Emotion Regulation Mediates Functional Impairment in Thai Children with Attention-deficit/hyperactivity Disorder: A Cross-Sectional Study

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ABSTRACT

Objective: The study investigated the potential mediating effects of emotion regulation and emotion lability/negativity in the relationship between attention-deficit/hyperactivity disorder (ADHD) symptoms and functional impairment while also examining the associations between ADHD symptoms, emotion regulation, and impaired functioning in different life domains among children with ADHD.

Materials and Methods: The clinical sample comprised 118 children diagnosed with ADHD aged 6–12 years. Primary caregivers completed parent reports on symptom severity using the Thai ADHD Screening Scale–Parent Version, assessed emotion regulation and lability/negativity via the Emotion Regulation Checklist, and evaluated functional impairment using the Weiss Functional Impairment Rating Scale–Parent Version.

Results: ADHD symptoms correlated negatively with overall emotion regulation ($r = -0.515$, $p < 0.01$) and positively with lability/negativity ($r = 0.583$, $p < 0.01$). Functional impairment exhibited a negative correlation with emotion regulation ($r = -0.649$, $p < 0.01$) and a positive correlation with lability/negativity ($r = 0.701$, $p < 0.01$). Elevated ADHD symptoms were linked with increased functional impairment ($r = 0.639$, $p < 0.01$). The parallel mediational model showed that emotion lability/negativity partially mediated the association between ADHD symptoms and functional impairment ($\beta = 0.282$, $p < 0.001$), suggesting that ADHD symptoms and emotion lability/negativity indirectly accentuate functional impairment. Thus, heightened ADHD symptoms may exacerbate emotion lability/negativity, contributing to increased functional impairments.

Conclusion: Emotion regulation difficulties, particularly emotion lability/negativity, may serve as significant risk factors. Regular monitoring and targeting these challenges hold promise in alleviating adverse functional outcomes co-occurring with elevated ADHD symptoms.

Keywords: Attention-deficit/hyperactivity disorder; emotion regulation; emotion lability; functional impairments; children (Siriraj Med J 2024; 76: 272-281)

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent neurodevelopmental disorder emerging in childhood, with an estimated worldwide prevalence of 5-7% among school-aged children.[1] Its primary features include a persistent pattern of inattention and hyperactivity/impulsivity that frequently disrupt academic, occupational, and social settings. While symptoms may change with age, approximately 60-85% of individuals continue to experience some residual symptoms in adolescence and

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adulthood.[2,3] Etiologically, emerging research underscores neuropsychological theories, emphasizing impairments in executive functioning processes and inhibitory control involving emotion self-regulation. This highlights emotion dysregulation as an additional core feature of ADHD that significantly contributes to impaired daily functioning and psychosocial maladjustment.[4] Emotion regulation deficits have been proposed as potential mediating mechanisms through which ADHD symptoms contribute to various functional issues, ranging from interpersonal relationship problems to an increased risk of developing psychiatric comorbidities if not properly treated.[5,6]

Difficulties in regulating emotions arise when individuals struggle to control emotional experiences and expressions to optimize functioning effectively, adapt to daily environments, and foster behaviors conducive to achieving their goals.[7] The literature on ADHD greatly supports the theoretical model linking emotion regulation challenges to deficits in executive inhibitory control and dysregulated attention extending to emotions.[8] Therefore, children with ADHD experience greater difficulty controlling shifts in emotion (lability), regulating negative emotional responses, recognizing and allocating attention to emotional stimuli, which are often linked with behavioral problems such as frustration, temper outbursts, or reactive aggression.[9] Additionally, those struggling with emotional regulation often exhibited fewer prosocial behaviors, encountered higher rates of peer rejection, and had an increased the risk of developing negative self-concept, low self-esteem, and self-destructive behaviors.[10] Recognizing transdiagnostic nature of emotion regulation deficits may play a crucial role in understanding the functional consequences suffered by children with ADHD, extending beyond traditional symptoms.[8]

Given the limited research on the underlying mechanistic relationship between ADHD symptoms and functional impairment, exploring these pathways may shed light on emotion regulation processes that could interfere with developing adaptive regulatory strategies for a healthy emotional adjustment, impacting symptom remission and functional improvement throughout treatment interventions. Therefore, in an effort to identify transdiagnostic targets for treatment and facilitate interventions, our primary objectives were to investigate the associations between ADHD symptoms, emotion regulation, and functional impairment in ADHD children. We also aimed to explore how the specific dimension of emotion regulation may mediate the relationship, using a parallel mediational design to simultaneously examine the indirect effects of emotion regulation and emotion lability/negativity.

MATERIALS AND METHODS

Study design and sample

A sample of 121 participants consisted of children aged 6-12 years diagnosed with ADHD. The clinical diagnosis of each participant was assessed by child and adolescent psychiatrists using the criteria specified in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5).[1] The exclusion criteria included children with severe medical conditions, individuals with caregivers not serving as the primary caregivers for more than 6 months and those unable to complete the questionnaires. The initial assessment included data from 121 participants; however, reported descriptive information and statistical models refer to the 118 participants remaining after the identification and removal of outliers.

Procedures

This cross-sectional study was conducted at the Child and Adolescent Psychiatry outpatient clinic, Department of Psychiatry, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand, between June and July 2023. Participants and primary caregivers were recruited during a regular follow-up visit. All caregivers provided written informed consent and assent to participate was obtained from the children. All questionnaires were completed by caregivers. Medical records were reviewed for patient clinical characteristics. The study protocol was approved by the Siriraj Institutional Review Board (COA no. Si 328/2023).

Measures

Demographic questionnaire

Demographic information including gender, age, and highest education level was collected for the participants. Primary caregivers' demographic data included age, gender, highest education level, monthly household income and marital status.

ADHD symptoms

ADHD symptoms were assessed using the Thai ADHD Screening Scale–Parent Version (THASS) for children aged 6–12, comprising 30 items. The symptoms are encompassed in two primary subsets: hyperactivity/impulsivity (e.g., difficulty controlling behaviors and persistent overactivity, 15 items) and inattentiveness (e.g., difficulty paying attention and sustaining focus, 15 items). Symptom frequency was reported using a 5-point scale, ranging from 0 (never) to 4 (very often). Interpretation was performed using the T-scores with designated thresholds for varying levels of severity. The

questionnaire has good psychometric qualities, including a robust internal consistency (α = 0.96), content validity index ≥0.80, and good test-retest reliability (r = 0.80–0.9).[11] Internal consistency for total symptom severity (α = 0.91), hyperactivity/impulsivity (α = 0.89), and inattentive subscales (α = 0.90) ranged from good to excellent for the current sample.

Emotion regulation

Parents completed the Emotion Regulation Checklist (ERC)[12], a 24-item instrument that evaluates processes integral to adaptive regulation in children aged between 6–12 by capturing two dimensions of emotion regulation: (1) *Emotion regulation subscale* (*ERC-ER*, 8 items), which refers to socially appropriate affective displays, emotional self-awareness, empathy, and (2) *Emotion lability/negativity subscale* (*ERC-LN*, 15 items), which refers to emotional inflexibility and reactivity, dysregulated negative affect, and mood lability. Items assessing the frequency of developmentally appropriate behaviors in individuals are measured on a Likert scale ranging from 1 (never) to 4 (almost always). Higher composite scores indicate superior overall emotion regulation, with higher scores in the *ER* subscale reflecting greater congruence in affective displays and optimal regulation of emotion arousal within the environments. Higher scores on the *LN* subscale indicate more significant emotion dysregulation and socially incongruent affective displays. The ERC (Thai version) demonstrated adequate internal consistency for both the *ER* subscale (α = 0.73) and the *LN* subscale (α = 0.82) in a study involving a Thai clinical sample.[13] The internal consistency for the *ERC* composite (α = 0.79), *ER* subscale (α =0.67), and *LN* subscale (α = 0.78) ranged from acceptable to good for the current sample.

Functional impairment

The Weiss Functional Impairment Rating Scale–Parent Report (WFIRS–P) is a 50-item parent-rated scale that assesses functional impairment in various domains, including family, academic, life skills, self-concept, social, and risky activities.[14] Each item is measured using a 4-point scale, ranging from 0 (never or not at all) to 4 (very often or very much). Higher total scores equate to greater overall functional impairment, ranging from mild to extreme impaired levels. The psychometric properties of the WFIRS–P (Thai version) have been translated and cross-culturally validated, with excellent internal consistency (α = 0.98) and good test-retest reliability (r = 0.88) for total and domain scores.[15] The internal consistency was strong in the current sample (α = 0.90).

Data analyses

Descriptive statistics, including Pearson's correlation coefficients, were used to describe clinical characteristics and explore relationships among study variables. Partial correlation analyses were additionally performed to examine these relationships while controlling for the potential confounding factors associated with caregivers' characteristics, including age, gender, and highest education. Prior to conducting the mediation analysis, the assumption of independent values was validated with a Durbin–Watson value of 1.85, below the threshold of 2.5. Multicollinearity was assessed using variance inflation factors (VIF) ≤10 and tolerance values ≥0.10, and through ensuring that all correlations remained below 0.8. The current study revealed no evidence of multicollinearity, as indicated by diagnostic measures: VIF ranging from 1.13 to 1.68 and tolerance ranging from 0.59 to 0.88.

A parallel mediation analysis was examined, utilizing scores from the emotion regulation subscale and the emotion lability/negativity subscale as mediators and total functional impairment as the independent variable. Additionally, a bootstrapping method of 5,000 bootstrapped resamples was constructed empirically to determine the statistical significance of the total and specific indirect effects (calculated as the product of the regression coefficients for a_1b_1 and a_2b_2; Table 4). These mediating indirect effects are considered statistically significant if the upper and lower bounds of the 95% confidence intervals (BootCIs) are entirely above zero.[16]

RESULTS

Sample characteristics

The average age of the children was 9.49 years (standard deviation [SD] ± 1.782). Male participants comprised a larger proportion (81.4%) than female participants (18.6%), with most falling into the elementary year category (90.7%). A high percentage of the participants had psychiatric comorbidities (51.7%). All participants received pharmacological treatment for ADHD, with the majority (76.8%) using a single medication (methylphenidate) and a subset using additional medications, including alpha-2 agonists, second-generation antipsychotics, and selective serotonin reuptake inhibitors (Table 1).

Descriptive statistics

Tables 2 & 3 show the descriptive statistics and correlations for all study variables. On average, the sample had a total ADHD symptom score of 59.4 (SD = 7.73), indicating mild symptoms according to age and

TABLE 1. Demographic and clinical characteristics of participants and demographic of primary caregivers.

Demographic characteristic	*n* (%)
Children	
Age, Mean (SD)	9.59 (1.782)
Gender	
Female	22 (18.6%)
Male	96 (81.4%)
Education level	
Kindergarten	1 (0.8%)
Elementary	107 (90.7%)
Junior high school	10 (8.5%)
Diagnosis	
Pure ADHD	57 (48.3%)
ADHD + comorbidity	61 (51.7%)
Medication status	
Methylphenidate (MPH)	118 (79.2%)
MPH + Alpha-2 Agonists (α2-AR)	4 (2.7%)
MPH + Selective Serotonin Reuptake Inhibitors (SSRI)	3 (2%)
MPH + Second-Generation Antipsychotics (SGAs)	24 (16.1%)
Caregivers	
Age, Mean (SD)	41.92 (9.05)
Gender	
Female	103 (87.3%)
Male	15 (12.7%)
Highest education	
Below Bachelor	60 (50.8%)
Bachelor	52 (44.1%)
Master	6 (5.1%)
Marital status	
Single	18 (15.3%)
Married	84 (71.2%)
Divorced	12 (10.2%)
Widowed	4 (3.4%)
Monthly Household Income	
< 420 US dollars[+]	30 (25.4%)
421 – 700 US dollars[+]	39 (33.1%)
≥ 700 US dollars[+]	49 (41.5%)

Abbreviation: ADHD = attention-deficit/hyperactivity disorder, [+]1 US dollar = 35.67 Baht

TABLE 2. Descriptive results of ADHD symptoms, emotion regulation, and functional impairment.

Variable	Mean (SD)
ADHD symptom	
Hyperactive/impulsive	58.01 (8.89)
Inattention	59.13 (7.9)
Total ADHD score	59.4 (7.73)
Severity of ADHD, n (%)	
Symptom not significant	18 (15.3%)
Mild	48 (40.7%)
Moderate	42 (35.6%)
Severe	10 (8.5%)
Total emotion regulation score	64.6 (7.06)
Emotion regulation composite score level, n (%)	
Poor emotion regulation	55 (46.6%)
Good emotion regulation	63 (53.4%)
Emotion regulation score (ER subscale)	24.03 (3.04)
Lability/negativity score (LN subscale)	34.43 (5.42)
Total impairment score	36.53 (15.29)
Impairment level, n (%)	
Mild	59 (50%)
Moderate	28 (23.7%)
Severe	24 (20.3%)
Extreme	7 (6%)

TABLE 3. Mean, standard deviations, observed range, and correlations among study variables (n = 118).

Variable	1	2	3	4	5	6	7
Total ADHD symptom	1.00						
Hyperactive/impulsive symptom	.832**						
Inattentive symptom	.853**	.426**					
Composite ERC	-.515**	-.605**	-.277**				
Emotion regulation (*ERC-ER* subscale)	-.157	-.201*	-.065	.693**			
Lability/negativity (*ERC-LN* subscale)	.583**	.676**	.324**	-.914**	-.341**		
Total impairments	.639**	.613**	. 469**	-.649**	-.258**	.701**	
Mean	59.40	58.01	59.13	64.60	24.03	34.43	36.53
SD	7.73	8.89	7.90	7.06	3.04	5.42	15.29
Observed range	43-77	33-75	40-77	48-82	18-32	22-50	8-86
Skewness	-.131	-.012	- .061	-.016	.147	.293	.545

*Statistically significant at p-value<.05, **p-value<.01.

TABLE 4. The mediating effects of the parallel mediation model illustrated in Fig 1.

Outcome Model	*β*	*b*	*SE*	*p*	95%CI LL	UL	R^2
Model without mediators	.639	1.264	.141	<.001	.984	1.544	.4083
Total effect (*c*)							
X (*ADHD*) → Y (*FI*)							
Model with mediators	.351	.695	.149	<.001	.399	.990	.5734
Direct effect (*c'*)							
X (*ADHD*) → Y (*FI*)							
Indirect effect (a_1 b_1)	.006	.0116	.015	>.001	-.021	.041	
X (*ADHD*) → M_1							
(ER) → Y (*FI*)							
Indirect effect (a_2 b_2)	.282	.558	.051	<.001	.177	.389	
X (*ADHD*) → M_2							
(LN) → Y (*FI*)							
Total indirect effects	.289	.569	.051	<.001	.189	.386	
(a_1 b_1 + a_2 b_2)							

Abbreviations: b = understandardized coefficient; β=standardized coefficient; SE = standard error; LL = lower limit, UL = upper limit, R^2 = coefficient of determination, X = independent variable; Y = dependent variable; M = mediating variable; ADHD = attention-deficit/hyperactivity disorder, FI = functional impairment, ER = emotion regulation subscale, LN = lability/negativity subscale.

gender norms. The mean score on the emotion regulation composite score was 64.6 (SD = 7.06), suggesting that the sample had good emotion regulation, on average. Furthermore, the emotion regulation subscale showed a mean score of 24.03 (SD = 3.04), and the lability/negativity subscale showed a mean score of 34.43 (SD = 5.42). Overall, the sample had a total functional impairment score of 36.53 (SD = 15.29), indicating moderate impairment in functioning.

Correlations

Pearson's correlations indicated that ADHD symptoms were negatively associated with overall emotion regulation (*ERC* composite; r = −0.515, $p < 0.01$). Specifically, lability/negativity subscale correlated positively with ADHD symptoms (r = 0.583, $p < 0.01$), while the emotion regulation subscale correlated negatively only with hyperactive/impulsive symptoms (r = −0.201, $p < 0.05$). Functional impairment showed a negative correlation with overall emotion regulation (r = −0.649, $p < 0.01$), and the emotion regulation subscale (r = −.285, $p < 0.1$), and a positive correlation with lability/negativity (r = 0.701, $p < 0.01$). Increased ADHD symptoms correlated positively with more significant functional impairment across most domains (r = 0.639, $p < 0.01$), with life skills demonstrating the strongest association with functional impairment, followed by academic and family domains.

After adjusting for caregivers' age, the partial correlation indicated that ADHD symptoms correlated with the lability/negativity (r = .591, p < 0.01) and functional impairment (r = .642, p < 0.01), while the correlation with the emotion regulation subscale remained insignificant (r = -.167, p > 0.05), aligning with observed relationships under caregivers' age. Further investigation showed a negative correlation between emotion regulation subscale and functional impairment (r = -.260, p < 0.01), and a positive correlation between lability/negativity and functional impairment (r = .702, p < 0.01). Controlling for caregivers' gender, significant correlations persisted between ADHD symptoms and lability/negativity (r = .590, p < 0.01) and functional impairment (r = .640, p < 0.01), with the emotion regulation subscale correlation remaining insignificant (r = -.157, p > 0.05), consistent with observed relationships under caregivers' gender.

The emotion regulation subscale negatively correlated with functional impairment (r = -.258, p < 0.01), while the lability/negativity subscale had a positive correlation with functional impairment (r = .703, p < 0.01). Similarly, after considering caregivers' highest education, significant correlations were found between ADHD symptoms and the lability/negativity subscale (r = .582, p < 0.01) and functional impairment (r = .643, p < 0.01). The emotion regulation subscale correlation remained insignificant (r = -.162, p > 0.05), in line with observed relationships under caregivers' highest education. The ER subscale negatively correlated with functional impairment (r = -.286, p < 0.01), while the lability/negativity subscale had a positive correlation with functional impairment (r = .705, p < 0.01). An inspection of zero-order correlations suggested that controlling for caregivers' characteristics, such as age, gender, and education, minimally impacted the relationship strength between these study variables.

Parallel mediation analysis

To identify whether a specific dimension of emotion regulation most accurately explained the relationship between ADHD symptoms and functional impairment, parallel mediational analyses were performed. Initially, we assessed the significance of the indirect effect of ADHD symptoms through emotion regulation and emotion lability/negativity in functional impairment (path a_1b_1 and a_2b_2) (Fig 1). As Table 4 and Fig 1 show, elevated symptoms of ADHD significantly predicted more significant difficulties regulating negative emotions and controlling emotion lability, which, in turn, predicted higher functional impairment. The indirect effects (path a_2b_2, β = 0.282, Boot 95%CI 0.177, 0.389) from ADHD symptoms to functional impairment through the mediating effect of the lability/negativity subscale were statistically significant, given that the 95%CIs were entirely above zero. Further, the direct impact of ADHD symptoms on functional impairment (path c', β = 0.3512, p < 0.01) was significant, suggesting that ADHD children experiencing greater emotional lability and dysregulated negative affects partially mediated the relationship between ADHD symptoms and functional impairment. The direct path had a substantial effect size (R^2 = 0.4083), with ADHD symptoms being able to predict 40.83% of the variances in functional impairment. The indirect effect (R^2 = 0.5734, p < 0.001) accounted for 57.34% of the variance in both predictors, ADHD symptoms and functional impairment, when mediated by both mediators. However, the relationship between ADHD symptoms and functional impairment was not significantly mediated by the emotion regulation subscale, as specific indirect effects were not statistically significant (path a_1b_1, β = 0.006; Boot 95%CI −0.021, 0.041).

DISCUSSION

The purpose of this study was to examine the relationships between ADHD symptoms, emotion regulation processes (ERC composite), and functional impairment in children with ADHD. As predicted, higher levels of ADHD symptoms were significantly and positively correlated with more impairments in functioning. Specifically, the symptoms of ADHD had a strong positive relationship with impairments in life skills, academic performance, and family functioning. These findings align with existing research showing that a higher proportion of children with ADHD reported impaired functioning compared with typically developing children. These impairments can be attributed to symptoms related to executive dysfunction,

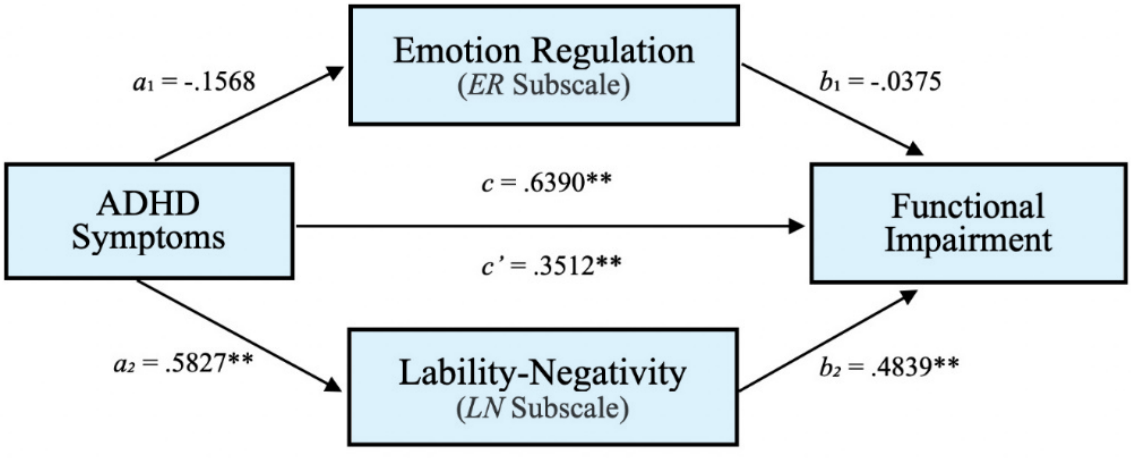

Fig 1. A statistical diagram of ADHD symptoms predicting functional impairment with emotion regulation (*ERC-ER* subscale) and lability/negativity (*ERC-LN* subscale) as mediators. ***p < 0.01*. Coefficients are standardized estimates.

such as deficits in working memory, self-motivation, organization, planning, and time management, and contribute to challenges in acquiring necessary life skills and achieving optimal academic potential, as both areas depend highly on executive functioning.[17,18]

In our sample, we found a negative correlation between ADHD symptoms and emotion regulation processes (ERC composite). At the same time, lability/negativity displayed a positive association with ADHD symptoms, indicating that heightened ADHD symptoms are linked to greater disinhibition of emotional reactivity and intense shifts in emotional states. These findings might suggest a reciprocal relationship between the tendency to exhibit more ADHD symptoms and challenges in regulating negative emotions or controlling emotional reactivity, which confers a risk of a detrimental impact on functional outcomes. Importantly, even after controlling for potential confounding factors, those correlations remained relatively stable, accentuating the direct impact of ADHD symptoms-particularly those linked with emotion lability/negativity-on functional outcomes in Thai children diagnosed with ADHD.

Notably, parallel mediation analyses examined the causal mechanisms of the emotion regulation and lability/negativity dimensions. They showed that the only significant mediator was the indirect effect of ADHD symptoms on functional impairment through lability/negativity. Thus, children with higher levels of ADHD symptoms may manifest more dysregulated negative, socially incongruent emotions, which, in turn, leads to increased functional deficits. Increased lability/negativity often hinders the inability to sustain a consistent emotional state over time, as this could then be further exacerbated by increasing sensitivity to emotional stimuli. The reduced ability to return to a normal emotional state within a reasonable timeframe can lead to more severe consequences.[19] Based on earlier longitudinal studies, children who are better at managing negative emotions and exhibiting appropriate affective behaviors demonstrate more social competence in peer interactions and prosocial behaviors, ultimately resulting in reduced internalizing symptomatology over time.[20,21] This perspective underscores the risk associated with difficulties in modulating responses to negative affect, variability of mood lability, and emotional inflexibility, which pose high risks for other problems, including strained parent-child relationships, negative social experiences, and childhood depression.[20,22,23]

However, contrary to the literature, the indicators of the emotion regulation subscale did not significantly mediate the pathway in our study, which could be partly explained by measurement differences. Our analysis focused only on appropriate positive emotion expressions, socially congruent behaviors, and empathy toward others as indicators of adaptive emotion regulation. Future research could incorporate more multifaceted aspects of emotion regulation (e.g., emotion recognition and awareness), using diverse instruments and observational measures to better understand a child's emotion regulation processes as manifested in various patterns of difficulty. The present findings underscore the importance of interventions targeting the improvement of emotion regulation deficits in alleviating functional impairment in ADHD children. Evidence-based cognitive behavioral interventions and parent management training have been shown to enhance emotional competence and adaptability in children. These multimodal approaches incorporate emotion-focused coping skills, promoting awareness, understanding, and managing of emotional responses through mindful parenting styles, maternal guidance, modeling positive expressiveness, and cognitive reframing of emotions.[24,25] Emotion regulation interventions, such as the "Checking the Facts" or "Opposite Action" from Dialectical Behavior Therapy (DBT) skill training[26], may specifically target emotion lability and negativity by intentionally identifying emotions that may or may not align with the facts, counteracting action urges with more productive learned options and rehearsing alternative solutions. Acquiring and practicing these set of specific skills can ameliorate a child's emotional dysregulation in response to emotionally triggered situations while also facilitating adaptive, goal-directed behaviors.[27]

Limitations

A primary limitation of the current study is that the data was derived from a single center and may not fully represent larger patient populations, thus limiting the generalizability of the findings. Future research should incorporate data from multiple centers to ensure a more diverse and representative sample. Second, our study focused on the ongoing effects of difficulties in emotion regulation and functional outcomes among participants who received various pharmacological treatments and interventions and did not capture the initial baseline conditions reflecting the acute effects before treatment. Thirdly, given that all assessments were parental reports and potentially subjected to the possibility of (positive) attributional bias, future research should ensure that correlation analyses between study variables are adjusted, accounting for parental characteristics. Therefore, a multi-informant perspective would be critical for capturing symptoms and conditions in different settings.

CONCLUSION

Understanding the underlying mechanisms linking ADHD symptoms and functional impairment may play a critical role in developing interventions that can effectively target functional challenges in children with ADHD. Our findings suggest that emotion lability/ negativity partially mediated the link between ADHD symptoms and functional impairment ($\beta = 0.282$, $p < 0.001$), with ADHD symptoms and lability/ negativity indirectly accentuating functional impairment. These findings are consistent with previous research that demonstrated that managing core ADHD symptoms and reducing emotion lability/negativity can play protective roles in reducing the adverse effects of impaired functioning. Therefore, regular monitoring and targeted therapeutic interventions for emotion lability/negativity may be significant priorities in the ongoing effort to improve functional outcomes among Thai children with elevated ADHD symptoms in this age group.

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Conflicts of interest

All authors declare no potential conflicts of interest.

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