

Chapter

Beyond Symptoms: ADHD and the Role of SRL in the School Context

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Abstract

Self-regulated learning (SRL) has been identified as a key factor in academic adjustment and psychological well-being during childhood and adolescence. In this regard, self-regulation is consistently associated with higher academic achievement, more efficient time management, and a lower risk of developing mental health difficulties. From a transdiagnostic perspective, difficulties in self-regulation and executive functioning have been conceptualised as a shared vulnerability factor across diverse developmental profiles, rather than as features exclusive to specific diagnostic categories. These challenges become particularly evident in structured school contexts, where sustained attention, response inhibition, planning, and effort regulation are required over time. Within this framework, Attention-Deficit/Hyperactivity Disorder (ADHD) represents a paradigmatic case for examining the educational implications of self-regulatory deficits. Beyond core behavioural symptoms, students with ADHD often experience persistent difficulties in autonomous learning and school adjustment, which may negatively affect both their academic trajectories and psychological well-being. In this context, the chapter employs the SRL framework to analyse the educational difficulties associated with ADHD and other profiles characterised by self-regulatory alterations, emphasising the role of teachers as key agents in supporting these processes within school settings. Adopting an innovative and theoretical perspective focused on teacher training, the chapter reviews the main psychoeducational contributions on SRL and ADHD, highlighting its value as a transdiagnostic framework for understanding learner diversity. It also identifies current limitations in teacher education and underscores the need for enhanced training programmes that move beyond symptom-focused approaches and promote inclusive practices aimed at fostering self-regulation, well-being, and academic adjustment.

Keywords: self-regulated learning, ADHD, teacher training, self-regulation strategies, early intervention

1. Introduction

Students' ability to adapt to school demands not only depend solely on their academic knowledge but also on their capacity to actively regulate their behaviour,

attention, motivation, and emotions in accordance with learning goals and contextual requirements. In this sense, self-regulation has become a key construct for understanding how students cope with academic challenges and why some experience greater difficulties in school adjustment than others, even when they possess adequate cognitive competencies [1, 2]. Addressing these difficulties from an educational perspective, therefore, requires moving beyond a mere description of symptoms and focusing instead on the processes underpinning learning and school adjustment.

Educational research has consistently shown that learning is not a passive process, but rather a dynamic and strategic one, in which students interpret task demands, select and adjust strategies, and continuously evaluate their own performance [3–5]. These self-regulatory processes develop progressively across the individual's lifespan and are closely linked both to neuropsychological maturation and to the learning opportunities provided by the environment [6, 7]. When these processes function effectively, individuals are better able to manage their cognition, emotions, and behaviour, which facilitates coping with challenges and supports adaptive functioning [8].

From a transdiagnostic perspective, several authors have pointed out that difficulties in self-regulation and executive functioning constitute a shared vulnerability factor across different developmental profiles, rather than features exclusive to specific diagnostic categories [9, 10]. Such difficulties become particularly visible in structured school contexts, where sustained attention, response inhibition, planning, and effort regulation are required over time [6]. Within this framework, Attention-Deficit/Hyperactivity Disorder (ADHD) constitutes a paradigmatic case for examining the educational impact of self-regulatory deficits, not only because of the presence of behavioural symptoms but also due to the persistent challenges it poses for autonomous learning and school adjustment [11–13].

The present chapter employs the self-regulated learning (SRL) framework to analyse the educational difficulties associated with ADHD and other profiles characterised by self-regulatory alterations, with a particular focus on the role of teachers as key agents in supporting these processes within school settings. From this perspective, the chapter reviews the theoretical foundations of SRL, its value as a transdiagnostic framework for understanding learner diversity, and the implications of this approach for teacher education. Finally, it underscores the necessity for enhanced teacher training programmes that move beyond symptom-focused approaches and promote inclusive educational practices aimed at fostering self-regulation, well-being, and academic adjustment.

2. Search strategy

This chapter presents a narrative review aimed at identifying the most relevant theoretical and empirical contributions on SRL, ADHD, and their implications for educational practice and teacher training.

The literature search was conducted using several major academic databases, including Web of Science (WoS), SCOPUS, PubMed, and Google Scholar. In this sense, searches were carried out using combinations of keywords related to the main constructs addressed in this study. Boolean operators were used to combine terms such as: (“self-regulated learning” OR “self-regulation” OR “executive function”)

AND (“ADHD” OR “attention-deficit hyperactivity disorder”) AND (“school” OR “education” OR “classroom”) AND (“teacher training” OR “teacher education” OR “professional development”).

The inclusion criteria considered peer-reviewed empirical studies and systematic reviews focusing on children and adolescents in primary and secondary education. Moreover, studies addressing the educational context, learning processes, executive functioning, self-regulation, or instructional practices related to ADHD were prioritised.

Studies were excluded if they met any of the following criteria: (1) doctoral theses, conference abstracts, or non-peer-reviewed publications; and (2) studies focused exclusively on adult populations or not related to the educational context.

3. Self-regulated learning as a framework for understanding educational adaptation

SRL has become one of the most relevant explanatory frameworks for understanding how students engage in learning from an active, strategic, and autonomous position [3, 14]. From this perspective, learning involves more than the mere acquisition of content; it entails the intentional regulation of one’s own cognitive, motivational, emotional, and behavioural processes in accordance with academic goals and the demands imposed by the educational context [1, 15].

This conception of SRL is grounded in the broader notion of self-regulation as the capacity to voluntarily direct thoughts, emotions, and actions toward the attainment of personal goals by flexibly adapting behaviour to situational demands [2, 7, 16]. From a multidimensional perspective, self-regulation is understood as a phenomenon integrating cognitive, emotional, social, and biological domains, whose development is linked to the progressive maturation of the nervous system and to learning derived from interaction with the environment [7, 17].

In the academic context, this capacity is reflected in a set of interrelated processes that enable students to plan, monitor, and adjust their learning on an ongoing basis. SRL involves goal setting, activation of prior knowledge, selection of cognitive and metacognitive strategies, as well as the regulation of effort, motivation, and task-related emotions [3, 4]. These processes do not develop linearly but operate as a dynamic system in which information generated during learning activities leads to successive adjustments in behaviour and in the strategies employed [5, 18].

In their respective models of SRL, Zimmerman (2000), Pintrich (2000), and Winne and Hadwin (1998) converge on describing self-regulatory functioning as a cyclical and dynamic process [2, 4, 19]. From this perspective, students interpret task demands, implement strategies to address them, and subsequently reflect on the outcomes obtained, integrating internal and external feedback so as to guide future learning and decisions. Despite conceptual differences among these models, they all share the view that self-regulation emerges from the interaction between personal, behavioural, and contextual factors, and that the standards used to evaluate performance play a key role in subsequent processes of control, adjustment, and adaptation.

Following this perspective, Zimmerman’s cyclical model provides a structured representation of how self-regulatory processes unfold over time and how different cognitive, motivational, and behavioural mechanisms interact throughout the learning process. As shown in **Figure 1**, SRL is divided into three interrelated phases that operate in a continuous feedback loop.

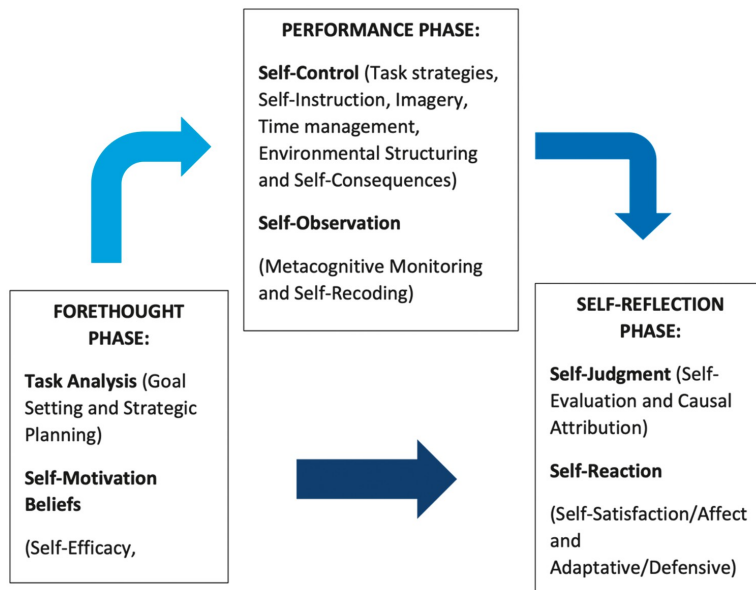


Figure 1.

Cyclical model of SRL learning adapted from Panadero (2017), based on the model proposed by Zimmerman (2000). Note. Figure adapted from Panadero (2017) [14], based on the cyclical model of SRL originally proposed by Zimmerman (2000) [2].

The first phase of Zimmerman's model, *forethought*, involves preparatory processes such as, goal setting, strategic planning, and motivational beliefs (e.g., self-efficacy or outcome expectations) that shape engagement with the task. During the *performance* phase, learners implement task strategies while they regulate their activity through mechanisms such as, self-instruction, time management, and self-observation or monitoring. Finally, in the *self-reflection* phase, learners evaluate their performance through self-judgment and generate self-reactions (e.g., self-satisfaction or affect), which influence future learning cycles. Together, these phases form a continuous feedback loop in which reflection on outcomes informs future planning and strategy use.

Despite being originally proposed more than two decades ago, Zimmerman's cyclical framework continues to guide contemporary research on SRL. Recent reviews indicate that a large proportion of empirical studies grounded in SRL models rely on this framework and its subsequent developments through the years [20–24].

From this conceptualization, SRL can be understood as a system of processes that, when effectively developed, promotes students' academic and personal adaptation [2, 4]. However, when these processes entail difficulties or disruptions, their effects are not restricted to a single functional domain or specific diagnostic categories but may manifest transversally across different student profiles and educational contexts [9]. This perspective is particularly relevant for the analysis of self-regulation difficulties in learning across various developmental and psychological disorders, in which common self-regulatory and executive deficits have been identified [6, 25], and it allows SRL to be situated within a transdiagnostic framework for understanding educational difficulties [10, 26].

3.1 Self-regulation difficulties as a transdiagnostic educational phenomenon

Before focusing specifically on ADHD, it is necessary to situate self-regulation difficulties within the broader framework of neurodevelopmental disorders and their impact on schooling. The literature consistently shows that alterations in self-regulation and executive functioning appear transversally across multiple clinical profiles, beyond specific diagnostic categories [9, 10, 25]. These difficulties affect students' ability to regulate attention, behaviour, and cognitive effort, directly compromising participation and performance in structured educational contexts [6, 27].

From a developmental perspective, self-regulation does not constitute a unitary mechanism, but rather a set of coordinated processes operating at multiple levels of analysis, including cognitive, emotional, behavioural, and neural systems [28, 29]. Individual differences in these processes emerge early and show notable continuity over time, influencing later academic and social adaptation [30, 31]. When school demands exceed a child's regulatory capacity, difficulties become particularly visible, even in the absence of a formal clinical diagnosis [31, 32].

Transdiagnostic research indicates that deficits in executive functions (EFs) constitute a common underlying mechanism across various neurodevelopmental disorders, including ADHD, autism spectrum disorder (ASD), and other externalising problems [25, 33]. However, these deficits are not homogeneous but are expressed in qualitatively distinct profiles depending on the disorder and the individual, contributing to the heterogeneity observed in the classroom [26, 34]. Moreover, executive difficulties are observed along a dimensional continuum, also affecting children with subclinical levels of ADHD or ASD traits [35].

In the school context, these alterations have clear functional implications. Difficulties in attention, inhibition, and task persistence pose more significant barriers to educational attainment than initial limitations in specific academic skills [6]. Likewise, self-regulation difficulties are associated with lower active participation, greater problems in social adjustment, and an increased risk of unfavourable academic trajectories [27, 36]. Addressing only observable symptoms while neglecting the underlying self-regulatory processes may limit the effectiveness of educational interventions [25].

Taken together, these findings underscore that difficulties in self-regulation and executive functioning constitute a key and shared vulnerability factor in atypical development, with transversal effects on learning and school adaptation [10, 37]. This framework is essential for subsequently understanding ADHD not as an isolated condition but as part of a continuum of self-regulatory alterations that interact with the demands of the educational environment.

4. ADHD in the child and youth population

ADHD is one of the most extensively studied neurodevelopmental disorders in the educational field due to its persistent impact on learning, behaviour, and school adaptation [12]. Its relevance in educational contexts is not limited to the presence of core symptoms but extends to broader difficulties related to behavioural self-regulation, attention, and learning processes, making it a particularly pertinent framework for analysis from the perspective of SRL [38, 39].

ADHD is currently defined as a neurodevelopmental disorder that persistently compromises the regulation of attention, activity, and behaviour, with substantial

functional repercussions in personal, academic, and social development [38]. The Diagnostic and Statistical Manual of Mental Disorders, DSM-5-TR [38], establishes that ADHD is classified into three subtypes: predominantly inattentive presentation, predominantly hyperactive-impulsive presentation, and combined presentation. From this perspective, ADHD is not limited to the isolated presence of behavioural symptoms but involves alterations in basic psychological processes linked to self-control and the voluntary regulation of behaviour [13, 40].

One of the most relevant clinical characteristics of ADHD is its marked heterogeneity. Variability in the combination, intensity, and evolution of symptoms gives rise to highly diverse profiles, both in clinical expression and in functional impact, which renders a unitary conceptualization of the disorder more complex [12, 41]. This diversity is reflected in the coexistence of different symptomatic presentations and in changing developmental trajectories across the individual's lifespan [38, 39].

ADHD also shows high prevalence and notable developmental continuity. It is one of the most frequent neurodevelopmental disorders in childhood and adolescence, with recent estimates indicating a prevalence between 5% and 7% in children and adolescents, and between 2.5% and 3.5% in adults, depending on diagnostic criteria and sociocultural context [42–44]. These data reinforce the consideration of ADHD as a disorder with an early onset and a generally persistent course, though with challenges in symptom expression as development progresses [39].

From a clinical and functional standpoint, ADHD rarely occurs in isolation. Comorbidity with other psychiatric disorders and learning difficulties is highly frequent and constitutes a fundamental element in understanding the complexity of the disorder and its impact on daily life [40, 45–48]. In this sense, ADHD has been described as the outcome of a complex interaction among multiple, diverse factors – genetic, neurobiological, cognitive-neurobiological, familial, developmental, and psychosocial – that jointly contribute to its clinical manifestation [41, 49, 50].

4.1 ADHD as a disorder of self-regulation and executive functioning

From a widely accepted theoretical perspective, ADHD has been associated with difficulties in EF and self-regulatory processes [9, 11, 51–54]. In this regard, several authors have pointed out that many of the behavioural and cognitive manifestations of ADHD can be understood as failures in the mechanisms that sustain self-control and behavioural regulation [9, 11, 31, 40].

These difficulties are closely related to alterations in EF, particularly those involved in response inhibition, working memory, emotional regulation, and effort maintenance [26, 34, 39, 55, 56]. Consequently, individuals with ADHD often experience greater difficulties in situations requiring planning, sustained behavioural control, and flexible adaptation to environmental demands, particularly in structured settings such as school environments [6, 27, 39, 52].

From an educational perspective, these limitations in self-regulation are particularly relevant, as they affect students' ability to manage their learning autonomously, maintain attention during prolonged tasks, and regulate their behaviour in accordance with academic norms and goals [53, 57–59]. ADHD is consistently associated with significant difficulties in academic achievement, school adjustment, and task persistence, especially when instructional demands require high levels of autonomy and self-regulatory control [12, 60]. These difficulties are

not explained solely by core symptoms of inattention or hyperactivity but are reflected in broader impairments in functioning, including behaviour regulation, effort regulation, and cognitive processes involved in learning [61].

Within the SRL framework, several studies indicate that students with ADHD exhibit greater deficits in planning, monitoring, and adjusting their learning, which negatively affects study organisation, sustained attention during prolonged tasks, and the strategic use of cognitive and metacognitive resources [52, 59]. In this regard, deficits in EF and self-regulation limit students' ability to meet academic demands in the school context [6, 27, 32, 39].

Empirical evidence also highlights the central role of teaching in modulating the educational impact of ADHD. Structured, explicit teaching practices oriented towards the development of autonomy promote the acquisition of self-regulation and self-regulated learning skills, particularly among students with attentional difficulties [62, 63]. Nevertheless, several studies indicate that many teachers perceive insufficient preparedness to address ADHD and to systematically promote self-regulation in the classroom, reinforcing the need for specific and ongoing training in this area [13, 64, 65].

5. SRL in students with ADHD

As discussed in previous sections, the academic adjustment difficulties associated with ADHD are largely explained by deficits in behavioural inhibition and EFs that support self-regulation and goal-oriented behaviour over time [66]. These challenges become especially apparent in structured school contexts, where sustained attentional control, adaptation to rules, and autonomous management of effort are required [27, 31].

From a developmental perspective, small early differences in self-regulation may be progressively amplified through cumulative processes, giving rise to trajectories of low achievement and persistent school maladjustment [6, 36]. In the case of ADHD, deficits in inhibition and working memory limit learning, planning, and monitoring, affecting both academic performance and active classroom participation [34, 55]. In addition, difficulties in emotional regulation increase the likelihood of disproportionate responses to academic frustration, with negative consequences for social adjustment and relationships with teachers [57].

The literature also emphasizes that these difficulties are neither homogeneous nor exclusive to a single diagnosis. Problems in EF and self-regulation appear along a dimensional continuum and account for part of the heterogeneity observed in the school adjustment of students with ADHD [26, 35]. When educational demands exceed students' regulatory capacity, even those with adequate cognitive competence may display inconsistent performance and lower engagement in school tasks [25, 32].

5.1 SRL interventions for addressing learner diversity

Adopting educational approaches oriented towards the development of self-regulation enables more effective responses to the diversity of needs present in the classroom, beyond specific diagnostic labels. Evidence indicates that difficulties in self-regulation and executive functioning constitute a transdiagnostic factor that limits autonomous and sustained participation in structured academic activities [9, 10]. In this regard, intervening solely in disruptive behaviours or isolated symptoms,

without addressing the underlying regulatory processes, reduces the effectiveness of inclusive practices [25, 28].

SRL-sensitive approaches emphasize the importance of creating educational contexts that combine emotional support, clear structure, and explicit opportunities to practice attentional and behavioural control. Scaffolding practices, positive external regulation, and the explicit articulation of goals foster the development of effort control, particularly in students with high emotional reactivity or lower initial self-regulatory capacity [30, 37].

From this perspective, inclusive education benefits from differentiated approaches that adjust support according to the specific self-regulatory processes affected, rather than applying uniform interventions. Recognizing the diversity of executive and emotional profiles enables the design of teaching practices that facilitate goal management, persistence, and flexible adaptation to classroom demands, thereby promoting more equitable and sustainable educational trajectories for students with ADHD and other at-risk profiles [26, 27].

6. Teachers as key agents in the development of SRL

The literature consistently highlights that teachers play a pivotal role in promoting SRL, as students' development of SRL depends largely on teachers' professional competencies, beliefs, and instructional practices [63, 67, 68]. From a situated perspective, SRL is not conceived as an exclusively individual skill but rather as a process that emerges from the interaction between the learner, the task, and the pedagogical context, in which teachers function as a key source of external scaffolding [69, 70].

In this sense, teachers not only create opportunities for SRL but also largely determine whether students' individual characteristics become barriers or resources for the development of self-regulation, depending on their instructional responses and attributional interpretations [68]. However, a growing body of research indicates that despite widespread acknowledgement of the importance of SRL, its promotion remains weakly integrated into everyday teaching practices, resulting in unequal access to systematic self-regulatory learning experiences among students [70, 71].

One of the most consistently identified factors associated with effective SRL promotion is teachers' self-efficacy for teaching SRL. This perceived competence predicts the actual implementation of self-regulatory practices more strongly than general theoretical knowledge or positive attitudes toward SRL [63, 72]. Moreover, when teachers perceive themselves as self-regulated learners and as capable role models of these processes, they show greater willingness to integrate explicit, sustained, and context-sensitive SRL instructional practices into their teaching [70, 73].

Nevertheless, a persistent gap remains between teachers' beliefs and their actual classroom practices. Teachers tend to overestimate both their understanding of SRL and the extent to which they already promote it, which limits students' real opportunities to develop functional self-regulatory competencies [74]. This discrepancy underscores the need for teacher training programmes that address not only conceptual knowledge but also attributional beliefs, self-efficacy, and specific pedagogical skills to support SRL in inclusive educational contexts [62, 68].

6.1 Why SRL-based instruction is especially relevant for ADHD?

SRL does not develop spontaneously and requires explicit, systematic, and sustained instruction, particularly for students who experience persistent difficulties in planning, monitoring, and adjusting their academic behaviour [16, 70]. In the case of students with ADHD, many of the necessary competencies are already present but are expressed inconsistently and unstably over time. This pattern supports interventions focused on strengthening self-regulation rather than on teaching entirely new skills [75].

SRL-based interventions have been shown to produce significant improvements in on-task behaviour, academic productivity, and accuracy, as well as reductions in disruptive behaviour among students with ADHD [75, 76]. These effects appear to be particularly robust when interventions incorporate clear procedures for self-evaluation and feedback, enabling students to compare their behaviour against explicit criteria and to make progressive adjustments [75].

Furthermore, the mere provision of autonomy or the isolated use of goal setting is insufficient to improve self-regulation in this population and may even be ineffective when task demands are high [74, 76]. In contrast, strategies that translate general interventions into concrete responses to challenging situations – such as if-then plans or the combination of goal setting with action implementation – have demonstrated more stable positive effects, including reductions in ADHD symptoms and increased student responsibility for their own behavior [76, 77].

From an inclusive perspective, SRL-based interventions are particularly well-suited, as they tend to benefit students with greater self-regulatory difficulties to a larger extent, thereby reducing behavioural variability and stabilising academic functioning in mainstream classrooms [69, 75, 77].

6.2 Explicit instruction of SRL practices

There is a broad consensus that explicit instruction in self-regulatory strategies constitutes a core component of SRL development, as it enables students to understand not only how to apply strategies but also when and why they are effective across different contexts [71, 78]. In the absence of such instruction, strategic behaviour tends to remain reactive, fragmented, and dependent on external support [79].

Evidence indicates that the most effective interventions combine explicit modelling, guided practice, and systematic reflection on learning processes, integrating motivational, metacognitive, and behavioral components within recurring cycles of planning, execution, and adjustment [75, 78]. These cycles allow teachers to initially act as external regulators, thus progressively facilitating the internalization of control by students [80, 81].

For students with ADHD, combining self-regulatory strategies with initial external supports – such as, clear criteria, frequent feedback, or reinforcement – increases the salience of self-evaluation and supports the gradual development of autonomy [75, 82]. Additionally, strategies aimed at anticipating obstacles and automating adaptive responses reduce the need for constant adult supervision, enhancing their feasibility in inclusive classroom settings [77].

To illustrate how explicit SRL instruction can be translated into concrete classroom practices for students with ADHD, **Table 1** summarises the key self-regulatory strategies along with examples of teacher-supported implementation.

SRL strategy	Example of classroom implementation
Planning	The teacher explicitly models how to analyse task demands, activates relevant prior knowledge, and provides structured resources or checklists before task initiation.
Goal setting	Learning goals are defined collaboratively, translated into short and concrete objectives, and visually displayed to support focus and task persistence.
Strategy use	The teacher demonstrates specific cognitive or metacognitive strategies (e.g., self-questioning, step-by-step procedures) and guides students during initial practice.
Monitoring	Students are prompted to pause at predefined moments to check their progress using simple self-monitoring questions or visual cues provided by the teacher.
Self-evaluation	Clear performance criteria are used to help students compare their work or behaviour with expected standards, supported by immediate and specific feedback.
Regulation of effort and behaviour	External support, such as, reminders, timers, or reinforcement systems, is gradually reduced as students internalise control over their engagement.
Anticipation of difficulties	The teacher helps students identify potential obstacles in advance and formulate if-then plans to respond adaptively to distractions or task difficulties.

Table 1.
Examples of SRL-based instructional strategies for students with ADHD.

Finally, several authors emphasize that explicit SRL instruction is only sustainable when teachers receive specific training and perceive these practices as feasible, useful, and aligned with the dynamics of regular classroom instruction [58, 71, 83]. In this regard, embedding SRL within broader frameworks of educational and inclusive support helps avoid isolated interventions and promotes a more equitable and systematic development of self-regulation as a core educational competence [69, 84].

7. Teacher training needs in SRL and ADHD

A growing body of evidence highlights significant limitations in teacher training for effectively responding to the educational demands associated with SRL and ADHD [65, 67, 73, 74, 85, 86]. Despite broad theoretical consensus on the importance of SRL and academic adaptation, its integration into teacher education remains insufficient and poorly systematized, with direct consequences for educational practice.

Regarding SRL, several studies indicate that teachers possess limited knowledge of the SRL construct and the strategies required to promote it explicitly in the classroom [67, 73, 74, 85, 86]. Despite extensive evidence supporting its relevance for academic success, SRL and metacognition are not usually addressed in a structured manner in teacher training, resulting in a partial and fragmented understanding of these processes [67, 73].

This lack of specific training is reflected in a persistent gap between the theoretical recognition of the importance of SRL and its practical implementation. Although many teachers report positive attitudes towards the promotion of self-regulation, educational practices tend to focus on external regulation of learning and behavioural control rather than on the explicit teaching of self-regulatory strategies [74, 86]. Furthermore, the level of support teachers provide for SRL is closely linked

to their own self-regulatory competencies, reinforcing the need for training that addresses both teachers' professional and personal development [73].

In the case of ADHD, the literature shows that teachers' knowledge is generally at low to moderate levels, with greater mastery of aspects related to symptoms and diagnosis, and significant gaps regarding the etiology of the disorder and educational intervention strategies [65, 87, 88]. These training deficiencies limit teachers' ability to understand the functional impact of ADHD on learning and to design pedagogical responses aligned with students' needs.

Likewise, several studies indicate that a substantial proportion of teachers access information about ADHD through nonformal or informal sources, which may contribute to fragmented or inaccurate knowledge and to the persistence of misconceptions about the disorder [88, 89]. These limitations are manifested in a widespread perception of insufficient preparation to support students with ADHD in mainstream classrooms, reinforcing the need for more robust and structured instruction in the field.

In this regard, limitations in teacher training on SRL and ADHD translate into difficulties in transferring theoretical knowledge into educational practice. The absence of specific and systematic training constrains teachers' capacity to implement strategies aimed at fostering self-regulation and to respond appropriately to student diversity, particularly in contexts that require sustained educational support [58, 74, 90]. Strengthening teacher training thus emerges as a key element for improving coherence between available theoretical knowledge and educational practices designed to promote self-regulation in the classroom.

To integrate the main ideas discussed throughout the chapter, **Figure 2** proposes a conceptual framework that connects teacher training in SRL and ADHD with the promotion of SRL processes in students. The model integrates teacher training components, Zimmerman's cyclical model of SRL, and the expected impact on students' SRL development [91].

This framework illustrates the relationship between teacher training components, the teacher-mediated support of the SRL cycle, and students' SRL development. Training elements such as, knowledge of SRL, ADHD, and EF, inclusive instructional strategies, and teachers' self-efficacy enable teachers to scaffold the phases of Zimmerman's SRL cycle (forethought, performance, and self-reflection) [2]. Through explicit instruction, structured classroom practices, and ongoing feedback, teachers act as mediators of students' planning, monitoring, behavioural, and emotional regulation—processes that are central to the development of SRL in diverse classroom contexts. From this perspective, SRL has increasingly been recognised as a valuable framework for understanding the regulatory processes that support learning and school adjustment in diverse student populations, including those who experience attentional, executive functioning, or behavioural regulation challenges, such as those commonly observed in ADHD [84, 92–96].

8. Conclusions and future directions

The present chapter has highlighted that difficulties associated with ADHD in educational contexts cannot be fully understood or addressed by focusing solely on behavioural symptoms. Instead, adopting the SRL framework allows these

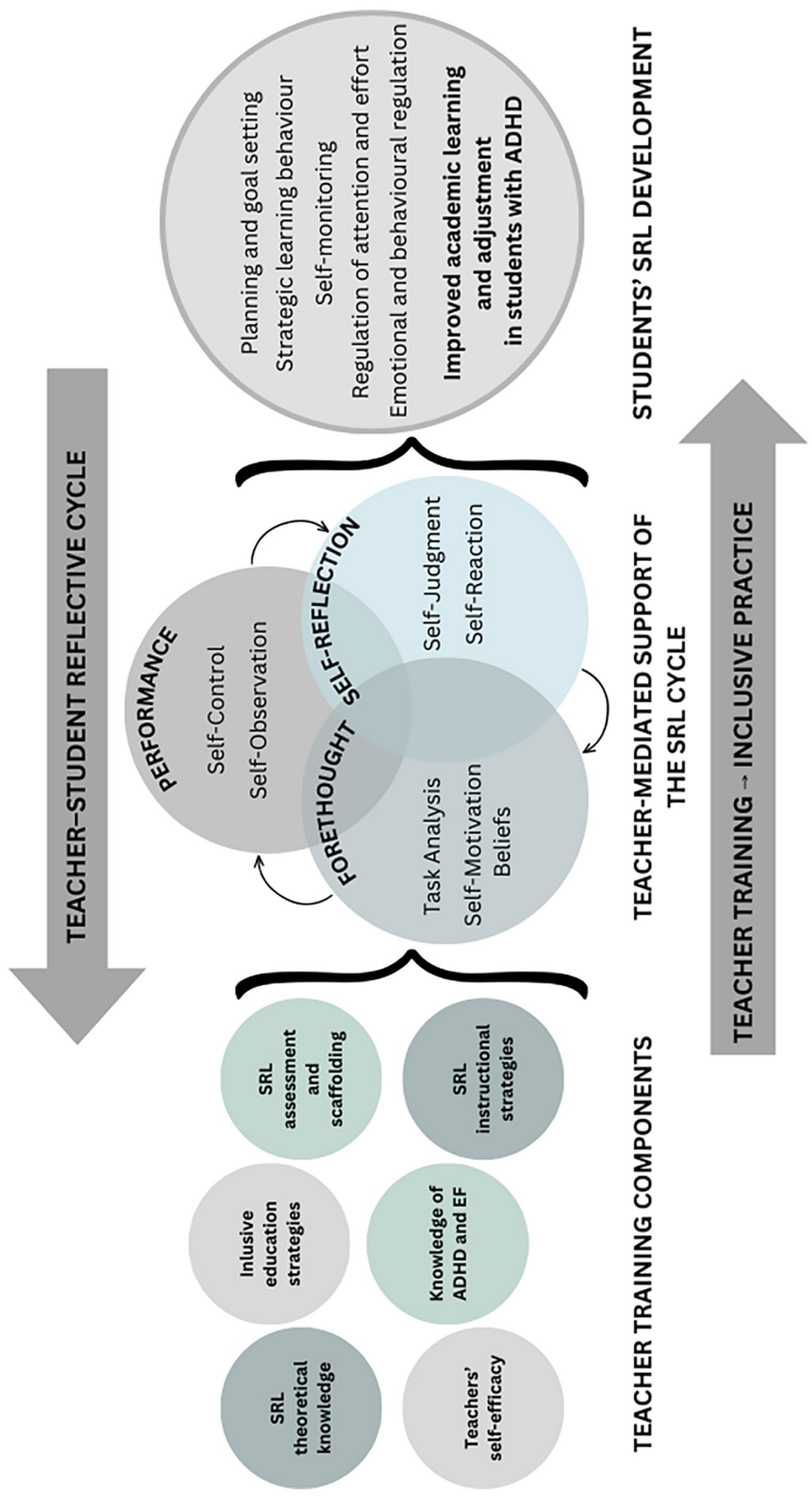


Figure 2.
Teacher training framework for promoting SRL in students with ADHD.

difficulties to be conceptualised as disruptions to SRL and school adjustment. From this perspective, SRL emerges not only as a powerful explanatory model but also as a key reference for inclusive educational practice.

Through the literature reviewed, teachers are consistently identified as crucial actors in the development of students' self-regulation. However, persistent gaps in teacher knowledge, self-efficacy, and training in both SRL and ADHD limit the systematic implementation of effective practices in classrooms. This mismatch between theoretical advances and everyday teaching underscores the urgent need to strengthen teacher education beyond symptom-focused approaches.

Overall, this chapter carries important practical implications for educational contexts, as it underscores the need to strengthen SRL and proposes a more holistic way of conceptualising ADHD. In particular, the transdiagnostic perspective adopted offers clear advantages by enabling the identification of key intervention targets that may be overlooked by symptom-based approaches. Widely used diagnostic frameworks, such as, the DSM-5 or the ICD-11, primarily describe behavioural symptoms but provide limited guidance for designing effective educational interventions or understanding the underlying mechanisms of the observed difficulties.

From a practical perspective, teacher training programmes should explicitly incorporate a transdiagnostic understanding of SRL difficulties together with concrete SRL instructional practices. In this sense, rather than focusing exclusively on diagnostic labels, educators should be prepared to identify common self-regulatory challenges in the classroom and respond through explicit teaching of SRL strategies such as, goal setting, planning, monitoring, and self-evaluation. The introduction of these practices into everyday practice may help teachers scaffold students' SRL processes more effectively, thereby supporting both academic engagement and psychological adjustment among students with ADHD and other students who experience self-regulation difficulties.

Future directions should, therefore, prioritise the design, implementation, and evaluation of evidence-based teacher training programmes that explicitly integrate SRL and ADHD from a psychoeducational and inclusive perspective. Such programmes should address not only conceptual knowledge but also teachers' beliefs, self-regulatory competencies, and practical skills for scaffolding students' learning. Advancing research on teachers' training needs, knowledge profiles, and professional development in this area constitutes a necessary step toward fostering sustainable educational practices that support self-regulation, well-being, and equitable learning trajectories for students with ADHD and related profiles.

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References

- [1] Pintrich PR. Understanding self-regulated learning. *New Directions for Teaching and Learning*. 1995;1995:3–12. DOI: 10.1002/tl.37219956304
- [2] Zimmerman BJ. Attaining self-regulation: A social cognitive perspective. In: Boekaerts M, Pintrich PR, Zeidner M, editors. *Handbook of Self-Regulation*. San Diego, CA: Academic Press; 2000. p. 13–39. DOI: 10.1016/B978-012109890-2/50031-7
- [3] Hadwin A, Järvelä S, Miller M. Self-regulation, co-regulation, and shared regulation in collaborative learning environments. In: Schunk DH, Greene JA, editors. *Handbook of Self-regulation of Learning and Performance*. 2nd ed. New York: Routledge; 2017. p. 83–106. DOI: 10.4324/9781315697048-6
- [4] Pintrich PR. The role of goal orientation in self-regulated learning. In: Boekaerts M, Pintrich PR, Zeidner M, editors. *Handbook of Self-Regulation*. San Diego, CA: Academic Press; 2000. p. 451–502. DOI: 10.1016/B978-012109890-2/50043-3
- [5] Winne PH, Perry NE. Measuring Self-Regulated Learning. In: Boekaerts M, Pintrich PR, Zeidner M, editors. *Handbook of Self-Regulation*. San Diego, CA: Academic Press; 2000. p. 531–566. DOI: 10.1016/B978-012109890-2/50045-7
- [6] Blair C, Diamond A. Biological processes in prevention and intervention: The promotion of self-regulation as a means of preventing school failure. *Development and Psychopathology*. 2008;20(3):899–911. DOI: 10.1017/S0954579408000436
- [7] Portilla MA. La autorregulación: Un horizonte de posibilidades [Self-regulation: A horizon of possibilities]. *Educación*. 2017;23:9–13. DOI: 10.33539/educacion.2017.n23.1163
- [8] Akeren İ, Çelik E, Yayla İE, Özgöl M. The effect of self-regulation on the need for psychological help through happiness, resilience, problem solving, self-efficacy, and adjustment: A parallel mediation study in adolescent groups. *Children (Basel, Switzerland)*. 2025;12(4). DOI: 10.3390/children12040445
- [9] Nigg JT. Annual Research Review: On the relations among self-regulation, self-control, executive functioning, effortful control, cognitive control, impulsivity, risk-taking, and inhibition for developmental psychopathology. *Journal of Child Psychology and Psychiatry*. 2017;58(4):361–383. DOI: 10.1111/jcpp.12675
- [10] Zelazo PD. Executive Function and Psychopathology: A Neurodevelopmental Perspective. *Annual Review of Clinical Psychology*. 2020;16:431–454. DOI: 10.1146/annurev-clinpsy-072319-024242
- [11] Marsh CL, Groves NB, Mehra LM, Black KE, Irwin LN, Meyer A, Kofler MJ. The relation between executive functions, error-related brain activity, and ADHD symptoms in clinically evaluated school-aged children. *Child Neuropsychology*. 2023;29(8):1362–1387. DOI: 10.1080/09297049.2023.2166029

- [12] DuPaul GJ, Weyandt LL, Janusis GM. ADHD in the Classroom: Effective Intervention Strategies. *Theory Into Practice*. 2011;**50**(1):35–42. DOI: 10.1080/00405841.2011.534935
- [13] Faraone SV, Banaschewski T, Coghill D, et al. The World Federation of ADHD International Consensus Statement: 208 Evidence-based conclusions about the disorder. *Neuroscience and Biobehavioral Reviews*. 2021;**128**:789–818
- [14] Panadero E. A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*. 2017;**8**(422). DOI: 10.3389/fpsyg.2017.00422
- [15] Wolters CA. Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology*. 2003;**95**(1):179–187. DOI: 10.1037//0022-0663.95.1.179
- [16] Stoeger H, Fleischmann S, Obergriesser S. Self-regulated learning (SRL) and the gifted learner in primary school: The theoretical basis and empirical findings on a research program dedicated to ensuring that all students learn to regulate their own learning. *Asia Pacific Education Review*. 2015;**16**:257–267. DOI: 10.1007/s12564-015-9376-7
- [17] Calma SS. Atención Y Aprendizaje: Estrategias de Autorregulación En El Aula [Calm, Attention, and Learning: Self-Regulation Strategies in the Classroom]. Lima, Perú: Cerebrum Ediciones; 2013
- [18] Peters EE, Kitsantas A. Self-regulation of student epistemic thinking in science: The role of metacognitive prompts. *Educational Psychology*. 2009;**30**(1):27–52. DOI: 10.1080/01443410903353294
- [19] Winne PH, Hadwin AF. Studying as self-regulated learning. In: Hacker D, Dunlosky J, Graesser A, editors. *Metacognition in Educational Theory and Practice*. Hillsdale, NJ: Erlbaum; 1998. p. 277–304
- [20] Tinajero C, Mayo ME, Villar E, Martínez-López Z. Classic and modern models of self-regulated learning: Integrative and componential analysis. *Frontiers in Psychology*. 2024;**15**:1307574. DOI: 10.3389/fpsyg.2024.1307574
- [21] Ateş Akdeniz A. Exploring the impact of self-regulated learning intervention on students' strategy use and performance in a design studio course. *International Journal of Technology and Design Education*. 2023;**33**:1923–1957. DOI: 10.1007/s10798-022-09798-3
- [22] Gambo Y, Shakir MZ. Review on self-regulated learning in smart learning environment. *Smart Learning Environments*. 2021;**8**(12). DOI: 10.1186/s40561-021-00157-8
- [23] Xu KM, Leferink J, Wijnia L. A review of the relationship between student growth mindset and self-regulated learning. *Frontiers in Education*. 2025;**10**:1539639. DOI: 10.3389/feduc.2025.1539639
- [24] Greenquist-Marlett S, Bol L, Hill C. Teachers' perceptions of their self-regulated learning practices in elementary school classrooms. *Frontiers in Education*. 2025;**9**:1464350. DOI: 10.3389/feduc.2024.1464350
- [25] Bloemen AJP, Oldehinkel AJ, Laceulle OM, Ormel J, Rommelse NNJ,

- Hartman CA. The association between executive functioning and psychopathology: General or specific? *Psychological Medicine*. 2018;**48** (11):1787–1794. DOI: 10.1017/S0033291717003269
- [26] Friedman NP, Miyake A. Unity and diversity of executive functions: Individual differences as a window on cognitive structure. *Cortex*. 2017;**86**:186–204. DOI: 10.1016/j.cortex.2016.04.023
- [27] Mulvihill A, Carroll A, Dux PE, Matthews N. Self-directed speech and self-regulation in childhood neurodevelopmental disorders: Current findings and future directions. *Development and Psychopathology*. 2020;**32**(1):205–217. DOI: 10.1017/S0954579418001670
- [28] Cicchetti D, Tucker D. Development and self-regulatory structures of the mind. *Development and Psychopathology*. 1994;**6**(4):533–549. DOI: 10.1017/S0954579400004673
- [29] Meredith WJ, Silvers JA. Experience-dependent neurodevelopment of self-regulation in adolescence. *Developmental Cognitive Neuroscience*. 2024;**66**:101356. DOI: 10.1016/j.dcn.2024.101356
- [30] McCabe LA, Cunningham M, Brooks-Gunn J. The development of self-regulation in young children: Individual characteristics and environmental contexts. In: Baumeister RF, Vohs KD, editors. *Handbook of Self-regulation: Research, Theory, and Applications*. New York: The Guilford Press; 2004. p. 340–356
- [31] Rothbart MK, Ellis LK, Posner MI. Temperament and self-regulation. In: Baumeister RF, Vohs KD, editors. *Handbook of Self-regulation: Research, Theory, and Applications*. New York: The Guilford Press; 2004. p. 357–370
- [32] Luciana M. Adolescent brain development in normality and psychopathology. *Development and Psychopathology*. 2013;**25**(4 Pt 2):1325–1345. DOI: 10.1017/S0954579413000643
- [33] Carter Leno V, Chandler S, White P, Baird G, Hobson C, Smith AB, Charman T, Rubia K, Simonof E. Testing the specificity of executive functioning impairments in adolescents with ADHD, ODD/CD and ASD. *European Child & Adolescent Psychiatry*. 2018;**27** (7):899–908. DOI: 10.1007/s00787-017-1089-5
- [34] Happé F, Booth R, Charlton R, Hughes C. Executive function deficits in autism spectrum disorders and attention-deficit/hyperactivity disorder: Examining profiles across domains and ages. *Brain and Cognition*. 2006;**61** (1):25–39. DOI: 10.1016/j.bandc.2006.03.004
- [35] Otterman DL, Koopman-Verhoeff ME, White TJ, Tiemeier H, Bolhuis K, Jansen PW. Executive functioning and neurodevelopmental disorders in early childhood: A prospective population-based study. *Child and Adolescent Psychiatry and Mental Health*. 2019;**13**(1). DOI: 10.1186/s13034-019-0299-7
- [36] Spinrad TL, Eisenberg N, Cumberland A, Fabes RA, Valiente C, Shepard SA, Reiser M, Losoya SH, Guthrie IK. Relation of emotion-related regulation to children’s social competence: A longitudinal study. *Emotion*. 2006;**6**(3):498–510. DOI: 10.1037/1528-3542.6.3.498

- [37] Eisenberg N, Smith CL, Sadovsky A, Spinrad TL. Effortful control: Relations with emotion regulation, adjustment, and socialization in childhood. In: Baumeister RF, Vohs KD, editors. *Handbook of Self-regulation: Research, Theory, and Applications*. New York: The Guilford Press; 2004. p. 259–282
- [38] American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR)*. 5th ed. Washington, DC: American Psychiatric Association; 2022. DOI: 10.1176/appi.books.9780890425787
- [39] Barkley RA. *Attention-Deficit Hyperactivity Disorder, Fourth Edition: A Handbook for Diagnosis and Treatment*. 4th ed. New York: The Guilford Press; 2014
- [40] Soutullo C, Díez A. *Manual Diagnóstico Y Tratamiento Del TDAH [Diagnostic and Treatment Manual for ADHD]*. Buenos Aires: Ed. Médica Panamericana; 2007
- [41] Siegenthaler R, Marco R. Conceptualización del TDAH [Manual práctico de TDAH]. In: Miranda AC, editor. *Manual Práctico de TDAH [Practical ADHD Manual]*. Madrid, España: Síntesis; 2011. p. 15–32
- [42] World Health Organization. *World mental health report: Transforming mental health for all*. Geneva: World Health Organization; 2022. p. 296
- [43] Popit S, Serod K, Locatelli I, Stuhec M. Prevalence of attention-deficit hyperactivity disorder (ADHD): Systematic review and meta-analysis. *European Psychiatry*. 2024;**67**(1):e68. DOI: 10.1192/j.eurpsy.2024.1786
- [44] Salari N, Ghasemi H, Abdoli N, Rahmani A, Shiri MH, Hashemian AH, Akbari H, Mohammadi M. The global prevalence of ADHD in children and adolescents: A systematic review and meta-analysis. *Italian Journal of Pediatrics*. 2023;**49**(1):48. DOI: 10.1186/s13052-023-01456-1
- [45] da Silva BS, Grevet EH, Silva LCF, Ramos JKN, Rovaris DL, Bau CHD. An overview on neurobiology and therapeutics of attention-deficit/hyperactivity disorder. *Discover Mental Health*. 2023;**3**(1). DOI: 10.1007/s44192-022-00030-1
- [46] Jogia J, Sharif AH, Nawaz FA, Khan AR, Alawami RH, Aljanahi MA, Sultan MA. Comorbidities Associated With Attention-Deficit/Hyperactivity Disorder in Children and Adolescents at a Tertiary Care Setting. *Global Pediatric Health*. 2022;**9**:1–11. DOI: 10.1177/2333794X221076607
- [47] Seo JC, Jon DI, Shim SH, Sung HM, Woo YS, Hong J, Park SY, Seo JS, Bahk WM. Prevalence and comorbidities of attention deficit hyperactivity disorder among adults and children/adolescents in Korea. *Clinical Psychopharmacology and Neuroscience*. 2022;**20**(1):126–134. DOI: 10.9758/cpn.2022.20.1.126
- [48] Njardvik U, Wergeland GJ, Riise EN, Hannesdottir DK, Öst LG. Psychiatric comorbidity in children and adolescents with ADHD: A systematic review and meta-analysis. *Clinical Psychology Review*. 2025;**118**:102571. DOI: 10.1016/j.cpr.2025.102571
- [49] Nigg JT, Sibley MH, Thapar A, Karalunas SL. Development of ADHD: Etiology, Heterogeneity, and Early Life Course. *Annual Review of*

Developmental Psychology. 2020;2(1):559–583. DOI: 10.1146/annurev-devpsych-060320-093413

[50] Ribasés M, Mitjans M, Hartman CA, Artigas MS, Demontis D, Larsson H, Ramos-Quiroga JA, Kuntsi J, Faraone SV, Børglumh AD, Reifq A, Franker B, Cormand B. Genetic architecture of ADHD and overlap with other psychiatric disorders and cognition-related phenotypes. *Neuroscience and Biobehavioral Reviews*. 2023;153:105313. DOI: 10.1016/j.neubiorev.2023.105313

[51] Cid-Duarte S, Areces D, Núñez JC. Las Funciones Ejecutivas en Población Infanto-juvenil que presenta TEA y TDAH en comorbilidad: Una revisión sistemática [Executive Functions in Child and Adolescent Population with ASD and ADHD in comorbidity: A systematic review]. *Revista de Psicología Educativa*. 2023;18(1):30–39. DOI: 10.23923/rpye2023.01.232

[52] Miranda A, Berenguer C, Baixauli I, Roselló B, Palomero B. Funciones ejecutivas y motivación de niños con trastorno de espectro autista (TEA) y trastorno por déficit de atención con hiperactividad (TDAH) [Executive Functions and Motivation in Children with Autism Spectrum Disorder (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD)]. *Infad*. 2016;1(1):103–112. DOI: 10.17060/ijo-daep.2016.n1.v1.200

[53] Shroff DM, Dunn NC, Green CD, Breaux R, Becker SP, Langberg JM. Predictors of executive function trajectories in adolescents with and without ADHD: Links with academic outcomes. *Development and Psychopathology*. 2024;36(3):1489–1502. DOI: 10.1017/S0954579423000743

[54] Hamilton A, Tallberg P, Ilahi F, Hoff E, Ahmadi B, Daukantaitė D. Behavioral manifestations of executive functioning in Swedish youth with ADHD, autism, and psychiatric comorbidity: A comparative analysis with community controls. *Child Neuropsychology*. 2024;31(5):771–790. DOI: 10.1080/09297049.2024.2434736

[55] Carlson SM, Moses LJ, Claxton LJ. Individual differences in executive functioning and theory of mind: An investigation of inhibitory control and planning ability. *Journal of Experimental Child Psychology*. 2004;87(4):299–319. DOI: 10.1016/j.jecp.2004.01.002

[56] Thorell LB, Wåhlstedt C. Executive Functioning Deficits in Relation to Symptoms of ADHD and/or ODD in Preschool Children. *Infant and Child Development*. 2006;15(5):503–518. DOI: 10.1002/icd.475

[57] Anastopoulos AD, Smith TF, Garrett ME, Morrissey-Kane E, Schatz NK, Sommer JL, Kollins SH, Ashley-Koch A. Self-Regulation of Emotion, Functional Impairment, and Comorbidity Among Children With AD/HD. *Journal of Attention Disorders*. 2011;15(7):583–592. DOI: 10.1177/1087054710370567

[58] Klimenko O. Las dificultades en la autorregulación asociadas al TDAH y los aportes de la teoría histórico-cultural para su abordaje intracurricular [Self-Regulation Difficulties Associated with ADHD and Contributions of Cultural-Historical Theory to Their Intracurricular Approach]. *Rieoei*. 2009;49(8):1–10. DOI: 10.35362/rie4982039

[59] Presentación MJ, Miranda A, Marco R. Intervención en TDAH en el

contexto escolar [Intervención en TDAH en el contexto escolar Practical manual of ADHD]. In: Miranda A, C. Manual Práctico de TDAH. Madrid, España: Síntesis; 2011. p. 193–219

[60] Arnold LE, Hodgkins P, Kahle J, Madhoo M, Kewley G. Long-term outcomes of ADHD: Academic achievement and performance. *Journal of Attention Disorders*. 2020;**24**(1):73–85. DOI: 10.1177/1087054714566076

[61] Bölte S, Mahdi S, Coghill D, Gau SSF, Granlund M, Holtmann M, Karande S, Levy F, Rohde LA, Segerer W, de Vries PJ, Selb M. Standardised assessment of functioning in ADHD: Consensus on the ICF Core Sets for ADHD. *European Child & Adolescent Psychiatry*. 2018;**27**(10):1261–1281. DOI: 10.1007/s00787-018-1119-y

[62] Cleary TJ, Kitsantas A, Peters-Burton E, Lui A, McLeod K, Slemph J, Zhang X. Professional development in self-regulated learning: Shifts and variations in teacher outcomes and approaches to implementation. *Teaching and Teacher Education*. 2022;**111**:103619. DOI: 10.1016/j.tate.2021.103619

[63] De Smul M, Heirweg S, Van Keer H, Devos G, Vandevelde S. How competent do teachers feel instructing self-regulated learning strategies? Development and validation of the teacher self-efficacy scale to implement self-regulated learning. *Teaching and Teacher Education*. 2018;**71**:214–225. DOI: 10.1016/j.tate.2018.01.001

[64] Dignath C, Büttner G. Teachers' direct and indirect promotion of self-regulated learning in primary and secondary school mathematics classes—Insights from video-based classroom

observations and teacher interviews. *Metacognition and Learning*. 2018;**13**:127–157. DOI: 10.1007/s11409-018-9181-x

[65] López-López A, López-Lafuente A, Eirís-Puñal J, Mulas F, Cardo E. Estudio de los conocimientos de los maestros de educación primaria sobre el trastorno por déficit de atención/hiperactividad [Study of Primary School Teachers' Knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD)]. *Revista de Neurología*. 2018;**66**(1):121–126

[66] Barkley RA. Attention-Deficit/Hyperactivity Disorder and Self-Regulation: Taking an Evolutionary Perspective on Executive Functioning. In: Baumeister RF, Vohs KD, editors. *Handbook of Self-regulation: Research, Theory, and Applications*. New York: The Guilford Press; 2004. p. 301–323

[67] Karlen Y, Hertel S, Hirt CN. Teachers' professional competences in self-regulated learning: An approach to integrate teachers' competences as self-regulated learners and as agents of self-regulated learning in a holistic manner. *Frontiers in Education*. 2020;**5**(159). DOI: 10.3389/feduc.2020.00159

[68] Peeters J, De Backer F, Kindekens A, Triquet K, Lombaerts K. Teacher differences in promoting students' self-regulated learning: Exploring the role of student characteristics. *Learning and Individual Differences*. 2016;**52**:88–96. DOI: 10.1016/J.LINDIF.2016.10.014

[69] Butler DL, Schnellert L. Success for students with learning disabilities: What does self-regulation have to do with it? In: *Self-regulated Learning Interventions with At-risk Youth: Enhancing Adaptability, Performance,*

and Well-being. Washington, DC: APA Press; 2015. p. 89–111. DOI: 10.1037/14641-005

[70] Karlen Y, Hertel S. Inspiring self-regulated learning in everyday classrooms: Teachers' professional competences and promotion of self-regulated learning. *Unterrichtswissenschaft*. 2024;**52**:1–13. DOI: 10.1007/s42010-024-00196-3

[71] Benick M, Dörrenbächer-Ulrich L, Weißenfels M, Perels F. Fostering self-regulated learning in primary school Students: Can additional teacher training enhance the effectiveness of an intervention? *Psychology Learning and Teaching*. 2021;**20**(3):324–347. DOI: 10.1177/14757257211013638

[72] Jud J, Karlen Y, Hirt CN. Linking teachers' and students' motivation for self-regulated learning: Is there a signal and how is it transmitted? *Metacognition and Learning*. 2024;**19**:939–965. DOI: 10.1007/s11409-024-09393-y

[73] Karlen Y, Hirt CN, Jud J, Rosenthal A, Eberli TD. Teachers as learners and agents of self-regulated learning: The importance of different teachers competence aspects for promoting metacognition. *Teaching and Teacher Education*. 2023;**125**:104055. DOI: 10.1016/j.tate.2023.104055

[74] Dignath C, van der Werf G. What teachers think about self-regulated learning: Investigating teacher beliefs and teacher behavior of enhancing students' self-regulation. *Education Research International*. 2012;**74**:1713. DOI: 10.1155/2012/741713

[75] Reid R, Trout AL, Schartz M. Self-regulation interventions for children with attention deficit/hyperactivity

disorder. *Exceptional Children*. 2005;**71**(4):361–377

[76] Guderjahn L, Gold A, Stadler G, Gawrilow C. Self-regulation strategies support children with ADHD to overcome symptom-related behavior in the classroom. *Adhd Attention Deficit and Hyperactivity Disorders*. 2013;**5**(4):397–407. DOI: 10.1007/s12402-013-0117-7

[77] Gawrilow C, Morgenroth K, Schultz R, Oettingen G, Gollwitzer PM. Mental contrasting with implementation intentions enhances self-regulation of goal pursuit in schoolchildren at risk for ADHD. *Motivation and Emotion*. 2013;**37**:134–145. DOI: 10.1007/s11031-012-9288-3

[78] Cleary TJ, Velardi B, Schnaidman B. Effects of the Self-Regulation Empowerment Program (SREP) on middle school students' strategic skills, self-efficacy, and mathematics achievement. *Journal of School Psychology*. 2017;**64**:28–42. DOI: 10.1016/j.jsp.2017.04.004

[79] Eggers JH, Oostdam R, Voogt J, Zijlstra Bonne JH. Retention effects of instruction in self-regulation strategies in blended learning environments. *Studies in Educational Evaluation*. 2025;**87**:101527. DOI: 10.1016/j.stueduc.2025.101527

[80] Gureasko-Moore S, Dupaul GJ, White GP. The effects of self-management in general education classrooms on the organizational skills of adolescents with ADHD. *Behavior Modification*. 2006;**30**(2):159–183. DOI: 10.1177/0145445503259387

[81] Panadero E, Jonsson A, Strijbos JW. Scaffolding self-regulated learning through self-assessment and peer

- assessment: Guidelines for Classroom implementation. In: Laveault D, Allal L, editors. *Assessment for Learning: Meeting the Challenge of Implementation*. Vol. 4. Boston, MA: Springer; 2016. p. 311–326. DOI: 10.1007/978-3-319-39211-0_18
- [82] Miranda A, Presentación MJ, Siegenthaler R, Jara P. Effects of a psychosocial intervention on the executive functioning in children with ADHD. *Journal of Learning Disabilities*. 2013;**46**(4):363–376. DOI: 10.1177/0022219411427349
- [83] Froelich J, Breuer D, Doepfner M, Amonn F. Effects of a teacher training programme on symptoms of attention deficit hyperactivity disorder. *International Journal of Special Education*. 2012;**27**(3):76–87
- [84] Aydan S, Mamas C. Self-regulated learning and students with disabilities: A mini review. *Frontiers in Education*. 2025;**10**:1–9. DOI: 10.3389/educ.2025.1600744
- [85] Callan G, Longhurst D, Shim S, Ariotti A. Identifying and predicting teachers’ use of practices that support SRL. *Psychology in the Schools*. 2022;**59**:2327–2344. DOI: 10.1002/pits.22712
- [86] Iriogbe-Efionayi S. Promoting Self-Regulation in Early Childhood Education: Teachers’ Knowledge of Self-Regulation. *Urban Education Research and Policy Annuals*. 2020;**7**(1):5–19. DOI: 10.55370/uerpa.v7i1.900
- [87] Aguiar AP, Kieling RR, Costa AC, Chardosim N, Dorneles BV, Almeida MR, Mazzuca AC, Kieling C, Rohde LA. Increasing teachers’ knowledge about ADHD and learning disorders: An investigation on the role of a psychoeducational intervention. *Journal of Attention Disorders*. 2014;**18**(8):691–698. DOI: 10.1177/1087054712453171
- [88] Soroa M, Gorostiaga A, Balluerka N. Conocimiento de los docentes sobre el TDAH: Relevancia de la formación y de las percepciones individuales [Teachers’ Knowledge of ADHD: The Relevance of Training and Individual Perceptions]. *Revista de Psicodidáctica / Journal of Psychodidactics*. 2016;**21**(2):205–226. DOI: 10.1387/RevPsicodidact.14023
- [89] Miranda A, Barrios D, Duque LF, Burgos EA, Salazar JE. Knowledge about ADHD in primary teachers of public schools of sabaneta, antioquia. *Revista Colombiana de Psiquiatria*. 2018;**47**(3):165–169. DOI: 10.1016/j.rcp.2017.04.002
- [90] Rodriguez-Gomez D, Muñoz-Moreno JL, Ion G. Empowering Teachers: Self-regulated learning strategies for sustainable professional development in initial teacher education at higher education institutions. *Sustainability*. 2024;**16**(7):3021. DOI: 10.3390/su16073021
- [91] Arvatz A, Hadas B, Waitzman R, J DY. Putting self-regulated learning and teaching into practice: Insights from two science teachers and their students. *Instructional Science*. 2025;**53**:973–1003. DOI: 10.1007/s11251-025-09719-6
- [92] Sins P, de Leeuw R, de Brouwer J, Vrieling-Teunter E. Promoting explicit instruction of strategies for self-regulated learning: Evaluating a teacher professional development program in primary education. *Metacognition and Learning*. 2024;**19**:215–247. DOI: 10.1007/s11409-023-09368-5

[93] Eberhart J, Bryce D, Baker ST. Staying self-regulated in the classroom: The role of children's executive functions and situational factors. *British Journal of Educational Psychology*. 2024;**94**(3):995–1010. DOI: 10.1111/bjep.12700

[94] Sankalaite S, Huizinga M, Dewandeleer J, Xu C, de Vries N, Hens E, Baeyens D. Strengthening executive function and self-regulation through teacher-student interaction in preschool and primary school children: A systematic review. *Frontiers in Psychology*. 2021;**12**(718262). DOI: 10.3389/fpsyg.2021.718262

[95] Kates MS, LaFreniere LS. School-Based Interventions for Attention-Deficit/Hyperactivity Disorder (ADHD) in Middle Schools: A review of the literature. *Education Sciences*. 2025;**15**(9):1225. DOI: 10.3390/educsci15091225

[96] Stalmach A, D'Elia P, Di Sano S, Casale G. Digital learning and self-regulation in students with special educational needs: A systematic review of current research and future directions. *Education Sciences*. 2023;**13**(10):1051. DOI: 10.3390/educsci13101051