

School Adjustment of Pupils with ADHD: Cognitive, Emotional and Temperament Risk Factors

Noelia Sánchez-Pérez & Carmen González-Salinas

Facultad de Psicología, Universidad de Murcia

Spain

Correspondence: Carmen González Salinas. Facultad de Psicología, Campus Universitario de Espinardo - 30100 Murcia (España) E-mail: cgonzale@um.es

© Education & Psychology I+D+i and Editorial EOS (Spain)

Abstract

From different research perspectives, the cognitive and emotional characteristics associated with ADHD in children have been identified as risk factors for the development of diverse adjustment problems in the school context. Research in nonclinical population can additionally help in understanding ADHD deficits, since children with specific problems for attentional focusing, inhibitory control, or impulsivity, allow to isolate the effects of these variables on their adjustment into school. This paper reviews studies of children diagnosed with ADHD and in typical development population with and without specific difficulties, with the purpose of obtaining a better understanding of the mechanisms that can lead ADHD children to develop a poor adjustment into school. Finally, in the intervention field, the reviewed programs offer promising results for the improvement of ADHD children's adjustment into school.

Keywords: children, ADHD, adjustment, temperament.

Received: 04/30/13

Initial acceptance: 06/03/13

Final acceptance: 07/19/13

Ajuste Escolar del Alumnado con TDAH: Factores de Riesgo Cognitivos, Emocionales y Temperamentales

Resumen

Desde diferentes ámbitos de investigación se han identificado las características cognitivas y emocionales asociadas al alumnado con TDAH como factores de riesgo para el desarrollo de una variedad de problemas de ajuste en el entorno escolar. Por otro lado, los estudios en niños y niñas de población no clínica que presentan problemas aislados para la focalización atencional, el control inhibitorio o la impulsividad, han permitido aislar el efecto de dichas variables sobre el ajuste escolar. Dichos estudios permiten arrojar luz sobre los procesos implicados en aquéllos los niños con TDAH. Este trabajo realiza una revisión de la literatura en este tema, incluyendo estudios en población clínica con TDAH y en población de desarrollo típico con y sin dificultades específicas, con el fin de obtener una mejor comprensión sobre los mecanismos que pueden conducir a los niños y niñas con TDAH a desarrollar un pobre ajuste a su entorno escolar. Finalmente, en el plano de la intervención, los programas revisados ofrecen resultados prometedores para la mejora del ajuste de los niños con TDAH al contexto escolar.

Palabras Clave: niños, TDAH, ajuste, temperamento.

Recepción: 30/04/13

Aceptación inicial: 03/06/2013

Aceptación final: 19/07/13

Introduction

Schools offer children in our society an environment for learning and social interaction. Since school objectives include acquisition of knowledge and development of competencies required within each culture, the school context is characterized by constant challenges and demands, putting children's adaptive mechanisms to the test on a daily basis. The adaptation they make will be a function of both endogenous (personal) variables and exogenous (context-related) variables.

One concept that takes into account the influence of both types of variables in adaptation processes is *adjustment*. This concept refers to the degree of consonance between a person's characteristics (e.g., their abilities, personality and interests) and the demands and opportunities within the context (Chess & Thomas, 1990). Positive adjustment in the school context promotes constructive experiences, while poor adjustment brings with it negative experiences. At the same time, the accumulation of positive and/or negative experiences has an impact on children's representations and evaluations of themselves, the school, the teachers and their peers (Rothbart & Jones, 1998). If typically developing children find it hard to adjust to the requirements of the educational context, it is certainly more difficult for children with impairments.

As part of the special educational needs population that forms part of classroom diversity, an estimated 5% of schoolchildren present Attention Deficit Disorder, which may be accompanied by Hyperactivity (ADHD). The clinical profile of this disorder is identified by the following symptoms: (1) *Inattention*, shown by not paying sufficient attention to details, or by making careless mistakes in schoolwork or other activities; (2) *Hyperactivity*, that is, excessive movement and difficulty in sticking with quiet activities; and (3) *Impulsiveness*, or emitting hasty responses or actions (First, Frances, & Pincus, 2002).

Children with an ADHD diagnosis, as compared to non-clinical samples of children, present more frequent adjustment problems at school, that is, they tend to have low levels of academic performance and poor social relations, and they may display behaviors that interrupt classroom dynamics, sometimes altering the classroom climate. In order to determine the causes of adjustment problems presented by ADHD children, most studies have focused on a single aspect of school life, such as academic performance, relations with teaching staff, or

relations with classmates, such that the literature on this topic seems fragmented. One objective of this study is to perform a review that integrates the research studies that address this field of study, in order to offer a global view of the contribution of cognitive and emotional aspects of ADHD children in their adaptation to school.

On the other hand, research with non-clinical populations of children that present isolated problems with attention focus, inhibitory control, or impulsiveness, have made it possible to isolate the effect of these variables on school adjustment, at the same time shedding light on the processes involved in children with ADHD. This paper seeks to combine the studies of children with ADHD and of populations with typical development, either with or without specific disabilities, so as to obtain a better understanding of the mechanisms that can lead ADHD children to adjust poorly to their school setting.

As we will see below, the confluence of cognitive deficits, poor self-regulation skills and a temperament profile based on high emotional reactivity and low self-regulation, increases the risk that children diagnosed with ADHD may develop a variety of adjustment problems at school.

Deficits associated with ADHD and school performance

Children with ADHD show deficiencies in acquiring mathematical and language skills as compared to children with typical development (Bruce, Thernlund & Nettelbladt, 2006; Kim & Kaiser, 2000; McConaughy, Volpe, Antshel, Gordon & Eiraldi, 2011). These two subject areas are extremely important for academic success, since they constitute the basis for other types of school learning.

In studying the causes of these academic difficulties, the latest research points to a deficit in executive functions (EF) (Lambek *et al.*, 2011; Schoemaker *et al.*, 2012; Willcutt, Doyle, Nigg, Faraone & Pennington, 2005). The concept of *executive functions* groups together a set of cognitive skills needed for voluntarily and deliberately maintaining information in working memory, for managing and integrating information, and for solving conflicts between stimuli and response options (for a review, see Miyake & Fiedman, 2012). Let us consider each of the components of the executive functions and how they intervene in teaching-learning processes.

Working memory, defined as maintaining or updating information during a relatively short period of time, is applied in tasks such as recalling digits in order to solve a problem, or recalling instructions in order to perform a task. Research carried out by Rogers, Hwang, Toplak, Weiss and Tannock (2011) studied the relation between the components of verbal and visuospatial working memory, and academic performance in children with ADHD. Verbal working memory is involved in manipulating and learning verbal information, while visuospatial working memory includes the manipulation of images and visuo-spatial learning; both represent basic processes required for learning school subjects, such as reading and mathematics. Rogers and colleagues found that the verbal component of working memory was positively associated with performance in reading and mathematics, even though the visuo-spatial component was related only to mathematics performance. In the study by Lambek *et al.* (2011), children with ADHD showed lower ability with both types of working memory. Therefore, students with this disorder could find their performance in mathematics and reading diminished as a consequence of having both components of working memory affected.

A second component, *inhibitory control*, refers to the activation of specific information and the inhibition of automatic responses when these are not the most adequate, or they are incorrect. *Inhibitory control* is put into practice in activities where the children must respond to certain stimuli and ignore others, following the teacher's previous instructions, or when the students have to resist the temptation to play instead of finishing their schoolwork. Several studies have found that ADHD children, as compared to children with typical development, have less capacity for inhibitory control (Lambek *et al.*, 2011; Schoemaker *et al.*, 2012). As to the role of inhibitory control in academic performance, the answer comes from research with non-clinical populations, where greater scores in this skill have been associated with better performance in mathematics, letter recognition and phonological awareness (Blair & Razza, 2007).

A third component of the executive functions is found in the attention mechanisms, that is, in *focusing* and *attention shifting*. Efficient information processing, on one hand, requires the ability to keep attending to a task despite the presence of possible distractions, and on the other hand, it requires the ability to flexibly change one's focus of attention and therefore, to adjust behavior (Blair & Ursache, 2011). At school, low attentional control would affect not only key moments for the student, such as preparation of exams or the teacher's explanations, but also routine tasks such as using a school agenda (e.g., difficulty with jotting

down exercises and checking one's notes at home). The study from Rogers and colleagues (2011) with ADHD children found that levels of inattention were negatively related to performance in reading and mathematics. This pattern of results was replicated in non-clinical population (Merrell & Tymms, 2001; Tymms & Merrel, 2011). In the same line, the study by Razza, Martinand Brooks-Gunn (2012) found even a predictive relationship between the ability to focus attention in five-year-old children, and academic performance at 9 years of age.

Generally speaking, attention functions as a facilitator of learning, promoting greater concentration and active monitoring of tasks and explanations, and therefore, it encourages participation in activities and learning contexts (Razza, Martin&Brooks-Gunn, 2012). If a student's attention level does not meet the requirements of school tasks, as occurs in the case of children with ADHD, the acquisition of academic skills can be compromised.

In conclusion, studies that have addressed academic performance in ADHD children indicate that some of the causes can be found in executive function deficits. This represents a disadvantage for these children, who will show lower performance in all activities that require use of inhibitory control, working memory and attentional skill. Nonetheless, within the group of ADHD children, there are important individual differences in the degree that EF are affected, and there are still questions regarding what factors cause this diversity in the degree of affectation. When the variables that cause this heterogeneity are understood, risk and protection factors could be identified with regard to EF affectation.

Finally, another aspect that also has been negatively associated with school performance is *hyperactivity*. In addition to the interruptions and teacher warnings that take place on this account, the relation between reading and this excessive motor tendency has been analyzed. Some studies have brought out that greater activity is associated with a lower level in this academic competency (Tymms & Merrel, 2011). However, other studies have observed that children with high levels of activity show better academic performance than those who are less active (Rudasill, Gallagher & White, 2010). One of the variables that may influence this divergence of results is the child's developmental stage. At preschool ages, level of activity is associated with characteristics such as energy, curiosity and motivation, while at later ages a high level of activity may indicate low inhibitory control and poor behavior regulation (Rudasill, *et al.*, 2010).

In summary, deficits in executive functions seem to partly explain lower academic performance from children diagnosed with ADHD as compared to children with typical development. However, the contribution of the hyperactivity component is not as clear. Yet children's adjustment to school is not only a matter of acquiring academic competencies. Emotional variables intervene in one's capacity to cope, in social interactions and social adaptation, and thus they ultimately have their influence on academic performance.

Emotional self-regulation in ADHD and social adjustment at school

ADHD children's adjustment to school is influenced by a number of factors. In the previous section we have analyzed the contribution of cognitive aspects, specifically the executive functions. The cognitive deficits associated with ADHD children may interact in turn with poor self-regulation abilities, and lead to unsatisfactory levels of adjustment at school.

The latest studies carried out by Barkley and Murphy (2010) emphasize that ADHD children tend to present limitations in two components of control: emotional impulsiveness and emotional self-control. According to these authors, *emotional self-control* comprises two processes that involve, on one hand, inhibiting emotional responses, and on the other hand, putting into practice self-regulating actions. One of these strategies of self-regulation is *Self-soothing*, defined as the ability to recover after a period of discomfort, excitation or general arousal.

According to Barkley and Murphy (2010), deficits in self-regulation can explain certain behaviors of children with ADHD, such as conflicts with their parents and social rejection. In support of this hypothesis, Skirrow *et al.* (2009) observed that children with ADHD showed less ability to regulate their emotions, greater emotional instability, irritability and emotional explosion, as compared to children with typical development.

This emotional impulsivity and lack of self-regulation may be at the root of ADHD children's problems with social relationships. Several studies have indicated the presence of problems in interpersonal relationships with peers and teachers (Becker *et al.*, 2006; Coghill *et al.*, 2006; Nijmeijer *et al.*, 2008). These relationships can be affected by their limitations in controlling their behavior and their inability to focus attention (Rimm-Kaufman, *et al.*, 2005), along with poor compliance with established rules, both in games and in school routines. Add

to this their difficulties in carrying out exchanges such as sharing, cooperating and taking turns in social contexts. Therefore, relationships with peers and conflicts in interactions with family members and teachers, etc., might relate not only to the executive and behavioral components of inattention, hyperactivity or impulsivity, but also to limitations in the children's emotional regulation.

Additionally, children with ADHD show difficulties in social cognition (Nixon, 2001; Uekermann *et al.*, 2010), another aspect that is involved in schoolchildren's social adjustment. Social cognition involves codifying, representing and interpreting social cues, and includes perceiving emotions based on facial expressions and prosody, the theory of mind, empathy and processing of humor (Uekermann *et al.*, 2010). All these abilities are truly important in the initiating and maintaining interpersonal relations and in children's social and personal development, and any deficits are expressed along several facets. Thus, the study by King *et al.* (2009), where it was observed that ADHD children responded with more hostility to provocations than did undiagnosed children, could be explained by inadequate processing of social cues, together with emotional impulsivity.

Another aspect of social cognition, empathy, is mediated by the processing of emotions. Children who present ADHD have been shown to manifest greater deficiencies in recognizing emotions in others (Braaten & Rosen, 2000). These limitations in facial recognition of emotions have been associated with interpersonal problems in ADHD children (Pelc, *et al.*, 2006), thereby contributing to difficulties in their social development. These limitations in emotional self-regulation and social cognition can explain the low levels of popularity of ADHD children; their classmates tend to choose them less often for doing activities, they are more often pointed out as "not friends", and when they themselves choose other children it tends not to be reciprocal (Hoza *et al.*, 2005).

In summary, problems presented by ADHD children in emotional self-regulation and social adjustment are associated with their impulsiveness and ineffective emotional self-regulation, their inattention and hyperactivity, together with limitations in recognizing and interpreting social cues and the emotions of others.

Temperament in ADHD and school adjustment

As we have shown, children with ADHD show deficits in executive functions and difficulties in emotional self-regulation. These skills play a part in processes of expressing emotions and in behavior in social contexts, such that they have an impact on the construction of personality and socio-emotional development.

Temperament constitutes the basis on which personality traits are built. This has been defined as individual differences in the excitability, responsivity and arousability of the behavioral and physiological systems of the organism (Reactivity), and includes as well the neural and behavioral processes that serve to modulate the expression of such reactivity (Self-regulation). These differences are constitutionally based and are subject to modification over time due to greater maturity and experience (Rothbart & Derryberry, 1981). Given that temperament includes both reactivity and emotional, cognitive and behavioral self-regulation, it would be expected that students with ADHD would show significant differences in temperament profile as compared to the normative population.

Studies that have compared temperament profiles between ADHD children and children with typical development have used questionnaires, mostly completed by their parents. In general, children with ADHD have obtained higher scores on dimensions related to distractibility (McIntosh & Cole-Love, 1996), levels of motor activity (Bussing *et al.*, 2003; Foley, McClowry & Castellanos, 2008; McIntosh & Cole-Love, 1996), expression of negative emotions (Foley *et al.*, 2008; González-Salinas *et al.*, 2012), impulsiveness (Foley, *et al.*, 2008; González-Salinas *et al.*, 2012) and variables of novelty seeking (González-Salinas *et al.*, 2012; Purper-Ouakil *et al.*, 2010). At the other end, ADHD children assessed by their parents scored lower on dimensions that refer to either attention control or behavioral control (Foley *et al.*, 2008; González-Salinas *et al.*, 2012; McIntosh & Cole-Love, 1996) and to the capacity to enjoy low arousal situations (González-Salinas *et al.*, 2012).

In summary, different researchers show us a temperament profile of ADHD children with greater emotional reactivity, excessive approach tendencies, and less ability to self-regulate, as compared to children with typical development. Research on the contribution of temperament in adjustment in the school context identifies precisely this profile as a risk factor for developing problems (Duckworth & Allred, 2012; Eisenberg, Valiente & Eggum,

2010; González-Salinas, Fernández & Carranza, 2011; Valiente, Swanson & Lemery-Chalfant, 2012; Zhou, Main & Wang, 2010). From this profile, the two aspects that have received the most attention with regard to school adaptation processes have been *effortful control* and *negative emotionality*.

According to Posner and Rothbart (2007), *effortful control* involves self-regulation skills that individuals voluntarily exercise. Operationally, it is reflected in individual differences in the ability to inhibit a dominant response to perform a subdominant response, to detect errors, and to engage in planning. It also involves the ability to voluntarily keep one's attention on task, move one's attention from one task to another, and initiate or inhibit an action. According to Zhou *et al.*, (2010), high *effortful control* is positively associated with good academic performance through cognitive, motivational, regulatory and interpersonal mechanisms, among others. Students with high *effortful control* will have greater ability to focus, maintain and self-regulate their attention, as well as to inhibit responses or stimuli, depending on the context (cognitive mechanisms). These cognitive skills are involved in most academic tasks and requirements (Blair & Razza, 2007; Posner & Rothbart, 2007). Such students will also be able to initiate, sustain and regulate their motivation and their commitment with goals and objectives (motivational mechanisms) (Valiente, 2008; Valiente, *et al.*, 2008); they will be able to regulate their negative emotions, and the speed of response initiation, that is, impulsiveness (regulatory mechanisms) (Pliszka, Carlson & Swanson, 1999; Walcott & Landau, 2004), and they are more likely to succeed in social relations (interpersonal factors) (Zhou, *et al.*, 2010).

Several studies with a non-clinical population have explicitly addressed the contribution of *effortful control* to academic performance, finding a positive relationship between the two variables, whether in Early Childhood Education (Blair & Razza, 2007), Primary Education (Valiente *et al.*, 2011; Zhou *et al.*, 2010), or Secondary Education (Checa, Rodríguez-Bailón & Rueda, 2008). At all these levels, children with greater self-regulation skills are interpreted as possessing better skills in *executive control*, a cognitive capacity that is involved in school learning. Nevertheless, a complete explanation of school performance would have to include additional social and motivational aspects (see Eisenberg *et al.*, 2010, for a review).

Students with ADHD do not benefit from high *effortful control* as a protection factor. On the contrary, low *effortful control* and poor regulation strategies trigger the start and con-

tinuance of conflicts and angry spells with classmates, further fueled by high reactivity and greater expression of negative emotions. These temperament variables will negatively influence classroom dynamics, reducing positive interactions with peers and intensifying feelings of anger, frustration and sadness.

As for negative emotions, most notable is the ADHD pupil's disposition toward *anger/frustration*. This dimension of temperament has been associated with poor social adjustment and poor school performance (Zhou *et al.*, 2010). Children with high levels of *anger* or *frustration* may present difficulties with exercising higher order cognitive processes, such as strategic thinking, memory, attention and problem solving (cognitive mechanisms) (Blair, 2002). Furthermore, these negative feelings may be accompanied by a performance decline in working memory, and low levels of conceptual change (Linnenbrink, 2007). These factors are joined by motivational mechanisms, such as the low motivation and low involvement in academic tasks that is usually found in students with high levels of *anger*, as well as problems in their social relations during their school years. Moreover, within the normative population, high levels of *anger* are associated with development of externalizing problems, and these are related to a decline in academic performance. Thus, there is indication of a possible relationship between temperament dimensions and academic performance, mediated by social competence and externalizing problems (Zhou *et al.*, 2010).

The combination of certain temperament characteristics has repercussions on the children's interactions with their teachers and peers. In the sphere of preschool peer relationships, children with better regulation of attention, behavior and emotion tend to be accepted by their peers (Wilson, 2003). In the period of Primary Education, high negative emotionality, high impulsiveness and low self-regulation – as is the case in ADHD children – have been found to be associated with rejection in class, while high positive emotionality and high self-regulation have been associated with popularity (Bermejo, González & Ruiz, 2000; Stocker & Dunn, 1990).

As for teacher-pupil relations, research by Keogh (1986, 1989) has shown that teachers have certain beliefs about the characteristics of children that are easy to teach (*teachability*); these include self-regulation skills and expressions of negative emotionality. Thus, the teachable pupil has longer attention-persistence, high adaptability, high approach, low to moderate activity and low negative emotionality. To the extent that children match this picture, teachers

tend to show more positive behaviors toward the children; they show less positive behaviors when the children are distant from the “teachable” prototype. Thus, for example, studies by Martin (1994) and Pullis (1989), showed that children with greater tendency to be distracted received more criticism on the part of their teachers, while children with low self-regulation tended to receive more coercive, punitive discipline from their teachers. On the other hand, children with high *effortful control* usually form positive relationships with their teachers (Midgley, Feldlaufer&Eccles, 1989). Relationships formed by students with their teachers are highly important, since they are an integral part of their training at school and of their long-term success (Wigfield, Eccles, Schiefele, Roeser & Davis-Kean, 2006).

In summary, the typical temperament profile of children with ADHD is characterized by high emotional reactivity and poor self-regulation skills, and is associated with lower academic performance, as well as poorer social adjustment in the classroom.

Intervention in the school context

Our review leads us to conclude that the confluence of cognitive deficits, poor self-regulation skills and a temperament profile based on high emotional reactivity and low self-regulation increase the risk that ADHD children will develop a variety of adjustment problems at school. Faced with this situation, early diagnosis of ADHD symptomatology is a pressing need, as well as implementation of intervention programs in the school context. As we have mentioned above, school adjustment depends on how well the students’ characteristics line up to the demands and opportunities of the educational context. Therefore, intervention programs should take into account both a set of adaptations from teachers who address the specific educational needs of these children, and training in cognitive-emotional skills that would permit the children to increase their competencies.

In the first case, schools should design a set of adapted responses for students with ADHD as a function of their characteristics and needs, in order to maximize development of their personal capacities. In this effort, certain teacher strategies have been noted for their effectiveness, such as keeping a motivating, structured environment (with established routines), segmentation of long and/or laborious activities; providing clear, concise and short instructions, and supervision of tasks by teachers or peer tutors (DuPaul & Stoner, 2004; Raggi & Chronis, 2006; Rief, 1993). These actions have proven to assist the student in an

adequate teaching-learning process, promoting the use of study strategies and minimizing the impact of disruptive behaviors (e.g. Arco, Fernández & Hinoja, 2004)

However, the training of children in cognitive and emotional skills is where there is still much work to be done. As far as we have found, few programs have been designed to date, even so they offer promising results. The programs have been oriented to improving self-regulation skills, addressing cognitive, emotional and behavioral aspects.

Some of the initiatives have focused on improving executive skills. For example, the *Cogmed Working Memory Training* (Cogmed, 2006) is a computer program designed to improve working memory through intensive, systematic training. With this type of training, aspects of working memory have improved in young people with ADHD and learning disabilities (Gray *et al.*, 2012), although this improvement has not transferred to other aspects of the executive functions. In a non-clinical population, Rueda, Rothbart, McCandliss, Saccomanno and Posner (2005) also applied a set of computer-designed tasks whose objective was to train attention in children between the ages of 4 and 6. Results showed strong improvement in executive attention and in intelligence as compared to children in the control group.

Other programs have incorporated training in executive functions as part of the school curriculum. Such is the case of the *Tools of the Mind* program (*Tools*), developed by Bodrova and Leong (2007), and based on Vygotsky (1978). This program has shown that executive functions can be trained and improved in the preschool years (Diamond, Barnett, Thomas & Munro, 2007). In the *Tools* curriculum, which is implemented by the teachers themselves, while the students are learning mathematics and language skills, they are also being trained in EF through the use of external supports for facilitating attention and memory, self-talk and self-regulation, through methods such as *role-playing* in interaction with classmates.

Certain characteristics of *Tools*—such as the importance given to peer tutoring, the teacher's observation of and adjustment to the pupil in particular, and continuous, adapted challenges—are shared by a curriculum program with a long trajectory: the Montessori method. Even though this program is not oriented specifically to training in EF, groups of children exposed to this methodology have been shown to obtain better performance on executive

tasks in comparison to groups receiving traditional instruction (Lillard & Else-Quest, 2006). The Montessori method also fosters inhibitory control, self-discipline and independence through a curriculum that comprehensively addresses cognitive, social and emotional development, with an individualized methodology in small groups (Diamond & Lee, 2012).

As for training in emotional self-regulation skills, most notable are the PATHS program (*Promoting Alternative Thinking Strategies*) and the CSR program (*Chicago School Readiness Project*). The PATHS program (Kusché & Greenberg, 1994) focuses on training in emotional and social aspects such as self-control, recognition and management of feelings, and solving interpersonal problems. Implementation of this program has proven to increase inhibitory control and cognitive flexibility in school children (Riggs, Greenberg, Kusché & Pentz, 2006). For its part, CSR emphasizes the teacher's development of strategies for emotional regulation. Studies carried out with this program also confirm improvement in self-regulation skills (Raver, Jones, Li-Grining, Zhai, Bub & Pressler, 2011).

Similar results are seen in the study by Tominey and McClelland (2011) with preschool aged children. These authors designed a series of games oriented toward motor control, where children were asked to respond according to instructions. The instructions involved responding to certain stimuli and ignoring others at a given moment, changing the instructions from one game to the next. Through these activities, children with poor self-regulation skills increased their self-regulating competencies and obtained improvement in their identification of letters and words. These results underline the role of self-regulation as a channel for helping prepare students for school learning.

The interventions mentioned here have proven to be effective for improving cognitive and emotional self-regulation skills in children of preschool and school age. Although most of these programs have not been designed explicitly for ADHD children, the benefits observed in children with poor skills lead us to perceive that their application may also benefit children with ADHD.

In conclusion, different spheres of research have identified cognitive, emotional and personality characteristics associated with ADHD children as risk factors for developing a number of adjustment problems in the school context. Given that the accumulation of positive and/or negative experiences at school has a large impact on the wellbeing of the children and

on their future development, there is a pressing need for early detection of this disorder, as well as for development and implementation of intervention programs.

Acknowledgement

This study was carried out with funding from the Ministry of Economics and Competitiveness, projects CSD2008-00048, PSI2010-09551-E, and PSI2011-23340.

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