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Post-Pandemic Mental Health of Children in School: Repeated Cross-Sectional SDQ Surveys in 2023 and 2025

Lam Thi Le [1], Johnston H. C. Wong [2], Yen Thi Truong [3,*], Bich-Hanh Thi Nguyen [1] and Nguyet Thi Trinh [1]

[1] Faculty of Psychology, Education and Social Work, The University of Danang—University of Science and Education, Danang 550000, Vietnam; ltlam@ued.udn.vn (L.T.L.); ntbhanh@ued.udn.vn (B.-H.T.N.); ttnguyet@ued.udn.vn (N.T.T.)
[2] Department of Life Science, Faculty of Science and Technology, The Beijing Normal-Hong Kong Baptist University, Zhuhai 519088, China; johnstonhuang@bnbu.edu.cn
[3] Faculty of Sociology and Social Work, University of Sciences, Hue University, Hue 530000, Vietnam
* Correspondence: truongthiyen@hueuni.edu.vn

Abstract

Background: The COVID-19 pandemic has generated widespread concerns regarding its long-term effects on children's mental health. While numerous studies documented increased psychological distress among children during the pandemic, less is known about how children's emotional and behavioral functioning have evolved in the post-pandemic period. *Objective*: This study examines patterns of children's mental health using survey data collected in 2023 and 2025. Guided by the dual-factor model of mental health, the analysis considers both psychological difficulties and positive social functioning in order to provide a multidimensional understanding of children's well-being. *Method*: Data were collected using the Strengths and Difficulties Questionnaire (SDQ-25), a widely used behavioral screening instrument assessing emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. These domains were analyzed across two time points to explore patterns of change in internalizing difficulties, externalizing difficulties, and social strengths among school-age children in the post-pandemic context (N = 1262 students in 2023 and N = 575 students in 2025). *Results*: The findings suggest that children's mental health after the pandemic reflects both persistent vulnerability and adaptive capacity. Emotional symptoms and behavioral challenges remain present among a proportion of children, indicating that the psychological effects of pandemic-related disruptions may extend beyond the immediate crisis period. At the same time, many children demonstrate relatively stable levels of prosocial behavior, highlighting the continued importance of positive social functioning as a protective factor for psychological adjustment. *Contributions*: These results underscore the importance of adopting a comprehensive perspective on children's mental health that recognizes both difficulties and strengths. The study highlights the role of schools and families in supporting children's post-pandemic recovery through early mental health screening, social–emotional learning initiatives, and programs that promote empathy and peer support. Such approaches may contribute to strengthening children's resilience and long-term well-being in the aftermath of large-scale social disruptions.

Keywords: children's mental health; post-COVID-19 mental health; strengths and difficulties questionnaire (SDQ); dual-factor model of mental health; prosocial behavior; emotional and behavioral difficulties; school-age children

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1. Introduction

The COVID-19 pandemic has generated unprecedented disruptions in the lives of children and adolescents worldwide. School closures, social distancing measures, and prolonged periods of uncertainty significantly altered children's daily routines, social relationships, and learning environments. These disruptions raised global concerns regarding the mental health and psychosocial well-being of young people. Global evidence suggests that school closure, social isolation, and disruptions to daily routines disproportionately affected children's emotional well-being, especially among those already facing social or educational disadvantage (Fegert et al., 2020; UNICEF, 2021) [1,2]. Numerous studies conducted during the pandemic reported increased levels of emotional distress, behavioral difficulties, and social challenges among children and adolescents (Loades et al., 2020; Racine et al., 2021) [3,4]. As countries transition into the post-pandemic period, an important question emerges: how have children's mental health profiles evolved after the immediate crisis phase of the pandemic?

Existing research has largely focused on the short-term psychological consequences of COVID-19, particularly during periods of lockdown and school closure. Evidence from international studies indicates that children experienced elevated levels of anxiety, depression, loneliness, and behavioral problems during this time (Racine et al., 2021) [4]. Studies conducted in China, Spain, Italy, Bangladesh, and the United Kingdom similarly reported elevated levels of anxiety, fear, emotional distress, and social withdrawal among children during periods of home confinement and restricted peer contact (Garcia de Avila et al., 2020; Orgilés et al., 2020; Waite et al., 2021; Xie et al., 2020; Yeasmin et al., 2020) [5–9].

Disruptions to peer interaction and school routines were also associated with increased emotional symptoms and social difficulties (Loades et al., 2020) [3]. However, far less is known about the longer-term trajectories of children's mental health in the post-pandemic context. While some scholars suggest that psychological distress may decline as social conditions normalize, others argue that the pandemic may have generated lasting psychosocial effects that continue to shape children's emotional and behavioral development (Daly & Robinson, 2021; WHO, 2022) [10,11].

In behavioral and developmental psychology, children's mental health is often conceptualized through two broad domains: internalizing difficulties and externalizing difficulties. Internalizing difficulties refer to problems that are directed inward, including emotional symptoms such as anxiety, depression, withdrawal, and peer-related distress. These difficulties are often less visible but may significantly affect children's subjective well-being and social functioning (Achenbach & Edelbrock, 1978; Goodman et al., 2010) [12,13].

In contrast, externalizing difficulties involve outward-directed behaviors such as conduct problems, hyperactivity, impulsivity, and rule-breaking behaviors. These manifestations are typically more observable in social and school contexts and are often associated with difficulties in behavioral regulation and interpersonal relationships (Achenbach & Edelbrock, 1978; Bongers et al., 2003) [12,14].

This distinction provides an important analytical framework for understanding children's psychological adjustment, particularly in the context of large-scale disruptions such as the COVID-19 pandemic, where both emotional distress and behavioral dysregulation may emerge in different forms.

Recent studies have applied this framework to examine the impact of the COVID-19 pandemic on children's mental health, highlighting that internalizing and externalizing difficulties may follow different developmental trajectories over time (Kaman, 2024) [15]. Empirical studies using the Strengths and Difficulties Questionnaire (SDQ) have also supported the distinction between internalizing and externalizing difficulties in examining children's mental health during and after the pandemic. These findings suggest the need for

a multidimensional and behaviorally grounded approach when examining post-pandemic mental health.

In addition to the persistence of psychological difficulties, contemporary perspectives emphasize that children's mental health should not be conceptualized solely as the absence of psychopathology, but also as the presence of positive psychological and social functioning (WHO, 2022) [11]. Contemporary perspectives increasingly conceptualize mental health as a multidimensional construct that includes both psychological difficulties and positive functioning. According to the dual-factor model of mental health, well-being and psychopathology represent two related but distinct dimensions of psychological functioning (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008) [16,17]. From this perspective, individuals may experience symptoms of distress while still maintaining positive psychological or social resources that support adaptation. This dualistic framework challenges the traditional deficit-focused view of mental health and encourages researchers to examine both vulnerabilities and strengths simultaneously.

Applying such a multidimensional perspective is particularly important when studying children and adolescents. Developmental research indicates that young people often display a complex pattern of adjustment in which psychological difficulties coexist with adaptive capacities, including prosocial behavior, peer support, and resilience (Suldo & Shaffer, 2008; Masten, 2014) [17,18]. These social and emotional strengths may function as protective factors that buffer the negative effects of stress and promote recovery following adverse experiences. Consequently, examining both difficulties and strengths provides a more comprehensive understanding of children's psychological adjustment in the aftermath of major societal disruptions such as the COVID-19 pandemic.

To examine these dimensions empirically, this study draws on the Strengths and Difficulties Questionnaire (SDQ), a widely used measure of children's emotional and behavioral adjustment. The SDQ is particularly suitable for the present study because it captures both psychological difficulties and prosocial strengths within a multidimensional framework [19,20].

Despite the growing body of research on children's mental health during COVID-19, several important gaps remain. First, most existing studies focus primarily on psychological difficulties, paying less attention to positive social resources such as prosocial behavior (Loades et al., 2020; Racine et al., 2021) [3,4]. As a result, current knowledge may provide an incomplete picture of children's psychological adjustment. Second, relatively few studies have examined how children's mental health profiles evolve over time in the post-pandemic period (Kaman et al., 2024) [15]. Longitudinal or repeated cross-sectional comparisons are needed to determine whether mental health difficulties decline, persist, or change in nature as children adapt to post-pandemic social environments. Third, research from low- and middle-income countries remains limited, particularly in Southeast Asia, where educational and social contexts may differ substantially from those in Western settings.

Vietnam provides an important context for addressing these gaps. During the COVID-19 pandemic, Vietnamese schools experienced periods of closure and transitions to online learning, which disrupted students' academic and social experiences (UNICEF Vietnam, 2021 [21]. Although infection rates were relatively controlled compared with many countries, the broader social consequences of the pandemic including isolation from peers, disruptions to schooling, and family stress may still have affected children's psychosocial well-being (UNICEF, 2021; OECD, 2021) [21,22]. However, empirical evidence on the mental health trajectories of Vietnamese students in the post-pandemic period remains limited.

Against this background, the present study examines changes in the mental health profiles of school-aged children in the post-COVID-19 period using data collected in two survey waves conducted in 2023 and 2025. Adopting a multidimensional perspective

on mental health, the study simultaneously analyzes psychological difficulties and social strengths using the Strengths and Difficulties Questionnaire (SDQ-25). The analysis focuses on three integrated domains of mental health functioning: internalizing difficulties, externalizing difficulties, and prosocial behavior. By comparing patterns across the two survey periods, the study aims to identify whether children's mental health in the post-pandemic period reflects a simple increase in psychological problems or a more complex pattern characterized by the coexistence of vulnerability and adaptive resources.

Specifically, the study addresses three research questions:

First, how has the mental health profile of school-aged children changed in the post-COVID-19 period?

Second, are there differences in the levels and configurations of internalizing and externalizing difficulties before and after the COVID-19 experience?

Third, how does children's prosocial behavior change over time, and what role do social strengths play as adaptive resources in the context of increasing psychological difficulties?

By addressing these questions, the study seeks to contribute to a more nuanced understanding of children's mental health in the aftermath of the COVID-19 pandemic, highlighting not only patterns of psychological vulnerability but also the social strengths that may support children's adaptation in a changing environment.

2. Analytical Framework

Understanding children's mental health in the post-pandemic period requires an analytical perspective that moves beyond a narrow focus on psychological problems. Traditional approaches in child mental health research have often conceptualized mental health primarily in terms of the presence or absence of psychological symptoms (Greenspoon & Saklofske, 2001; Achenbach & Edelbrock, 1978) [12,16]. Within this deficit-oriented perspective, mental health is typically assessed through indicators such as anxiety, depression, behavioral problems, or emotional distress (Achenbach & Edelbrock, 1978) [12]. While these indicators remain essential for identifying children at risk, focusing exclusively on psychological difficulties may provide an incomplete picture of children's overall psychological functioning.

Recent theoretical developments have increasingly emphasized a broader conceptualization of mental health that integrates both vulnerability and positive functioning. One influential framework in this regard is the dual-factor model of mental health, which proposes that psychological well-being and psychopathology represent two related but distinct dimensions of mental health (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008) [16,17]. According to this model, the absence of psychological symptoms does not necessarily imply the presence of positive mental health, and conversely, individuals experiencing certain psychological difficulties may still maintain adaptive capacities and positive functioning. This perspective highlights the importance of examining both psychological difficulties and strengths in order to obtain a more comprehensive understanding of mental health.

Applying the dual-factor perspective is particularly relevant when studying children's adjustment in the aftermath of major societal disruptions such as the COVID-19 pandemic. The pandemic exposed children to a range of stressors, including social isolation, disrupted schooling, and changes in family routines. While these experiences may increase psychological vulnerability, developmental research suggests that children often demonstrate adaptive responses through social engagement, peer support, and prosocial behaviors (Suldo & Shaffer, 2008; Masten, 2014) [17,18]. These positive social resources can function as protective factors that help children cope with adversity and facilitate psychological adjustment. Therefore, examining children's mental health in the post-pandemic con-

text requires an analytical framework that simultaneously captures both difficulties and adaptive resources.

In the present study, this multidimensional perspective is operationalized using the Strengths and Difficulties Questionnaire (SDQ-25). The SDQ is a widely used behavioral screening instrument designed to assess emotional and behavioral functioning among children and adolescents (Goodman, 2001) [20]. The instrument consists of five subscales measuring emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior. These domains capture both psychological difficulties and positive social functioning, making the SDQ particularly suitable for research grounded in the dual-factor conceptualization of mental health.

Within the analytical framework of this study, the five SDQ domains are organized into three broader dimensions of children's mental health. The first dimension represents internalizing difficulties, which include emotional symptoms and peer relationship problems. Internalizing difficulties reflect inwardly directed emotional distress, such as anxiety, sadness, social withdrawal, or feelings of loneliness. These problems often relate to children's emotional regulation and interpersonal experiences.

The second dimension represents externalizing difficulties, which include conduct problems and hyperactivity/inattention. Externalizing difficulties are characterized by outwardly directed behavioral challenges such as impulsivity, aggression, rule-breaking behavior, or difficulties maintaining attention. These problems are particularly relevant in school contexts because they may affect children's classroom behavior, peer relationships, and academic engagement.

The third dimension represents social strengths, captured by the prosocial behavior subscale of the SDQ. Prosocial behavior refers to voluntary actions intended to benefit others, such as helping, sharing, cooperating, and showing empathy. In developmental research, prosocial behavior is widely recognized as an important indicator of positive social functioning and social competence (Masten, 2014; Goodman, 2001) [18,20]. Within the dual-factor framework, prosocial behavior can be interpreted as a protective resource that supports children's adaptation in the presence of psychological challenges.

An additional element of the analytical framework is the incorporation of a temporal dimension through the comparison of data collected at two post-pandemic time points, 2023 and 2025. Rather than attempting to establish causal relationships, the temporal comparison is used to identify patterns of change and stability in children's mental health profiles over time. This approach allows the study to explore whether children's psychological functioning reflects recovery, persistence of difficulties, or the coexistence of vulnerability and adaptation in the years following the pandemic.

Finally, within this framework, the COVID-19 pandemic is conceptualized primarily as a contextual background rather than a direct explanatory variable. The pandemic created prolonged psychosocial stress that may have influenced children's emotional and behavioral development through disruptions to schooling, peer interaction, and family environments. By positioning COVID-19 as a contextual factor, the framework allows the analysis to focus on how children's mental health profiles evolve in the broader post-pandemic environment.

Taken together, this analytical framework conceptualizes children's mental health as a multidimensional construct that integrates psychological difficulties and social strengths. By combining the dual-factor perspective with the SDQ-25 measurement framework and temporal comparison across survey waves, the study aims to capture the complex processes of vulnerability and adaptation shaping children's mental health in the post-COVID-19 period. Figure 1. Analytical framework of children's mental health based on the dual-factor model, illustrating internalizing and externalizing difficulties alongside prosocial behavior

as a protective factor, and their comparison across two post-pandemic time points (2023 and 2025).

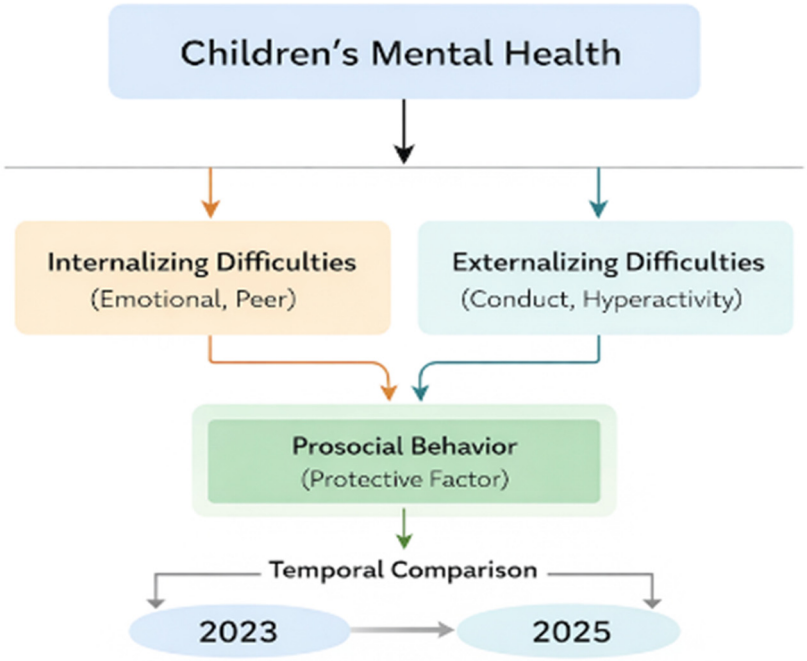


Figure 1. Analytical Framework of Children's Mental Health Based on the Dual-Factor Model (SDQ-25). (Note. The figure was developed by the authors.)

3. Methods

3.1. Study Design

This study employed a repeated cross-sectional design to examine changes in the mental health profiles of school-aged children in the post-COVID-19 period. Data were collected at two time points, in 2023 and 2025, allowing for the comparison of children's psychological functioning across two stages of the post-pandemic context. The repeated cross-sectional approach enables the identification of patterns of change in population-level mental health indicators over time without requiring the same individuals to be followed longitudinally.

The analytical framework of the study conceptualizes children's mental health as a multidimensional construct consisting of both psychological difficulties and social strengths. Mental health difficulties were examined through indicators of internalizing and externalizing problems, while prosocial behavior was analyzed as a potential protective resource. The SDQ-25 was used as the primary measurement instrument because it allows the simultaneous assessment of both difficulties and strengths in children's emotional and behavioral functioning.

The comparison between the two survey waves was designed to explore whether children's mental health profiles in the post-pandemic period reflect patterns of persistence, change, or adaptation in the years following the COVID-19 pandemic.

3.2. Participants

Participants in this study were students enrolled in lower and upper secondary schools in Da Nang City, Vietnam. The study focused on school-aged children because schools represent an important social environment where children's emotional and behavioral adjustment becomes visible through peer interaction, learning engagement, and social participation.

In the first survey wave conducted in 2023, a total of 1262 students participated in the study. In the second survey wave conducted in 2025, 575 students completed the questionnaire. Participants were recruited from several public schools located in different districts of Da Nang in order to obtain a diverse sample of students from urban school settings.

Participants ranged in age from 11 to 17 years, covering both lower secondary and upper secondary education levels. In the 2023 sample, approximately 49.3% of students were from lower secondary schools and 50.7% were from upper secondary schools. In the 2025 sample, 56% were from lower secondary schools and 44% were from upper secondary schools. The mean age of participants in 2023 was M = 15.23 years (SD = 1.92), and in 2025 was M = 15.11 years (SD = 1.85). Gender distribution was also recorded, with 45.3% male and 54.7% female students in 2023, and 49.7% male and 50.3% female students in 2025.

Participation was voluntary, and students completed the questionnaire anonymously. The demographic characteristics of participants, including gender and grade level, were recorded to provide a descriptive overview of the study sample.

Because the study employed a repeated cross-sectional design, the samples collected in 2023 and 2025 were not intended to represent the same individuals. Instead, the two datasets represent comparable groups of students from the same educational context, allowing for the examination of changes in the distribution of mental health indicators across the two time periods.

Table 1 presents the demographic characteristics of participants across the two survey waves. Although minor differences were observed in age and school-level composition between the 2023 and 2025 samples, the overall demographic profiles were broadly comparable, supporting cautious descriptive comparison across waves.

Table 1. Sample Characteristics by Survey Wave (2023 vs. 2025).

Characteristic	2023 (n =1262)	2025 (n = 575)	*p*-Value
Age, mean (SD)	15.23 (1.92)	12.11 (1.85)	
Gender, n (%)			
Male	856 (45.3%)	284 (49.7%)	0.08
Female	977 (54.7%)	287 (50.3%)	
School level			
Lower secondary	946 (49.3%)	320 (56%)	0.008
Upper secondary	887 (50.7%)	251 (44%)	

3.3. Measures

Children's mental health was assessed using the Strengths and Difficulties Questionnaire (SDQ-25), a widely used screening instrument designed to evaluate emotional and behavioral functioning among children and adolescents (Goodman, 2001) [20]. The SDQ consists of 25 items grouped into five subscales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior.

Each item is rated on a three-point Likert scale (0 = "not true," 1 = "somewhat true," and 2 = "certainly true"). The first four subscales measure psychological and behavioral difficulties, while the prosocial behavior subscale measures positive social functioning.

Consistent with established SDQ scoring procedures, a Total Difficulties Score was calculated by summing the scores of the four difficulty subscales (emotional symptoms, conduct problems, hyperactivity, and peer problems). Higher scores indicate greater levels of psychological and behavioral difficulties.

For analytical purposes, the SDQ subscales were also grouped into broader domains consistent with contemporary conceptualizations of child mental health: (i) Internalizing difficulties, including emotional symptoms and peer relationship problems; (ii) Externalizing difficulties, including conduct problems and hyperactivity/inattention; (iii) Social strengths, represented by prosocial behavior (Goodman, Lamping, & Ploubidis, 2010) [13].

In addition to raw scores, SDQ results were categorized into three standard classification levels normal, borderline, and abnormal based on established cutoff points. This classification allowed the study to examine changes in the distribution of students across different levels of mental health risk between the two survey periods. In the 2023 survey wave, additional information was collected regarding students' previous experience of COVID-19 infection, which was used in an exploratory analysis to examine its association with children's mental health outcomes.

3.4. Data Collection

Data were collected through school-based surveys administered in participating schools in Da Nang City. Prior to the survey, permission to conduct the study was obtained from school administrators. Students were informed about the purpose of the study and were assured that participation was voluntary and that their responses would remain anonymous.

The questionnaires were administered during school hours in classroom settings under the supervision of teachers or research assistants. Students completed the questionnaires individually and were encouraged to answer all questions honestly based on their own experiences.

To ensure confidentiality, no identifying information was collected from participants. Completed questionnaires were collected and compiled for data entry and analysis. The survey procedures followed ethical principles for research involving human participants, including voluntary participation, informed consent, and the protection of participant anonymity.

3.5. Statistical Analysis

Data analysis was conducted using statistical software to examine patterns of children's mental health across the two survey waves. Both descriptive and inferential statistical methods were employed.

First, descriptive statistics were calculated to summarize the distribution of SDQ scores across the five subscales and the total difficulties score. Mean scores and standard deviations were used to describe overall levels of emotional and behavioral functioning among students in each survey year. Second, categorical analyses were conducted using the SDQ classification system (normal, borderline, and abnormal). The proportions of students falling into each category were calculated for each SDQ subscale and for the total difficulties score. Differences in the distribution of these categories between the 2023 and 2025 survey waves were examined using chi-square tests (χ^2 tests), and the chi-square statistic, degrees of freedom, and p-values were reported.

Third, independent sample t-tests were used to compare mean SDQ scores between the two survey years. This analysis allowed the study to examine whether statistically significant differences existed in the levels of emotional symptoms, behavioral difficulties, and prosocial behavior over time. For all t-tests, test statistics (t), degrees of freedom (df), and p-values were reported in accordance with APA guidelines.

Fourth, Pearson correlation analysis was conducted to examine the relationships between prosocial behavior and the various SDQ difficulty subscales. This analysis was used to explore whether prosocial behavior functioned as a social strength associated with

lower levels of psychological and behavioral difficulties. Correlation coefficients were reported with corresponding degrees of freedom (df = N − 2) and *p*-values following APA reporting conventions.

Finally, in the 2023 dataset, an exploratory comparison was conducted to examine differences in SDQ scores between students who reported previous COVID-19 infection and those who did not. Independent sample *t*-tests were used to assess whether prior infection experience was associated with differences in mental health indicators. All statistical analyses were conducted using IBM SPSS Statistics for Windows, Version 20 (IBM Corp., Armonk, NY, USA). Together, these analytical procedures allowed the study to examine both the distribution and the relationships of children's mental health indicators across the two post-pandemic survey periods.

Because students were nested within schools, standard errors may be affected by school-level clustering. In addition, multiple comparisons were conducted across subscales and survey waves; therefore, results should be interpreted cautiously, particularly for marginally significant findings.

3.6. Ethical Considerations

The study followed ethical principles for research involving human participants. Permission to conduct the survey was obtained from participating schools in Da Nang. Participation was voluntary and anonymous. Students were informed about the purpose of the study before completing the questionnaire.

4. Results

The results indicate that children's mental health in the post-COVID-19 period reflects a complex pattern rather than a simple increase in psychological difficulties. While certain domains of mental health problems showed signs of deterioration, indicators of social strengths remained relatively stable. Comparisons between the two survey waves (2023 and 2025) using the three-category SDQ classification (normal, borderline, and abnormal) provide insight into changes in the distribution of mental health difficulties among students. In addition, analyses of prosocial behavior and its relationship with other SDQ subscales help clarify whether increasing difficulties are accompanied by changes in social strengths.

Finally, within the 2023 dataset, prior COVID-19 infection was examined as a contextual factor to explore its association with children's mental health difficulties.

4.1. Shifts in the Severity of Children's Mental Health Difficulties in the Post-COVID-19 Period (2023–2025)

As shown in Table 2, the distribution of SDQ categories across 2023 and 2025 reveals significant changes in conduct problems and peer relationship problems. Overall, the results indicate that a substantial proportion of students fell into the borderline or abnormal categories across several SDQ domains in both survey waves.

For emotional symptoms, the proportion of students classified as abnormal remained relatively stable, decreasing slightly from 22.0% in 2023 to 21.5% in 2025, $\chi^2(2) = 2.5$, $p = 0.28$). Similarly, hyperactivity showed only minor changes, with abnormal cases increasing from 9.5% to 10.7%, $\mathbf{\chi^2(2) = 1.09, p = 0.57}$.

In contrast, statistically significant changes were observed for conduct problems and peer relationship problems. The proportion of students classified as abnormal in the conduct problems subscale increased from 6.9% in 2023 to 11.7% in 2025, $\chi^2(2) = 13.27$, $p = 0.001$. A similar pattern was observed for peer problems, where abnormal cases rose from 10.2% to 14.2%, $\mathbf{\chi^2(2) = 8.77, p = 0.012}$.

Table 2. Distribution of SDQ Categories among Students in 2023 and 2025 (N = 1833).

SDQ Subscale	2023			2025			χ^2(df)	*p*-Value
	Normal (%)	Borderline (%)	Abnormal (%)	Normal (%)	Borderline (%)	Abnormal (%)		
Emotional Symptoms	68.5	9.5	22	66.4	11.9	21.5	2.50 (2)	0.28
Conduct Problems	83.4	9.7	6.9	77.4	10.9	11.7	13.27 (2)	0.001
Hyperactivity	78.7	11.8	9.5	76.5	12.8	10.7	1.09 (2)	0.57
Peer Problems	58.6	31.1	10.2	52.4	33.5	14.2	8.77 (2)	0.012
Prosocial Behavior	81.1	10.8	8.1	79.2	11.9	8.9	0.98 (2)	0.61
Total Difficulties	63	20	17	59	22.6	18.4	2.69 (2)	0.26

For prosocial behavior, the distribution across SDQ categories remained largely stable, with abnormal cases increasing slightly from 8.1% to 8.9%, $\chi^2(2) = 0.98$, $p = 0.61$. At the overall level, the proportion of students classified as abnormal in the total difficulties score increased modestly from 17.0% in 2023 to 18.4% in 2025, although this change was not statistically significant, $\chi^2(2) = 2.69$, $p = 0.26$.

Taken together, these results suggest that while some domains of children's mental health remained relatively stable, certain behavioral and social difficulties particularly conduct problems and peer relationship problems showed signs of increasing severity in the post-pandemic period.

4.2. Expansion of the Mental Health Difficulty Spectrum (Borderline and Abnormal Groups)

To further examine changes in the breadth of mental health difficulties, the proportions of students classified in the borderline and abnormal categories combined were compared between the two survey years (see Table 3).

Table 3. Proportion of Students in Borderline and Abnormal SDQ Categories (2023 vs. 2025).

SDQ Subscale	2023 (Borderline and Abnormal) %	2025 (Borderline and Abnormal) %	χ^2(df)	*p*-Value
Emotional Symptoms	31.5	33.4	1.76	0.18
Conduct Problems	16.6	22.6	3.41	0.06
Hyperactivity	21.3	23.5	0.03	0.86
Peer Problems	41.3	47.7	2.36	0.12
Prosocial Behavior	18.9	20.8	0.00	1.00
Total Difficulties	37	41	0.05	0.81

As shown in Table 3, the combined proportion of students falling into the borderline or abnormal categories increased across all SDQ subscales between 2023 and 2025. The most notable increases were observed for peer problems, which rose from 41.3% to 47.7%, and conduct problems, which increased from 16.6% to 22.6%. A similar upward trend was observed for total difficulties, which increased from 37.0% in 2023 to 41.0% in 2025.

Although these changes did not reach statistical significance for most domains, the overall pattern suggests a gradual expansion in the proportion of students experiencing elevated levels of psychological or behavioral difficulties.

4.3. Students' Social Strengths in the Context of Increasing Mental Health Difficulties

Table 4 presents the relationship between prosocial behavior and other dimensions of children's mental health. Descriptive comparisons indicate that the mean prosocial behavior score decreased modestly from 7.26 ± 1.97 in 2023 to 7.02 ± 1.94 in 2025, and this

difference was statistically significant, **t(1835) = 2.4, p = 0.016**. Despite this decline, overall levels of prosocial behavior remained relatively high across both survey waves.

Table 4. Relationship between prosocial behavior and other scale (N = 1833).

Other Subscale	Prosocial Behavior
Emotional Symptoms	0.038
Conduct Problems	−0.201 **
Hyperactivity	−0.163 **
Peer Problems	−0.177 **
Total Difficulties	−0.149 **

Note: Pearson correlation coefficients were calculated using the pooled sample across both survey waves (2023 and 2025; N = 1833). Negative coefficients indicate that higher prosocial behavior was associated with lower levels of psychological difficulties. ** $p < 0.01$.

To further examine the role of social strengths, correlation analyses were conducted between prosocial behavior and other SDQ subscales. As shown in Table 3, prosocial behavior was significantly and negatively associated with multiple domains of psychological difficulties, including conduct problems (r = −0.201, $p < 0.01$), hyperactivity (r = −0.163, $p < 0.01$), peer problems (r = −0.177, $p < 0.01$), and total difficulties (r = −0.149, $p < 0.01$). These findings indicate that higher levels of prosocial behavior are consistently linked to lower levels of behavioral and interpersonal difficulties among children.

In contrast, the association between prosocial behavior and emotional symptoms was negligible (r = 0.038), suggesting that prosocial tendencies may not be strongly related to internal emotional distress. This pattern indicates that the adaptive role of prosocial behavior may be more pronounced in relation to externalizing and social difficulties than to internalizing problems.

Taken together, these findings suggest that prosocial behavior may function as an important social resource in children's mental health, particularly in mitigating behavioral and peer-related challenges. At the same time, the selective nature of these associations highlights the multidimensional structure of mental health, in which different domains of functioning may be influenced by distinct protective mechanisms.

4.4. Supplementary Analysis Based on Raw SDQ Scores

In addition to categorical analyses, raw SDQ scores were compared across the two survey waves to further examine changes in children's mental health over time (see Table 5). The results revealed patterns consistent with those observed using the three-category SDQ classification.

Table 5. Mean SDQ Total and Subscale Scores in 2023 and 2025.

Scale	2023	2025	t(df)	p
Emotional Symptoms	4.27 ± 2.66	4.62 ± 2.34	−2.84 (1835)	0.005
Conduct Problems	2.16 ± 1.49	2.49 ± 1.67	−3.99 (1835)	0.00
Hyperactivity	3.75 ± 2.09	3.97 ± 2	−2.20 (1835)	0.028
Peer Problems	3.29 ± 1.65	3.61 ± 1.71	−3.85 (1835)	0.00
Prosocial Behavior	7.26 ± 1.97	7.02 ± 1.94	2.40 (1835)	0.016
Total Difficulties	13.46 ± 5.87	14.69 ± 5.28	−4.44 (1835)	0.00

Mean scores for several domains of psychological difficulties increased significantly between 2023 and 2025. Emotional symptoms rose from 4.27 ± 2.66 to 4.62 ± 2.34, (t(1835) = −2.84 (p = 0.005), conduct problems increased from 2.16 ± 1.49 to 2.49 ± 1.67, t(1835) = −3.99, (p < 0.001), and peer problems increased from 3.29 ± 1.65 to 3.61 ± 1.71, t(1835) = −3.85, (p < 0.001). Hyperactivity scores also showed a modest but significant increase (from 3.75 ± 2.09 to 3.97 ± 2.00, t(1835) = −2.2, p = 0.028). Correspondingly, the total difficulties score increased from 13.46 ± 5.87 in 2023 to 14.69 ± 5.28 in 2025, t(1835) = −4.44 (p < 0.001), indicating a general upward trend in psychological difficulties during the post-pandemic period.

In contrast, prosocial behavior showed a slight but statistically significant decline, decreasing from 7.26 ± 1.97 in 2023 to 7.02 ± 1.94 in 2025 (p = 0.016). However, the magnitude of this decrease was relatively small compared to the observed increases in difficulty domains, and overall levels of prosocial behavior remained comparatively high.

Notably, the simultaneous increase in psychological difficulties and relative stability of prosocial behavior reflects the coexistence of vulnerability and adaptive social functioning among children in the post-pandemic period. This pattern is consistent with a multidimensional understanding of mental health, in which difficulties and strengths may develop in parallel rather than as opposing ends of a single continuum.

4.5. COVID-19 Infection Experience and Children's Mental Health Difficulties in 2023

Using the 2023 dataset, an exploratory analysis was conducted to examine differences in SDQ scores between students who reported prior COVID-19 infection and those who did not (see Table 6).

Table 6. Mean SDQ Scores by COVID-19 Infection Experience in 2023.

Scale	Not Infected	Infected	t(df)	*p*
Emotional Symptoms	4.49	3.99	3.36 (1260)	0.001
Conduct Problems	2.24	2.06	2.24 (1244.1)	0.025
Hyperactivity	3.77	3.72	0.44 (1260)	0.65
Peer Problems	3.28	3.31	−0.32 (1260)	0.74
Prosocial Behavior	7.26	7.25	0.15 (1260)	0.87
Total Difficulties	13.78	13.07	2.16 (1229.2)	0.03

Note: Welch's t-test was used when the assumption of equal variances was violated.

Students without a history of COVID-19 infection reported higher mean scores for emotional symptoms (4.49 vs. 3.99, t(1260) = 3.36, p = 0.001), conduct problems (2.24 vs. 2.06, t(1260) = 2.24, p = 0.025), and total difficulties (13.78 vs. 13.07, t(1260) = 2.16, p = 0.03) compared with students who had previously been infected. No statistically significant differences were observed for hyperactivity, peer problems, or prosocial behavior (all p> 0.05).

These findings suggest that COVID-19 infection history may be associated with variation in selected mental health indicators; however, these differences were limited and should be interpreted cautiously.

5. Discussion

This study contributes to the emerging literature on post-pandemic child mental health by providing empirical evidence from a Southeast Asian context, where research remains relatively limited.

This study examined patterns of children's mental health in the post-pandemic period using the Strengths and Difficulties Questionnaire (SDQ). By comparing survey data

collected in 2023 and 2025, the research aimed to explore how children's emotional and behavioral functioning evolved in the years following the COVID-19 pandemic. Guided by the dual-factor model of mental health, the analysis considered both psychological difficulties and social strengths as complementary dimensions of children's mental health.

The findings provide insight into patterns of vulnerability and adaptation in children's mental health across two post-pandemic survey waves.

5.1. Interpretation of Key Findings

The findings suggest that children's mental health in the post-pandemic period reflects a pattern of both persistent vulnerability and relative adaptive functioning. On one hand, indicators of internalizing and externalizing difficulties remain present among a proportion of children, indicating that the difficulties associated with earlier social and educational disruptions may extend beyond the immediate crisis period. Emotional symptoms such as anxiety and loneliness, as well as behavioral challenges related to attention and conduct, continue to affect children's daily functioning in school and social environments. These patterns align with growing evidence suggesting that the mental health consequences of the COVID-19 pandemic may persist for several years, particularly among younger populations who experienced prolonged school closures and social isolation during critical developmental periods. This pattern is consistent with broader evidence showing that children's psychological distress often persisted beyond the acute phase of the pandemic, even as public health restrictions were lifted (WHO, 2022; Le et al., 2025) [11,23].

These patterns are broadly consistent with findings from studies conducted in China using the Strengths and Difficulties Questionnaire (SDQ). For instance, recent research has reported that internalizing symptoms such as anxiety and emotional distress, as well as externalizing behaviors, remained elevated among children during and after the COVID-19 pandemic. Such cross-national consistency suggests that prolonged disruptions to schooling and peer interaction may have were associated with broadly similar patterns of psychological difficulty across different socio-cultural contexts (Du et al., 2021; Wang et al., 2021) [24,25].

At the same time, the findings also highlight the presence of social strengths among children, as reflected in levels of prosocial behavior. Many children continued to report relatively high levels of empathy, cooperation, and helping behaviors toward peers. Within the framework of the dual-factor model of mental health, these positive social behaviors may represent important social resources associated with children's psychological adjustment. Prosocial tendencies can facilitate supportive peer relationships and foster social belonging, which are known to buffer the impact of stress and emotional difficulties. The coexistence of psychological challenges and adaptive social functioning therefore illustrates the multidimensional nature of children's mental health. Meta-analytic evidence further confirms that the psychological consequences of the pandemic were not limited to isolated symptoms but reflected broader disruptions across emotional, behavioral, and social domains (Bussières et al., 2021; Singh et al., 2020) [26,27].

5.2. Post-Pandemic Mental Health Patterns Across Contexts

The persistence of emotional and behavioral difficulties observed in this study is consistent with findings from recent international research examining children's mental health after the pandemic. Several large-scale studies conducted in Europe, North America, and Asia have reported elevated levels of anxiety, depressive symptoms, and behavioral problems among children and adolescents during the pandemic, with many of these difficulties continuing into the post-pandemic period. For example, longitudinal research has indicated that children who experienced extended periods of remote learning and re-

duced peer interaction may face challenges in re-establishing social routines and emotional stability even after schools fully reopened (Houghton et al., 2022; Xie et al., 2022) [28,29].

Comparative evidence from studies conducted in China further supports this pattern. Research using the Strengths and Difficulties Questionnaire (SDQ) has reported that emotional symptoms and behavioral difficulties among children remained elevated during and after the pandemic, reflecting the lasting psychological effects of prolonged school disruption and social isolation (Xie et al., 2020) [8]. School closures also intensified existing inequalities in access to learning, psychosocial support, and developmental opportunities, especially for children in socially vulnerable households (OECD, 2021; Armitage & Nellums, 2020) [22,30]. The use of the same SDQ instrument across studies also enhances methodological comparability, allowing the present findings to be interpreted within a broader international context. At the same time, differences in educational systems, family structures, and pandemic management strategies suggest that children's post-pandemic recovery may follow distinct trajectories across countries.

In this regard, the current findings from a Southeast Asian context contribute additional evidence to the growing body of post-pandemic research, suggesting that patterns of persistent vulnerability alongside adaptive social functioning may represent a broader regional trend among children.

However, research conducted since 2023 has also emphasized the importance of resilience and recovery processes among children. Prospective studies have shown that although many children experienced elevated distress during the pandemic, some also demonstrated adaptive recovery trajectories supported by social connectedness, family stability, and peer relationships (Magson et al., 2021; Daly & Robinson, 2021) [31,32]. Some studies have observed gradual improvements in children's psychological well-being as social interactions resume and school environments stabilize (Racine et al., 2021; Loades et al., 2020; Ravens-Sieberer et al., 2022) [3,4]. The current findings support this emerging perspective by demonstrating that children's prosocial capacities remain present and may even serve as a key mechanism supporting adjustment in the aftermath of collective stress. In developmental psychology, prosocial behavior has long been associated with social competence and emotional regulation, both of which contribute to children's ability to cope with challenging life events.

At the same time, evidence from SDQ-based studies in China also indicates that children may continue to exhibit prosocial tendencies despite experiencing psychological difficulties. This coexistence of vulnerability and adaptive functioning reinforces the argument that children's mental health should be understood as a multidimensional construct rather than a unidimensional continuum.

The coexistence of difficulties and strengths observed in this study reinforces the relevance of the dual-factor model of mental health. Rather than viewing children's well-being solely through the presence of psychological symptoms, the dual-factor perspective emphasizes that positive functioning can occur alongside certain difficulties. In the post-pandemic context, this perspective is particularly valuable because it acknowledges that recovery is not necessarily a linear process. Children may experience emotional fluctuations while simultaneously maintaining supportive social behaviors and adaptive coping strategies.

5.3. Educational and Social Implications

The findings of this study suggest several practical implications for schools, families, and policymakers seeking to support children's mental health in the post-pandemic era. Schools represent one of the most important environments for children's psychological development, particularly following periods of social disruption. International evidence consistently identifies schools as central settings for post-pandemic psychosocial recovery

because they provide structure, peer interaction, and access to early support services (UNICEF, 2021; WHO, 2022; OECD, 2021) [2,11,22]. The persistence of emotional and behavioral difficulties suggests that educational systems should continue to prioritize mental health support as part of post-pandemic recovery strategies.

First, school-based mental health programs may provide a useful avenue in identifying and supporting children experiencing emotional distress or behavioral challenges. Screening tools such as the SDQ can help educators and school psychologists monitor students' psychological functioning and detect early signs of difficulty. Early identification is particularly important because emotional and behavioral problems in childhood can influence academic engagement, peer relationships, and long-term psychological development. The psychological consequences of school closure extend beyond academic disruption and include reduced physical activity, weaker peer engagement, and declines in overall well-being, reinforcing the need for school-based recovery strategies (Viner et al., 2022; Wang et al., 2020) [33,34].

Second, the presence of prosocial strengths among children suggests that interventions should not focus exclusively on reducing psychological symptoms. Programs that promote empathy, cooperation, and peer support may enhance children's social resources and contribute to a more supportive school climate. Research in social and emotional learning has consistently demonstrated that fostering prosocial skills can improve both psychological well-being and educational outcomes.

Third, families also play a critical role in children's post-pandemic adjustment. During the pandemic, many families experienced heightened stress due to economic uncertainty, changes in work arrangements, and increased caregiving responsibilities. Continued collaboration between schools and families may therefore be essential in supporting children's emotional well-being. Parental awareness of children's emotional needs and open communication within families can help mitigate the impact of ongoing stressors.

5.4. Limitations

Despite its contributions, this study has several limitations that should be acknowledged. First, the analysis relies on survey data collected using the SDQ, which is a screening instrument rather than a clinical diagnostic tool. While the SDQ is widely used in child mental health research, it may not capture the full complexity of children's psychological experiences. Future research could complement SDQ assessments with qualitative approaches or clinical evaluations to obtain a more comprehensive understanding of children's mental health.

Second, the study compares data from two time points but does not follow the same individuals longitudinally. As a result, the findings should be interpreted as reflecting general patterns at the population level rather than individual developmental trajectories. Longitudinal studies tracking the same children over time would provide stronger evidence regarding the long-term psychological effects of the pandemic.

Third, the study focuses primarily on emotional and behavioral indicators measured through the SDQ and does not include other potentially relevant factors such as family socioeconomic status, digital media use, or academic stress. These contextual variables may influence children's mental health outcomes and should be considered in future research.

Finally, cultural and educational contexts may shape how children experience and express psychological difficulties. The findings of this study should therefore be interpreted within the specific social context in which the data were collected. Comparative studies across countries and educational systems could further illuminate how different social environments influence children's post-pandemic adjustment.

5.5. Directions for Future Research

Future research should continue to investigate children's mental health trajectories as societies move further away from the immediate crisis phase of the COVID-19 pandemic. Longitudinal studies will be particularly valuable for understanding whether emotional and behavioral difficulties observed in the early post-pandemic period diminish over time or evolve into longer-term mental health challenges.

In addition, future studies could explore the factors associated with positive adjustment among children facing post-pandemic stress. For example, peer relationships, family support, and school climate may all play important roles in shaping children's capacity to adapt to social disruptions. Identifying these protective factors would contribute to the development of more effective mental health interventions.

Another promising direction involves integrating psychological assessments with broader measures of well-being, including life satisfaction, academic engagement, and social connectedness. Such multidimensional approaches would align closely with the dual-factor model of mental health and provide a more comprehensive understanding of children's development in the post-pandemic era.

Finally, researchers should also consider the potential long-term developmental implications of the pandemic for younger cohorts of children who experienced early schooling during periods of social restriction. Understanding how these experiences shape emotional development, learning behaviors, and social competence will remain an important area of research in the coming years.

6. Conclusions and Policy Implications

This study examined patterns of children's mental health in the post-pandemic period by analyzing Strengths and Difficulties Questionnaire (SDQ) data collected in 2023 and 2025. Guided by the dual-factor model of mental health, the research considered both psychological difficulties and positive social functioning in order to capture a multidimensional picture of children's well-being. The findings suggest that children's mental health in the years following the pandemic reflects a combination of ongoing vulnerability and relatively preserved social functioning. While emotional symptoms and behavioral difficulties remain evident among a portion of children, prosocial behaviors and social strengths continue to play an important role in supporting psychological adjustment.

These findings highlight that changes in children's mental health from large-scale disruptions such as the COVID-19 pandemic may be uneven across domains. Children may continue to experience emotional distress related to earlier disruptions in schooling, social interaction, and family routines. At the same time, the persistence of prosocial tendencies suggests that many children retain important social resources that can support resilience and adaptation. Recognizing this coexistence of challenges and strengths is essential for developing effective policies and interventions aimed at promoting children's well-being in the post-pandemic era.

From a policy perspective, the results emphasize the importance of integrating mental health support into educational systems. Schools may play an important role in post-pandemic recovery by incorporating regular mental health screening, school-based counseling services, and social–emotional learning programs. Screening tools such as the SDQ can assist educators and school psychologists in identifying children who may benefit from early psychological support. Early intervention is particularly important because emotional and behavioral difficulties during childhood can influence academic engagement, peer relationships, and long-term developmental outcomes.

In addition, educational policies should emphasize the promotion of positive social development rather than focusing solely on a reduction in psychological symptoms. Pro-

grams that strengthen empathy, cooperation, and peer support can reinforce children's prosocial capacities and contribute to a supportive school climate. Collaboration between schools, families, and community organizations is also essential to ensure that children receive consistent emotional support across different environments.

Overall, supporting children's mental health in the post-pandemic period requires a comprehensive approach that addresses both psychological vulnerabilities and social strengths. By combining preventive mental health strategies with programs that foster positive social development, policymakers and educators can better support children's long-term well-being and resilience in a rapidly changing social environment.

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