment approaches that are not merely categorical but also sensitive to children's developmental dynamics (Zhang, 2020). Within developmental theoretical frameworks, children's behavior is understood as the result of interactions among developmental stages, social environments, and educational systems (Luis et al., 2024). This perspective rejects the notion of children's behavior as static symptoms and emphasizes the importance of context-based observation within the assessment process Therefore, assessment for children with special needs constitutes a crucial initial step in educational intervention processes. Assessment involves the comprehensive collection of data regarding children's barriers, strengths, and unique characteristics, which are influenced by developmental factors, family background, and social conditions (Marlina et al., 2023).

Through accurate and holistic assessment, educational practitioners can design intervention programs that are better aligned with children's individual needs, thereby making educational processes more targeted and effective (Marlina et al., 2023). Thus, assessment functions not only as an identification tool but also as an evidence-based foundation for educational decision-making. Comprehensive assessment can also assist in designing appropriate instructional interventions while simultaneously providing the emotional and social support that children require (Marlina & Mukhsim, 2020). Furthermore, valid and reliable assessment instruments should be capable of representing children's profiles of strengths and needs comprehensively (Kagan et al., 2024). However, instrument validity is strongly influenced by cultural factors, social context, and population characteristics, meaning that instruments developed within a particular context cannot always be directly applied to other contexts (Levantini et al., 2025).

Several internationally recognized instruments commonly used in child psychological assessment, such as the Child Behavior Checklist (CBCL), Strengths and Difficulties Questionnaire (SDQ), and Emotion Regulation Questionnaire (ERQ), have indeed made important contributions to child psychological assessment. However, various studies have criticized their limitations within the Indonesian educational context, particularly regarding cultural bias, limited accessibility, and insufficient alignment with local social characteristics and parenting patterns. Moreover, most of these instruments have not yet been fully integrated with current diagnostic frameworks such as the DSM-5-TR, raising questions regarding their conceptual relevance within modern assessment practices, such as the DSM-5-TR (Liu et al., 2024). These gaps become even more evident within educational practices in Indonesia. Preliminary studies indicate that most inclusive schools, special schools (SLB), and behavioral service practitioners still do not consistently use standardized and evidence-based assessment instruments. Consequently, the process of identifying children's needs tends to be subjective and may lead to less accurate educational intervention planning. In line with this, other studies also emphasize that development screening instruments meeting psychometric validity standards while remaining adaptive to local contexts are still very limited (Mahabbati, 2023).

Based on these conditions, there is an urgent need to develop a more integrative, multidimensional, and developmentally sensitive assessment framework. Therefore, this study aims to synthesize scientific literature related to the assessment of children's emotional and behavioral disorders based on developmental sensitivity through a Systematic Literature Review (SLR) using the PRISMA approach, as well as to map the knowledge structure of the field through bibliometric analysis. As a conceptual contribution, this study proposes the development of a developmental-based assessment framework through the integration of the Emotional Behavior–Adaptive Developmental Assessment Pyramid Tool (EB-ADAPT) and the Developmental Function Index (DFI). These two models are expected to strengthen assessment approaches that are not only developmental in nature but also supportive of more adaptive, individualized, and evidence-based intervention planning.

In an effort to comprehensively map the academic landscape, this study begins by focusing on bibliometric exploration and macro-trend analysis. The first research question is designed to analyze the trends and dynamics in the development of scientific publications closely related to the assessment of children's emotional and behavioral disorders based on developmental sensitivity throughout the 2016–2026 period. Through this initial step, researchers can examine data distribution patterns, journal productivity, and shifts in the theoretical paradigms that underscore the importance of developmental sensitivity in assessing children worldwide.

Moving beyond a mere macro-bibliometric analysis, the direction of this study then shifts to analyzing the core substance of the instruments through the second research question. This focus aims to dissect and identify the fundamental characteristics of assessment instruments for emotional and behavioral disorders that have successfully integrated the principles of developmental sensitivity for children with special needs. Through this discussion, the study will uncover practical dimensions, adaptive behavior indicators, child-friendly assessment methods, and the extent to which children's chronological and mental aspects are accommodated to prevent rigid clinical over-labeling biases.

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As the culmination of a structured literature synthesis, the third research question is directed toward exploring future avenues of development. This question focuses on identifying critical challenges and strategic opportunities for the future development of assessment instruments for children's emotional and behavioral disorders, synthesized from the cumulative findings of the systematic literature review. This final section serves as a foundation for innovation to yield new assessment tools that are more adaptive, contextual, and highly acceptable to special education practitioners in the field.

2. Method

2.1. Research Design and Data Sources

This study employed a systematic literature review approach to examine the assessment of emotional and behavioral disorders in children based on developmental sensitivity. This method aims to identify, evaluate, and systematically synthesize relevant literature in order to obtain a comprehensive understanding of the practices, challenges, and assessment interventions related to emotional and behavioral disorders in children within a developmental sensitivity framework. The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines developed (Snyder, 2019), thereby promoting consistency and minimizing bias to ensure transparency, objectivity, and rigor in the literature selection process.

The PRISMA approach applied in this study consisted of three main stages: identification, screening (including eligibility assessment), and inclusion of the literature. Each stage was conducted carefully to ensure that the analyzed sources possessed validity, relevance, and meaningful contributions to the assessment of emotional and behavioral disorders in children based on developmental sensitivity. The detailed workflow is illustrated in the PRISMA flow diagram (see Figure 1).

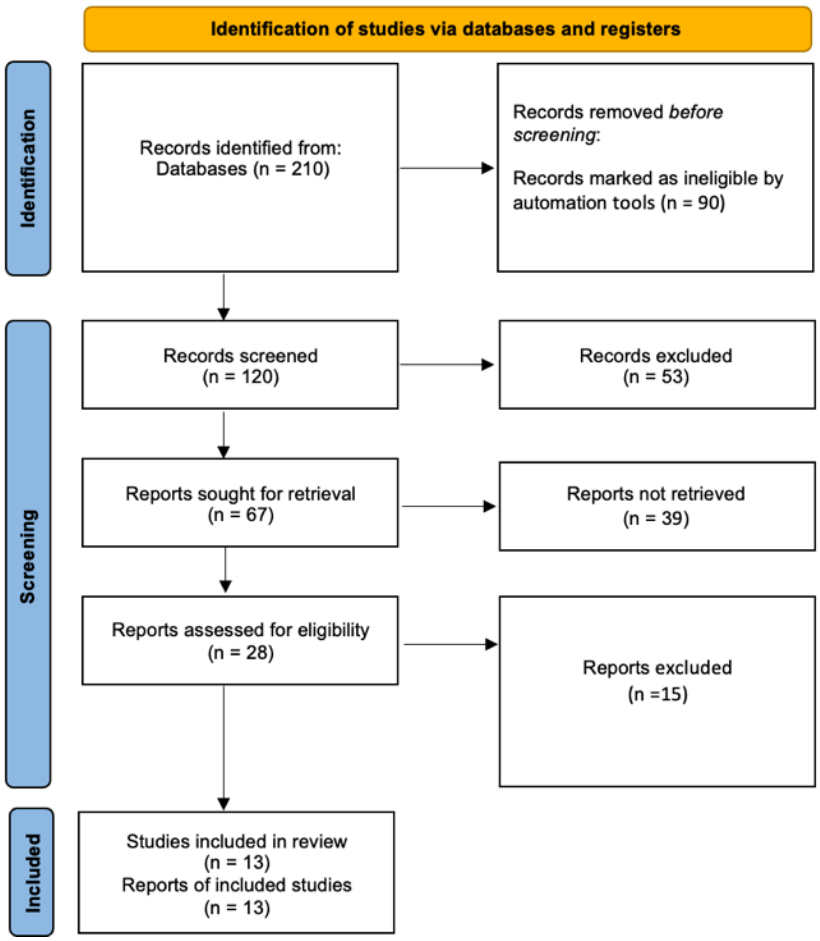


Figure 1. PRISMA Flow Diagram

2.2. Database

The literature search was conducted using the academic database Scopus.com, which indexes articles from a wide range of scientific journals and provides broad and diverse coverage. The selection of this database

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ensured access to multidisciplinary research, enabling a comprehensive review of the topics explored in this study. The selected time frame ensured the inclusion of recent and relevant studies.

A structured literature search was carried out through Scopus.com using systematically organized search terms to capture comprehensive studies related to the assessment of emotional and behavioral disorders in children based on developmental sensitivity.

The selection of literature for this study was executed through a systematic and structured search protocol on the Scopus.com database. Choosing this specific indexing platform guaranteed robust access to multidisciplinary research, allowing for a comprehensive and holistic review of the explored themes. To extract studies addressing the intersection of child evaluation, psychopathology, and chronological progression, the search strategy was built upon three primary thematic pillars using systematically arranged keywords. The first pillar identified the core conditions using the terms "emotional and behavioral disorders" or "emotional and behavioral problems". This was then syntactically intersected with the second pillar, which focused on evaluative methodologies via "assessment" or "screening". Finally, to anchor the findings within the study's specific theoretical framework, these terms were combined with the third pillar encompassing "developmental" or "developmental sensitivity". This systematic formulation successfully captured a precise, high-yield sample of literature, ensuring the review reflects recent and critical developments in the field.

2.3. Inclusion and Exclusion Criteria

This study established inclusion and exclusion criteria to ensure that the selected studies were both relevant and academically credible. To maintain a rigorous screening process, specific parameters were outlined to refine the literature dataset based on document type, language, and publication timeline. In terms of inclusion parameters, the selection was strictly limited to peer-reviewed journal articles written in English and published within the decade spanning from 2016 to May 2026. Conversely, the exclusion criteria systematically filtered out non-journal documents, such as books, as well as publications written in languages other than English or those published outside the designated ten-year timeframe. This structured filtering protocol was critical to eliminate gray literature and ensure that only highly robust, contemporary research was synthesized. The comprehensive breakdown of these established inclusion and exclusion criteria for the literature selection is systematically presented in Table 1.

Table 1. Inclusion and Exclusion Criteria for Literature Selection

No	Category	Criteria
1	Exclusion Criteria	Document type limited to books
		Publications written in languages other than English
		Publications published outside the period of 2016 to May 2026 (21:00 WIB)
2	Inclusion Criteria	Document type limited to journal articles
		Articles written in English
		Articles published within the period of 2016 to May 2026 (21:00 WIB)

2.4. Data Extraction

Data extraction included the following information: author names and year of publication; country of origin of the study; research objectives; participant characteristics (age and emotional and behavioral disorders); methodology; strategies for developing assessments of emotional and behavioral disorders in children based on developmental sensitivity; and the main findings of the studies.

2.5. Documents Included in the Analysis

After the screening and eligibility assessment processes, 13 documents that met the inclusion criteria were selected for further analysis. Figure 1 illustrates the selection process. The dataset was compiled into a CSV file for bibliometric analysis using RStudio and the Bibliometrix package. This approach integrated both empirical and systematic literature, thereby providing comprehensive insights into the assessment of emotional and behavioral disorders in children based on developmental sensitivity.

2.6. Quality and Credibility

The data collection process in this study was conducted rigorously to ensure that only articles meeting quality criteria were included in the analysis. Each bibliographic metadata entry was carefully reviewed to ensure the accuracy and completeness of the information collected from each article. This verification process included checking essential details such as title, author, publication year, keywords, and citations, which are crucial for maintaining the quality of the data used in the bibliometric analysis. This procedure ensured that the study findings were reliable and valid. The results presented in Table 2 indicate that most metadata elements, including abstracts (AB), affiliations (C1), authors (AU), DOI (DI), document type (DT), journal source (SO),

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language (LA), publication year (PY), title (TI), total citations (TC), keywords (DE), corresponding author (RP), keywords plus (ID), and science categories (WC), were complete.

Table 2. Completeness of Bibliographic Metadata

Metadata	Description	Missing Counts	Missing %	Status
AB	Abstract	0	0	Excellent
C1	Affiliation	0	0	Excellent
AU	Author	0	0	Excellent
DI	DOI	0	0	Excellent
DT	Document Type	0	0	Excellent
SO	Journal	0	0	Excellent
DE	Keywords	0	0	Excellent
LA	Language	0	0	Excellent
PY	Publication Year	0	0	Excellent
TI	Title	0	0	Excellent
TC	Total Citation	0	0	Excellent
CR	Cited References	1	7.69	Good
RP	Corresponding Author	1	7.69	Good
ID	Keywords Plus	4	30.77	Poor
WC	Science Categories	13	100	Completely missing

This approach provided a strong foundation for bibliometric research by ensuring that the core components of each analyzed article were available. The completeness of these elements enabled citation analysis and author impact analysis to be conducted with a high level of accuracy, as comprehensive data allowed for detailed mapping of citation patterns and the influence of authors or journals. Although the completion rate for most metadata elements was high, several important gaps could still affect the overall comprehensiveness of the analysis.

A crucial stage in ensuring the validity of bibliometric analysis and the Systematic Literature Review (SLR) was the evaluation of metadata rigor. Based on the missing data analysis presented in Table 2, the analyzed dataset demonstrated a very high level of primary data integrity. This was evidenced by fundamental elements such as Abstract (AB), Author (AU), DOI (DI), Publication Year (PY), Title (TI), and Keywords (DE), all of which recorded a 0% missing rate and were categorized as "Excellent." The complete availability of these core metadata elements ensured that the article screening process based on developmental sensitivity parameters and the psychometric validity of instruments could be conducted precisely without the risk of information bias.

Although the integrity of the primary metadata was optimally maintained, several gaps in the supporting variables require critical consideration. The variables Cited References (CR) and Corresponding Author (RP) each showed a minimal missing rate of 7.69% (1 item) and were categorized as "Good." In contrast, the Keywords Plus (ID) variable recorded a missing rate of 30.77% ("Poor"), while the Science Categories (WC) variable demonstrated complete data absence (100%). Nevertheless, the incompleteness of these secondary variables did not reduce the systemic validity of the analysis. This is because the key variables used for mapping citation patterns, author impact analysis, and content synthesis remained comprehensively available, thereby ensuring the objectivity and reliability of the study findings.

Overall, the robustness of the bibliometric data presented in Table 2 provided a rigorous foundation for mapping the research trajectory concerning the assessment of emotional and behavioral disorders in children. The complete availability of abstracts and references enabled an in-depth identification of key references and developmental psychopathology parameters. Consequently, the quality of this metadata ensured that the resulting synthesis could make a significant contribution to the development of more precise early detection models for emotional disorders while minimizing technical limitations within bibliographic data extraction procedures.

This study comprehensively mapped the dynamics of the literature on the assessment of emotional and behavioral disorders in children based on developmental sensitivity through the integration of Systematic Literature Review and bibliometric analysis methods, in which mapping trends, citation patterns, and researcher collaborations served as crucial indicators for understanding the evolution of assessment instruments. The strong bibliometric dataset, characterized by complete metadata availability for abstracts and references (0% missing data), provided in-depth insights into research trajectories and key references related to developmental psychopathology parameters in children. Although the exclusion of certain metadata elements such as Science Categories (WC) and the limitations in Corresponding Author (RP) restricted specific analytical dimensions, the availability of other primary metadata ensured the rigor and integrity of this study. Therefore, this research was still able to present an objective synthesis regarding the psychometric validity of assessment instruments without compromising the depth of systemic analysis, while simultaneously contributing

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significantly to the development of more precise and developmentally sensitive early detection models for emotional disorders in children.

2.7. Data Analysis

The type of data analysis used in this study was thematic analysis with a narrative synthesis approach. This approach was selected because the data obtained from the included studies were qualitative and descriptive quantitative in nature, and demonstrated considerable diversity in methodologies, contexts, and forms of assessment of emotional and behavioral disorders in children based on developmental sensitivity.

3. Results and Discussion

3.1. Main Findings

After completing the screening and quality evaluation process, the selected articles were thoroughly analyzed to extract key insights. To provide a clear overview, critical details including authors, study designs, research focus, and main results were systematically organized. The complete summary of the methodologies and key findings from these selected articles is presented in Table 3.

Table 3. Main Findings from Articles Included in the Synthesis

Author & Year	Title	Design	RQ Focus	Key Findings
(Van den Heuvel et al., 2016)	Identification of emotional and behavioral problems by teachers in children with developmental coordination disorder in the school community	Cross-sectional study	This study focused on the identification of emotional and behavioral problems by teachers among children with Developmental Coordination Disorder (DCD).	Teachers were able to identify emotional and behavioral problems in children with DCD, particularly internalizing and externalizing problems in the school environment.
(Crane et al., 2017)	Emotional and behavioural problems in children with Developmental Coordination Disorder: Exploring parent and teacher reports	Comparative cross-informant study	This study focused on comparing parent and teacher reports in assessing emotional and behavioral problems among children with DCD.	Differences were found between teachers' and parents' perceptions in reporting children's emotional and behavioral problems, highlighting the importance of multi-informant assessment approaches.
(Shirama et al., 2022)	Emotional and behavioral problems in Japanese preschool children with motor coordination difficulties: the role of autistic traits	Cross-sectional study	This study focused on the relationship between motor coordination difficulties, autistic traits, and emotional and behavioral problems in preschool children.	Preschool children with motor coordination difficulties and autistic traits showed a higher risk of experiencing emotional and behavioral problems.
(Mikami et al., 2023)	Trajectories of emotional and behavioral problems in school-age children with coordination difficulties and their relationships to ASD/ADHD traits	Longitudinal study	This study focused on the developmental trajectories of emotional and behavioral problems in school-age children with coordination difficulties and their relationship with ASD/ADHD traits.	Emotional and behavioral problems tended to persist in children with coordination difficulties and were more pronounced in children with ASD/ADHD traits.
(Jasiulione & Jusiene, 2019)	Delivery mode, maternal characteristics, and developmental trajectories of toddlers' emotional and behavioral problems	Longitudinal study	This study focused on the developmental trajectories of emotional and behavioral problems in toddlers based on early developmental factors and maternal characteristics.	Children's emotional and behavioral problems developed dynamically from early childhood and were influenced by prenatal factors, delivery mode, and maternal characteristics.
(Zajac et al., 2020)	Trajectories of sleep in Child Protective Services (CPS)-referred children	Longitudinal study	This study focused on the relationship between sleep development trajectories and	Poor sleep patterns were associated with increased emotional and behavioral

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Author & Year	Title	Design	RQ Focus	Key Findings
	predict externalizing and internalizing symptoms in early childhood		internalizing and externalizing symptoms in early childhood.	problems during early childhood development.
(Panourgia & Comoretto, 2017)	Do cognitive distortions explain the longitudinal relationship between life adversity and emotional and behavioural problems in secondary school children?	Longitudinal study	This study focused on the role of cognitive distortions in the relationship between adversity and emotional-behavioral problems among secondary school children.	Cognitive distortions served as important mediators between adverse experiences and the development of children's emotional and behavioral problems.
(Slobodskaya et al., 2025)	Temporal changes in the level of emotional and behavioral problems of children according to teachers' data in 1999–2021	Trend analysis study	This study focused on temporal changes in children's emotional and behavioral problems based on teachers' reports over time.	Changes in the levels of children's emotional and behavioral problems occurred during the 1999–2021 period and were influenced by social and educational changes.
(Lin et al., 2020)	Prolonged touch screen device usage is associated with emotional and behavioral problems, but not language delay, in toddlers	Cross-sectional study	This study focused on the relationship between touchscreen device use and emotional and behavioral problems in toddlers.	Prolonged touchscreen device use was associated with increased emotional and behavioral problems in toddlers.
(Kheto et al., 2025)	Interpersonal Relationship, Academic Performance, & Life Skills: A Comparative Study of Children With and Without Emotional and Behavioral Problems	Comparative study	This study focused on the impact of emotional and behavioral problems on interpersonal relationships, academic performance, and children's life skills.	Children with emotional and behavioral problems demonstrated greater difficulties in social relationships, academic performance, and life skills compared to children without such problems.
(Pandey et al., 2025)	Effectiveness of yoga and physical exercises on emotional and behavioral problems and academic performance among Indian adolescents: A randomized trial	Randomized controlled trial	This study focused on the effectiveness of yoga and physical exercise in reducing adolescents' emotional and behavioral problems.	Yoga and physical exercise were effective in improving emotional regulation, behavior, and adolescents' academic performance.
(Emser et al., 2016)	Child Adjustment and Parent Efficacy Scale-Developmental Disability (CAPES-DD): First psychometric evaluation of a new child and parenting assessment tool for children with a developmental disability	Instrument development and psychometric study	This study focused on the development and psychometric evaluation of an assessment instrument for children with developmental disabilities.	CAPES-DD demonstrated good reliability and validity in measuring child adjustment and parental efficacy among children with developmental disabilities.
(Deutz et al., 2018)	Evaluation of the Strengths and Difficulties Questionnaire-Dysregulation Profile (SDQ-DP)	Psychometric evaluation study	This study focused on evaluating the validity and reliability of the SDQ-DP instrument for assessing emotional and behavioral dysregulation in children.	SDQ-DP demonstrated good validity and reliability in detecting emotional and behavioral dysregulation in children and adolescents.

The table presents a summary of the main findings from the articles included in the literature synthesis on emotional and behavioral disorders in children. In general, the table categorizes the literature based on the authors, titles, research designs, research question (RQ) focus, and the key findings generated by each study.

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Methodologically, the reviewed literature is dominated by longitudinal and cross-sectional study designs, reflecting researchers' efforts to understand behavioral changes over time. The key findings highlighted in the table emphasize the importance of using multi-informant assessments involving both parents and teachers to obtain a more accurate understanding, given the differences in perceptions among observers. In addition, the synthesis demonstrates that emotional and behavioral problems are not static; rather, they develop dynamically from early childhood and are influenced by factors ranging from prenatal conditions to cognitive distortions during secondary school years.

More specifically, the table provides a strong foundation for addressing the research question concerning the characteristics of developmentally sensitive assessment instruments. These findings underline that the effectiveness of identifying emotional and behavioral disorders largely depends on the ability of both the instruments and the observers to recognize internalizing and externalizing symptoms within the context of specific developmental challenges. By summarizing the variations in risk factors and developmental trajectories, the table serves as a scientific evidence map supporting the need for the development of more adaptive assessment instruments grounded in developmental sensitivity.

3.2. Demographic Distribution Results

This study analyzed 13 research articles on the assessment of emotional and behavioral disorders in children based on developmental sensitivity, published between 2016 and 2025. The data presented in Figure 2 indicate a positive Annual Growth Rate of 12.98%. A total of 66 authors contributed to these publications, with no single-authored articles identified (0 single-author documents). The level of international collaboration was relatively high, with 46.15% of the articles involving co-authors from different countries. On average, each article involved 5.08 authors, reflecting the strong collaborative nature of research in the development of assessment instruments.

The analyzed literature included 70 unique author keywords, reflecting specific thematic focuses within the field. The average age of the documents was 4.46 years, highlighting the novelty and contemporary relevance of studies in this area. Furthermore, with an average of 14.77 citations per document and a total of 558 references used, research on the assessment of children's emotional and behavioral disorders demonstrates stable academic influence. Overall, Figure 2 presents comprehensive demographic information regarding the final dataset used in this study.



Figure 2. Demographic Distribution Results

3.3. Annual Publication Trends

Figure 3 illustrates fluctuations in the annual number of publications related to the assessment of emotional and behavioral disorders in children from 2016 to 2025. In 2016, only one article was published, which then increased to two articles in the following year. However, in 2018, the trend showed a drastic decline, with no articles published (0 articles). This condition began to improve in 2019 and 2020, during which the number of publications remained stable at one article per year.

The publication trend declined again in 2021, with no articles published, before eventually demonstrating consistent growth in the following years. In 2022, the number of publications increased to one article and rose significantly in 2023 to two articles. This growth continued, with the number of publications remaining stable at two articles in 2024 and reaching its highest point in 2025 with a total of three published articles. Overall, Figure 3 illustrates publication dynamics that were initially fluctuating but later demonstrated a promising positive trend approaching 2025.

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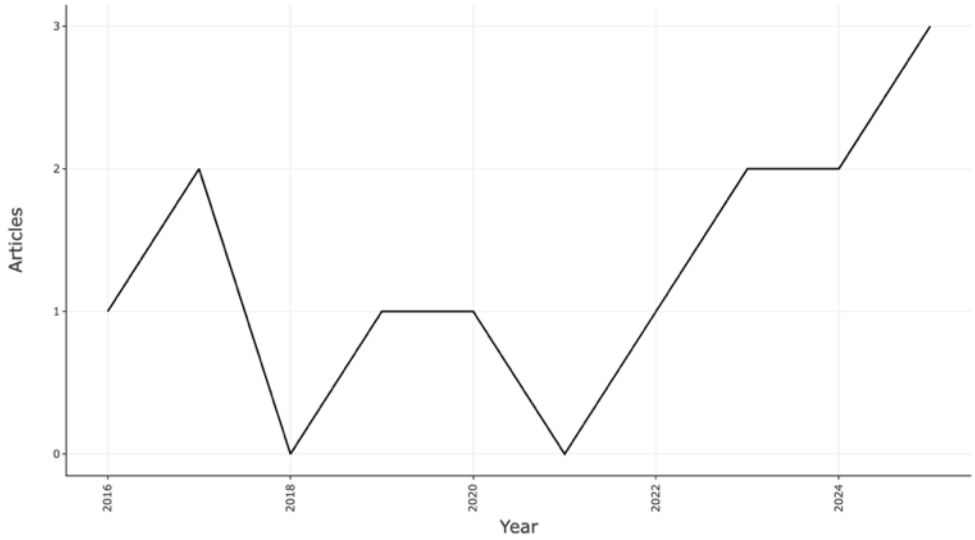


Figure 3. Annual Publication Trend

3.4. Country-Level Analysis

The country-level analysis indicates that China leads in the cumulative number of research publications on the assessment of emotional and behavioral disorders in children, with a total of 13 documents published up to 2025. Figure 4 provides information regarding the growth dynamics of articles contributed by the leading countries. China demonstrated a significant increase during the 2019–2020 period and continued to maintain the leading position with 13 publications. Japan followed with a contribution of 11 articles, showing a steady upward trend since 2020.

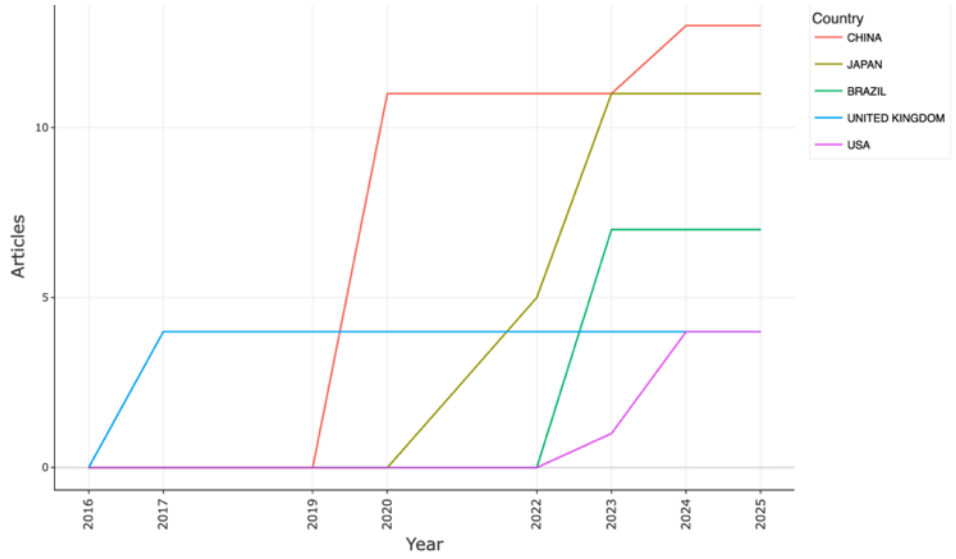


Figure 4. Country-Level Analysis

Furthermore, Brazil recorded a total of 7 publications after experiencing rapid growth during the 2022–2023 period. Meanwhile, the United Kingdom and the United States showed an equal number of publications, with each country contributing 4 articles. The United Kingdom displayed a relatively stable trend since 2017, whereas the United States only began to show more active publication growth starting in 2022 and reached its peak in 2024. Overall, Figure 4 illustrates an increasingly diverse global contribution map in the development of literature within this field.

3.5. Key Contributors and Influential Institutions

3.5.1. Most Relevant Authors

By analyzing the authors who contributed to this field, several scholars were identified as having published articles related to the assessment of emotional and behavioral disorders in children between 2016 and 2025.

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Table 4 presents a list of the 10 most relevant authors along with the number of articles they produced. Based on Table 4, all listed authors including Adachi Masaki, Behera Narayan, Chen Kuan-Lin, Chen Yu-Shao, Chou Willy, Chow Julie Chi, Comoretto Amanda, Cooke Eric, Crane Laura, and De Azevedo Cardoso Taiane each contributed one research article.

Although the number of published articles by each author was quantitatively the same, the Articles Fractionalized values indicate differences in the relative contribution weights within collaborative research teams. Among the listed authors, Comoretto Amanda had the highest fractionalized value (0.50), followed by Behera Narayan and Crane Laura (0.33). Overall, the data presented in Table 4 demonstrate a relatively balanced distribution of contributions among the leading researchers, thereby strengthening the literature base concerning assessment instruments for emotional and behavioral disorders during children's developmental stages.

Table 4. Most Relevant

Author	Articles	Articles Fractionalized
ADACHI, MASAKI	1	0.12
BEHERA, NARAYAN	1	0.33
CHEN, KUAN-LIN	1	0.14
CHEN, YU-SHAO	1	0.14
CHOU, WILLY	1	0.14
CHOW, JULIE CHI	1	0.14
COMORETTO, AMANDA	1	0.5
COOKE, ERIC	1	0.2
CRANE, LAURA	1	0.33
DE AZEVEDO CARDOSO, TAIANE	1	0.11

3.5.2. Authors' Production Over Time

The analysis of citation metrics and author productivity presented in Table 5 provides a comprehensive overview of the intellectual influence of researchers within the field of emotional and behavioral disorder assessment in children. Based on the data, although each author recorded an equal publication frequency (freq = 1), significant variations were observed in the citation impact generated by their work. The group of researchers consisting of Chen, Kuan-Lin; Chen, Yu-Shao; Chou, Willy; and Chow, Julie Chi demonstrated the most dominant influence, achieving a total of 95 citations (Total Citation/TC) since the publication of their work in 2020. The effectiveness and academic impact of their research are further reflected in the Total Citations per Year (TCpY) value of 13.57, indicating that their study has become an important reference with high visibility within the academic community.

Table 5. Authors' Production over Time

Author	year	freq	TC	TCpY
ADACHI, MASAKI	2023	1	9	2.25
BEHERA, NARAYAN	2025	1	1	0.5
CHEN, KUAN-LIN	2020	1	95	13.57
CHEN, YU-SHAO	2020	1	95	13.57
CHOU, WILLY	2020	1	95	13.57
CHOW, JULIE CHI	2020	1	95	13.57
COMORETTO, AMANDA	2017	1	5	0.5
COOKE, ERIC	2024	1	5	1.66
CRANE, LAURA	2017	1	39	3.9
DE AZEVEDO CARDOSO, TAIANE	2023	1	0	0

On the other hand, the contribution of Crane, Laura, published in 2017, continues to demonstrate sustained relevance, with a total of 39 citations and a TCpY value of 3.9. Other researchers, such as Adachi, Masaki (2023) and Cooke, Eric (2024), have begun to establish their trajectories of influence, with TCpY values of 2.25 and 1.67 respectively, indicating potential citation growth in the future. In contrast, the more recent publications by (Narayan, 2025) and (Taiane, 2023) are still in the early stages of dissemination, with relatively low citation counts or limited indexing visibility. Overall, the data presented in Table 5 confirm that the novelty of publication year does not necessarily correspond directly to citation impact; rather, the integration of content quality and the timeliness of the issues addressed are the primary determinants in strengthening researchers' academic authority within the field of developmental psychopathology.

3.5.3. Author Impact: h-index, g-index, and m-index

The analysis of author impact was conducted by evaluating several key bibliometric metrics to comprehensively measure scientific quality and contribution. In addition to assessing the number of

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publications (NP), this study also considered impact indicators such as the h-index, g-index, and m-index. Based on the data presented in Table 6, the average author demonstrated an h-index of 1, indicating that most researchers in this dataset had at least one publication that had been cited at least once. Although the average level of productivity remains at an early stage, several authors exhibited highly significant impact through high Total Citation (TC) values, such as Chen Kuan-Lin and Chow Julie Chi, each of whom accumulated 95 citations. The use of the m-index in the table also provides insight into the comparison of author impact relative to the duration of their academic careers since their first publication. Overall, these findings indicate that although the majority of authors contributed only one document (NP = 1), the resulting works possess strong relevance within the academic literature, as evidenced by the accumulated citation counts.

Table 6. Author Indexation Impact

Author	h_index	g_index	m_index	TC	NP	PY_start
ADACHI MASAKI	1	1	0.25	9	1	2023
BEHERA NARAYAN	1	1	0.5	1	1	2025
CHEN KUAN-LIN	1	1	0.14	95	1	2020
CHEN YU-SHAO	1	1	0.14	95	1	2020
CHOU WILLY	1	1	0.14	95	1	2020
CHOW JULIE CHI	1	1	0.14	95	1	2020
COMORETTO AMANDA	1	1	0.1	5	1	2017
COOKE ERIC	1	1	0.33	5	1	2024
CRANE LAURA	1	1	0.1	39	1	2017
DE AZEVEDO CARDOSO, TAIANE	1	1	0.5	1	1	2023

3.5.4. Most Influential Institutions

Table 7 highlights several affiliations that emerged as major contributors to the distribution of scientific publications within this research topic. The data reveal that Hirosaki University was the most prominent institution, contributing a total of 3 articles. In addition, several institutions demonstrated equal levels of productivity by contributing 2 articles each, namely Chi Mei Medical Center, National Cheng Kung University, Ochanomizu University, and Shenzhen University. Meanwhile, other academic institutions such as Bournemouth University, Bowling Green State University, and the Catholic University of Pelotas each contributed 1 article to the research dataset. The prominence of these institutions provides an overview of the major centers of research development and academic collaboration that serve as important references within the related literature.

Table 7. Most Relevant Affiliations

Affiliation	Articles
HIROSAKI UNIVERSITY	3
CHI MEI MEDICAL CENTER	2
NATIONAL CHENG KUNG UNIVERSITY	2
OCHANOMIZU UNIVERSITY	2
SHENZHEN UNIVERSITY	2
BOURNEMOUTH UNIVERSITY	1
BOWLING GREEN STATE UNIVERSITY	1
CATHOLIC UNIVERSITY OF PELOTAS	1
CHIALI CHI MEI HOSPITAL	1
CHUNG SHAN MEDICAL UNIVERSITY	1
FACULTY OF KINESIOLOGY AND REHABILITATION SCIENCES	1

3.6. Discussion

3.6.1. Analyzing Trends and Developments in Scientific Publications Related to the Assessment of Emotional and Behavioral Disorders in Children Based on Developmental Sensitivity During the Period 2016–2026 (RQ1)

Based on the data presented in the text, publication and research trends concerning the assessment of emotional and behavioral disorders in children over the last decade indicate a significant paradigm shift. The primary focus of research has evolved from merely identifying clinical symptoms toward the development of assessment instruments that are integrative, multidimensional, and sensitive to child development. This shift has been driven by findings showing that the prevalence of emotional disorders continues to increase alongside the growing complexity of digital and social environments (Voltmer & Salisch, 2022). Researchers have increasingly highlighted the limitations of traditional instruments in detecting behaviors that appear “normative” yet carry significant risks, often leading to delayed intervention within inclusive school settings (Simanjuntak, 2022).

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Furthermore, developments in scientific publications demonstrate a strong demand for the decolonization or local adaptation of international assessment instruments such as the CBCL and SDQ. Criticism emerging in recent literature (Liu et al., 2024) emphasizes that global instruments frequently overlook cultural biases and local parenting patterns, particularly within the Indonesian context. Consequently, current research directions focus on the creation of assessment frameworks that are not only psychometrically valid but also grounded in systematic teacher observations within school environments. Such approaches are considered more effective in capturing the interaction between children's developmental stages and educational systems holistically compared to single-report methods (Mahabbati, 2023; Luis et al., 2024) (see Table 8).

Table 8. Evidence-Based Analysis (RQ1)

Trend & Development Aspect	Textual Evidence (Citation)	Main Findings in the Article
Increasing Global Urgency	(Voltmer & Salisch, 2022)	Emotional and behavioral disorders in children have become a significant global developmental issue, with a prevalence of 5–10% and a continuing upward trend.
Shift in Classification Models	(Zhang, 2020)	There has been a shift from solely clinical categories (internalizing and externalizing) toward assessment approaches that are sensitive to children's developmental dynamics.
Challenges in School-Based Detection	(Simanjuntak, 2022)	Under-identification problems exist in inclusive schools because high-risk behavioral manifestations often appear "normative."
Criticism of International Instruments	(Liu et al., 2024)	Global instruments (CBCL, SDQ, ERQ) have been criticized for cultural bias and for being insufficiently aligned with newer diagnostic frameworks such as the DSM-5-TR in local contexts.
Need for Local Standardization	(Mahabbati, 2023)	A significant gap exists in Indonesia, where inclusive schools and special schools still lack screening instruments that simultaneously meet psychometric validity standards and cultural adaptability.
New Assessment Methodologies	(Luis et al., 2024)	The trend has shifted toward context-based assessments, with teachers serving as the primary informants, as they are considered more accurate in capturing behavioral dynamics compared to parent reports alone.

3.6.2. How Do the Characteristics of Emotional and Behavioral Disorder Assessment Instruments Integrate the Principles of Developmental Sensitivity for Children With Special Needs (RQ2)?

The primary characteristic of emotional and behavioral disorder assessment instruments that are developmentally sensitive is their ability to avoid reducing behavior into static symptoms. Such instruments should understand children's behavior as the result of complex interactions among developmental stages, social environments, and educational systems (Luis et al., 2024). In other words, the instruments should not merely function as symptom checklists but should also consider whether a particular behavior reflects developmental difficulties or simply represents normative variation influenced by family and cultural backgrounds (Marlina et al., 2023; Levantini et al., 2025).

In addition, ideal assessment instruments should possess high contextual validity, particularly within inclusive school settings in Indonesia. The reviewed literature emphasizes that international instruments often fail to capture local dynamics due to cultural bias (Liu et al., 2024). Therefore, the characteristics currently needed include instruments that prioritize systematic teacher observations rather than relying solely on parent reports, thereby reducing subjectivity in identifying children's needs. By integrating principles of developmental sensitivity, such instruments can function as more integrative and multidimensional tools in supporting targeted educational interventions for children with special needs (Mahabbati, 2023).

Furthermore, integrative and preventive assessment instruments constitute a major pillar in supporting the success of inclusive education for children with special needs. These characteristics require instruments not only to function as passive identification tools, but also to serve as a strong foundation for evidence-based educational decision making. By providing comprehensive and accurate data at an early stage, these instruments can facilitate the early detection of emotional and behavioral disorders that are often not immediately visible. This is crucial in preventing delays in intervention that may hinder children's academic and social development, thereby enabling educational support processes to be implemented in a more targeted, effective, and individualized manner (see Table 9).

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Table 9. Evidence-Based Analysis

Instrument Characteristics	Textual Evidence (Citation)	Data-Based Description
Dynamic & Non-categorical	(Zhang, 2020)	Assessment instruments should not be solely categorical, but must be sensitive to interacting developmental dynamics in children.
Holistic & Multidimensional	(Marlina et al., 2023)	Instruments should include comprehensive data collection regarding children's difficulties, strengths, and unique characteristics influenced by developmental factors and family backgrounds.
Culturally Adaptive	(Liu et al., 2024); (Levantini et al., 2025)	Instruments should be free from cultural bias and adapted to local parenting patterns and social characteristics to maintain conceptual relevance.
Context-Based (School Environment)	(Luis et al., 2024)	Emphasizes the importance of systematic observation within school settings, with teachers serving as the primary informants to capture children's behavior more accurately.
Aligned with Modern Standards	(Liu et al., 2024); (Mahabbati, 2023)	Instruments should be integrated with the latest diagnostic frameworks (such as DSM-5-TR) and meet standardized psychometric validity standards.

What are the challenges and opportunities for developing emotional and behavioral disorder assessment instruments for children in the future based on findings from the systematic literature review (RQ3)?

The future development of assessment instruments for emotional and behavioral disorders faces significant challenges related to ecological and cultural validity. The literature indicates that reliance on foreign instruments without thorough adaptation often results in informational bias, as children's emotional expressions are strongly influenced by social and family backgrounds (Levantini et al., 2025). In addition, technical challenges arise from the lack of standardized instruments in practice settings, particularly in special schools and inclusive schools, causing early detection processes to be delayed because high-risk symptoms are often overlooked as "normative" behavior (Simanjuntak, 2022; Mahabbati, 2023).

However, these conditions also create substantial opportunities for innovation in assessment methodologies. There is considerable potential for developing instruments that do not rely solely on a single source of data, but instead integrate teachers as systematic key informants (Luis et al., 2024). In the future, opportunities for development lie in creating assessment tools capable of aligning global diagnostic standards with sensitivity to local developmental dynamics. By utilizing multidimensional and integrative approaches, future instruments are expected to become strong preventive tools, enabling more accurate and evidence-based educational decision making for every child (Voltmer & Salisch, 2022) (see Table 10).

Table 10. Evidence-Based Analysis

Category	Analysis Factor	Textual Evidence (Citation)	Main Findings in the Article
Challenge	Cultural Bias & Local Context	Liu et al. (2024); Levantini et al. (2025)	International instruments often cannot be directly transferred because of differences in cultural norms and parenting patterns.
Challenge	Subjectivity in Identification	Mahabbati (2023)	Many schools (inclusive schools/SLB) still do not use standardized instruments, causing identification processes to be subjective and less accurate.
Challenge	Symptom Complexity	Simanjuntak (2022); Zhang (2020)	Symptoms often appear "normative" (under-identification), and comorbidity exists between internalizing and externalizing problems.
Opportunity	Integration with Modern Frameworks	Liu et al. (2024)	Opportunities exist to align instruments with updated diagnostic frameworks such as DSM-5-TR to maintain clinical relevance.
Opportunity	Optimization of Teachers' Roles	Luis et al. (2024)	The development of teacher observation-based instruments is considered more effective in capturing children's behavioral dynamics in school compared to parent reports.
Opportunity	Developmentally Sensitive Approaches	Voltmer & Salisch (2022); Final Paragraph	There is an urgent need for integrative and multidimensional assessment frameworks to design more targeted interventions.

These findings indicate that the development of assessment instruments for children's emotional and behavioral disorders should be directed toward approaches that are more contextual, developmentally sensitive, and culturally relevant. Theoretically, the results highlight a paradigm shift in assessment practices from universal approaches toward frameworks that consider children's developmental characteristics and sociocultural contexts. Practically, teachers, counselors, psychologists, and educational professionals require

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assessment instruments that are capable of early identification of disorders while also distinguishing between developmentally normative behaviors and indications of emotional and behavioral problems. In addition, the use of digital technology and multidimensional approaches has the potential to improve assessment accuracy, while from a policy perspective, there is a need for the development of culturally based assessment instruments as well as professional training to support more effective educational services and interventions for children.

Although this study provides a comprehensive overview of the development of assessment instruments for children's emotional and behavioral disorders, several limitations should be acknowledged. Most of the analyzed articles were derived from international contexts and may not fully represent the cultural conditions and educational systems in Indonesia. Furthermore, the findings are highly dependent on the quality of the articles available in the selected databases, while empirical implementation of the assessment instruments in real-world settings remains limited. The rapid advancement of digital assessment technology may also mean that recent innovations were not fully captured in this review. Therefore, future research should conduct empirical validation studies and develop assessment instruments that are more aligned with the cultural characteristics and needs of children in Indonesia.

3.7. Implications

Theoretically, this study makes a significant contribution by bridging the paradigmatic gap between pure clinical psychometrics and developmental approaches within the field of special education. The findings confirm an epistemological shift toward assessments anchored in developmental sensitivity, reinforcing the premise that evaluating children's emotional and behavioral barriers cannot be divorced from the context of their mental and chronological age. Furthermore, the presented bibliometric mapping functions as an academic roadmap, clarifying global research trajectories for future scholars aiming to develop more adaptive conceptual models. On practical and social levels, the results of this systematic review encourage practitioners and special education teachers to implement innovative, context-specific assessment frameworks, such as the Emotional Behavior Adaptive Developmental Assessment Pyramid Tool (EB-ADAPT) and the Developmental Function Index (DFI). The most critical social implication of utilizing such development-sensitive instruments is their capacity to minimize the risks of rigid over-labeling and the long-standing negative stigmas attached to children, thereby ensuring that early interventions are accurately targeted and tailored to the children's actual capacities in the field.

3.8. Limitations

Although this study provides a comprehensive overview of the research landscape surrounding development-sensitive assessments, several inherent limitations must be acknowledged. The generalizability of the findings is constrained by the strict restrictions imposed on the number of analyzed articles and the scope of the databases utilized. Tightening the criteria to exclude certain document types may have inadvertently omitted other highly relevant studies or gray literature that possess rich empirical ground data. Additionally, this study is bounded by a restricted temporal scope, capturing publication dynamics only within a designated timeframe from 2016 to May 2026; consequently, theoretical paradigm shifts outside this period are not fully captured. Another prominent limitation pertains to cultural bias, as most international assessment instruments identified in the global literature still exhibit significant cultural limitations when adapted to local contexts. This synthesis has not yet deeply unraveled how cross-cultural adaptation and local standardization of these international tools can be uniformly applied at the regional level without degrading the core essence of their developmental sensitivity.

4. Conclusion

Assessment of children's emotional and behavioral disorders is currently transitioning toward a holistic, multidimensional, and context-based approach, driven by a 5–10% increase in global prevalence and the limitations of international instruments like the CBCL and SDQ, which are deemed culturally biased and poorly aligned with local parenting practices in Indonesia. To address these issues and prevent under-identification, future ideal instruments must integrate age-appropriate developmental sensitivity principles, optimize the role of teachers as primary informants in systematic observations, and overcome local psychometric validity challenges. As an applicable scientific solution to this critical gap, the study proposes the Emotional Behavior–Adaptive Developmental Assessment Pyramid Tool (EB-ADAPT) framework integrated with the Developmental Function Index (DFI). The integration of this model not only provides theoretical contributions but also offers tangible practical implications for practitioners and policymakers in evidence-based decision-making, thereby ensuring a more accurate identification process for children with special needs and allowing intervention plans to be effectively designed to support holistic child well-being.

Author Contributions

All authors contributed equally to this paper. All authors have read and approved the final manuscript.

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Data Availability

The datasets generated during and/ or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

The authors declare that no artificial intelligence (AI) or AI-assisted tools were used in the preparation of this manuscript.

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