

| RESEARCH ARTICLE

Cognitive Flexibility and Coping Skills as Predictors of Academic Resilience in Children with ADHD

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| ABSTRACT

Children with Attention-Deficit/Hyperactivity Disorder (ADHD) face continuous challenges in maintaining attention, regulating impulses, and managing emotions, which often affects their academic engagement and performance. Recent research emphasizes academic resilience—the capacity to recover and remain motivated despite difficulties—as a vital factor for academic success in ADHD populations. This review synthesizes empirical findings on two core predictors of academic resilience: cognitive flexibility and coping skills. Cognitive flexibility enables children to shift perspectives and adapt strategies in response to challenges, while coping skills transform these cognitive adjustments into sustained behavioral and emotional regulation. The review integrates evidence from global and emerging studies, highlighting that these constructs are malleable through intervention. Training programs that strengthen flexibility and coping, when combined with pharmacological or environmental supports, can significantly enhance resilience in children with ADHD. Future research should adopt longitudinal and neurocognitive approaches to clarify developmental mechanisms and optimize intervention design.

| KEYWORDS

ADHD, cognitive flexibility, coping skills, academic resilience, inclusive education; SDG 3 – Good Health and Well-being; SDG 4 – Quality Education

| ARTICLE INFORMATION

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1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is a common neurodevelopmental condition characterized by persistent patterns of inattention, impulsivity, and hyperactivity that interfere with daily functioning (American Psychiatric Association, 2022). In recent years, the focus of research has shifted beyond symptom reduction toward understanding the psychological factors that promote academic resilience—the ability to stay engaged and recover from setbacks (Dangmann et al., 2024). For children with ADHD, resilience plays a crucial role in mitigating academic underachievement and emotional distress. Two interrelated psychological constructs, cognitive flexibility and coping skills, have emerged as central components of this resilience (Nakhostin-Khayyat et al., 2024; Setiawati et al., 2024). Cognitive flexibility reflects an individual's capacity to switch between mental frameworks or problem-solving strategies, while coping skills refer to behavioral and emotional methods when managing stress. Together, these mechanisms help children support adaptive responses to learning difficulties and frustration. This review explores empirical findings from 2019 to 2025 on how cognitive flexibility and coping skills jointly contribute to academic resilience in children with ADHD.

2. Cognitive Flexibility and Academic Resilience

Cognitive flexibility is a core element of executive functioning that allows individuals to adapt behavior and thinking patterns in changing situations (OECD, 2024). In educational settings, this skill allows students to modify learning strategies,

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regulate emotions, and regain motivation after failure. While deficits in cognitive flexibility among children with ADHD often lead to inflexible thinking, difficulty transitioning between tasks, and poor adaptation to feedback (Charabin et al., 2023). Research consistently links cognitive flexibility with resilience. Nakhostin-Khayyat et al. (2024) demonstrated that cognitive flexibility mediates the relationship between self-regulation and resilience, indicating that flexible thinkers are more capable of reframing challenges and sustaining motivation. Similarly, Chan et al. (2024) found that adolescents with ADHD who exhibited higher flexibility displayed stronger academic motivation and persistence, even after controlling for symptom severity. These findings position flexibility as a dynamic, learnable process rather than a fixed cognitive trait. Neurocognitive studies have deepened understanding of this relationship. Zhang et al. (2023) revealed that attentional alerting and personality traits, such as neuroticism, interact to influence perseveration in children with ADHD, suggesting that emotional regulation moderates flexibility outcomes. Moreover, Mphahlele et al. (2022) reported that children with ADHD performed significantly worse on working memory and set-shifting tasks compared to typically developing peers, reinforcing the idea that flexibility deficits co-occur with broader executive dysfunction. Setiawati et al. (2024) extended these findings by showing that children with high ADHD risk exhibited measurable deficits in attention and set-shifting, yet cognitive function improved following structured physical activity interventions. Recent findings also reveal that mindfulness-based interventions can significantly enhance executive and cognitive functions in adolescents with ADHD symptoms, leading to measurable gains in cognitive intelligence and attentional control (Eden, Setiawati, & Atika, 2025). This supports the view that flexibility is not static—it can be strengthened through environmental and behavioral interventions that target neurocognitive plasticity.

3. Coping Skills and Adaptive Functioning

Coping skills refer to the cognitive, emotional, and behavioral strategies individuals use to manage stress and challenges (Lazarus & Folkman, 1984). In the context of ADHD, deficits in emotion regulation and impulse control often lead to maladaptive coping patterns such as avoidance, denial, or self-blame (Dangmann et al., 2024). These maladaptive patterns can exacerbate stress, reduce self-efficacy, and impair academic persistence. In contrast, adaptive coping—such as problem-solving, help-seeking, and cognitive reframing—can buffer the negative effects of academic stressors. Charabin et al. (2023) found that resilient children with ADHD were more likely to use problem-focused coping and positive reframing strategies. Social and family support further enhances coping effectiveness by providing external models of adaptive behavior. Empirical studies underscore the importance of coping interventions. DuPaul et al. (2024) demonstrated that structured school-based programs teaching coping and self-regulation skills improved emotional control and classroom engagement in adolescents with ADHD. Setiawati (2024) reported similar outcomes in case-based intervention studies, showing that non-pharmacological behavioral approaches focused on emotion regulation and structured routines effectively reduced disruptive symptoms and improved learning behaviors. Together, these findings emphasize that coping skills, like flexibility, are malleable and can be strengthened through intentional intervention. Complementary evidence from Indonesian trials indicates that mindfulness interventions also reduce impulsive aggression among adolescents with ADHD, highlighting their broader role in promoting emotional regulation and adaptive coping (Putriana, et al., 2025).

4. Empirical Evidence : Interaction between Flexibility and Coping

Emerging research suggests that cognitive flexibility and coping skills interact synergistically to predict academic resilience. Flexible thinkers are more likely to select coping strategies that fit situational demands, whereas rigid thinkers rely on avoidance or emotional disengagement (Nakhostin-Khayyat et al., 2024). Chan et al. (2024) observed that flexibility predicts persistence in ADHD adolescents even after accounting for executive deficits, while coping mediates the emotional impact of academic challenges. Neuropsychological data from Mphahlele et al. (2022) indicate that working memory and set-shifting deficits undermine the ability to implement adaptive coping, particularly when task demands exceed cognitive resources. Complementary findings from Setiawati et al. (2024) revealed that children demonstrating improved cognitive control following physical or structured behavioral interventions also showed gains in adaptive coping and academic engagement. These data support a dual-mechanism model in which cognitive flexibility facilitates strategy selection, and coping skills operationalize those strategies into resilient behavior. Moreover, coping may moderate the relationship between cognitive flexibility and resilience. Recent studies also emphasize that mindfulness-based interventions can enhance cognitive flexibility and executive functioning in adolescents with ADHD, thereby indirectly supporting coping and resilience development (Eden, Setiawati, & Atika, 2025). When coping repertoires are limited or maladaptive, even flexible cognition may not translate into sustained effort. Conversely, teaching children to recognize stress and deploy adaptive coping can amplify the benefits of flexibility training (DuPaul et al., 2024).

5. Discussion and Future Directions

Collectively, recent findings underscore that cognitive flexibility and coping skills are interdependent predictors of academic resilience in children with ADHD. Flexibility underpins the ability to shift perspectives, while coping governs the emotional execution of those shifts. Together, they form the cognitive-behavioral infrastructure for persistence and recovery in learning contexts. However, several gaps remain. First, most studies are cross-sectional, limiting causal interpretation. Longitudinal research is necessary to determine whether improvements in flexibility and coping predict sustained academic outcomes. Second,

heterogeneity within ADHD—such as inattentive versus combined presentations—may shape how these constructs operate. Third, neurobiological correlates of flexibility (e.g., prefrontal activation patterns) remain underexplored in relation to resilience outcomes. Intervention-wise, combined approaches appear most promising. Miklós et al. (2019) showed that stimulant medication improved executive function performance to levels comparable to typically developing peers. Building on this, behavioral and cognitive training programs can leverage medication-induced improvements in attention to strengthen flexible thinking and coping. In parallel, social skills training has been shown to enhance peer interaction, emotional regulation, and communication in children with ADHD, serving as a valuable complement to cognitive-behavioral and mindfulness-based approaches (Puspitasari & Setiawati, 2025). Similarly, school-based sensory integration therapy has demonstrated improvements in emotional regulation and adaptive coping, reinforcing the importance of multimodal interventions in strengthening resilience among children with ADHD (Victoria & Setiawati, 2025). Setiawati and colleagues (2020, 2024) highlight similar implications, noting that structured behavioral and psychoeducational interventions can enhance both self-regulation and cognitive adaptability in ADHD populations. Future studies should also integrate neurocognitive and psychosocial frameworks. Combining performance-based measures (e.g., Trail Making Test, Wisconsin Card Sorting Test) with coping inventories and academic performance indicators could clarify multilevel pathways to resilience. Additionally, cross-cultural replication is crucial to ensure generalizability and to identify contextual moderators such as family dynamics, digital media use, or educational support systems (Setiawati & Fayzhia, 2024; Wedastra & Setiawati, 2024).

6. Conclusion

This review consolidates evidence that cognitive flexibility and coping skills serve as foundational mechanisms of academic resilience in children with ADHD. Flexible cognition enables strategic adaptation, while coping skills ensure emotional stability and sustained engagement. Both constructs are malleable and can be enhanced through combined interventions—including cognitive training, behavioral therapy, and supportive educational environments. Integrating cognitive, emotional, and contextual perspectives offers the most promising path toward empowering children with ADHD to thrive academically and personally.

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