

Executive Functions and their Relationship to Social Skills in Children with and without Attention Deficit Hyperactivity Disorder (ADHD)

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مستخلص

الوظائف التنفيذية وعلاقتها بالمهارات الاجتماعية لدى الأطفال المصابين وغير المصابين باضطراب نقص الانتباه وفرط النشاط (ADHD)

هدفت هذه الدراسة إلى التعرف على العلاقة بين الوظائف التنفيذية والمهارات الاجتماعية لدى الأطفال الأسوياء وذوي اضطراب نقص الانتباه وفرط النشاط. ولتحقيق هذه الأهداف استخدم الباحث المنهج الوصفي الارتباطي المقارن. تكونت عينة الدراسة من ثمانين أما (40) أما لأطفال عاديين و40 أما لأطفال مصابين باضطراب فرط الحركة ونقص الانتباه. تم استخدام المقاييس؛ الوظائف التنفيذية، وتشمل ثلاثة أبعاد فرعية: المرونة المعرفية، والسيطرة المثبطة، والذاكرة العاملة، والمهارات الاجتماعية؛ وتتضمن أربعة أبعاد فرعية: مهارات الاتصال. ومهارات توكيد الذات، والمهارات الوجدانية، ومهارات ضبط النفس، ومقياس أعراض اضطراب الانتباه المصحوب بفرط النشاط، واختبار الذكاء، وباستخدام معاملات الارتباط واختبار (ت) للعينات المستقلة، توصلت النتائج إلى وجود علاقة ارتباطية دالة إحصائية بين الوظائف التنفيذية والمهارات الاجتماعية، لا توجد فروق ذات دلالة إحصائية بين الذكور والإناث في كل من الوظائف التنفيذية والمهارات الاجتماعية، بينما توجد فروق بينهما في اضطراب الانتباه المصحوب بفرط النشاط لصالح الأولاد، كما توجد فروق بين الأشخاص الأسوياء والذين يعانون من اضطراب الانتباه المصحوب بفرط النشاط في الوظائف التنفيذية لصالح الأشخاص الأسوياء؛ بينما لا توجد فروق بينهما في المهارات الاجتماعية. وأوصت الدراسة بتعزيز الوظائف التنفيذية لدى الأطفال المصابين باضطراب الانتباه المصحوب بفرط النشاط.

الكلمات المفتاحية: الوظائف التنفيذية، المهارات الاجتماعية، اضطراب نقص الانتباه وفرط النشاط.

Abstract:

This study aimed to identify the relationship between executive functions and social skills in normal children and those with attention deficit hyperactivity disorder. To achieve this goal, the researcher used descriptive, correlational, and comparative methods. The study sample consisted of eighty (40 mothers of normal children and 40 mothers of children with ADHD). Measures were used; Executive functions, include; Cognitive flexibility, inhibitory control, and working memory, and social skills; include four sub-dimensions; Communication Skills, Self-assertive Skills, Affective Skills, Self-Control Skills, a measure of symptoms of attention disorder accompanied by hyperactivity, and an intelligence test. Using correlation coefficients and the t-test for independent samples, the results concluded that there is a statistically significant positive correlation between executive functions and social skills, There are no statistically significant differences between males and females in both executive functions and social skills, while there are differences between them in attention disorder accompanied by hyperactivity in favor of boys, and there are differences between normal people and those with attention disorder accompanied by hyperactivity in executive functions in favor of normal people; While there are no differences between them in social skills. The study recommended enhancing executive functions in children with attention disorder accompanied by hyperactivity.

Keywords: executive functions, social skills, attention deficit hyperactivity disorder

Introduction

Social skills play a pivotal role in the development of a child's ability to communicate with other people, to involve knowing how to act in a certain social situation, and to improve and maintain meaningful social and emotional relationships in his or her lifespan (Merrell & Gimpel, 1998). The difficulty and inability to deliver an acceptable definition of social skills create significant difficulties in recognizing behaviors that make up the meaning of social skills in a commonly accepted way. According to Bloomquist (2013), the determination of behaviors depends on the degree of quality and the difficulty of individuals responding to various situations, while according to Laurel and Taylor (2016), social behaviors depend on their grade in five different reporting categories. However, according to McClelland, Cameron Ponitz, Messersmith, and Tominey (2010) social behaviors are organized by social competence, emotional competence, cognitive process, and self-regulation, because of these characteristics of social behaviors, people can monitor their everyday life and involvement in other activities that are controlled forms of human interactions.

Early childhood includes the foundational years for developing executive functions that ensure readiness for school. Executive functions increase cognitive, social, emotional, linguistic, pre-reading, and pre-mathematical skills (Liew, 2012; Shaul). In general, executive functions enable children to perform goal-directed behaviors by eliminating distractions and controlling impulsive or inappropriate behaviors (Diamond, 2013; Garon, Bryson, & Smith, 2008). During the early childhood years, attention span increases, enabling children to focus longer on both free play and structured tasks (Garon et al., 2008). Attention is the infrastructure in executive functions and is linked to the three components of executive functions: inhibitory control, working

memory, and cognitive flexibility. Although each component entails a different conceptual definition, development or lack thereof in one field affects the functioning of the other two (Diamond, 2013).

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder (Frick & Brocki, 2019) characterized by decreased executive function and attention deficits. ADHD has a genetic component, but the specific gene has not yet been identified (Capodieci et al., 2019). There are three categories of ADHD symptoms. Diagnosis requires the presence of at least six symptoms in a category that significantly interferes with the child's life for more than six months. Interventions include medications and support at school and home. Without proper support, children with ADHD can struggle with poor grades, relationship problems, and authority issues throughout their lives (American Academy of Pediatrics, 2019). Even with appropriate support, they may have long-term challenges in their personal and professional lives.

Statement of the Problem

Attention-deficit/hyperactivity disorder (ADHD) is a heterogeneous neurodevelopmental disorder found in approximately 5% of school-age children (Polanczyk et al., 2014) and characterized by impaired symptoms of inattention, hyperactivity, and/or impulsivity (American Association for Psychiatry, 2013). Children with ADHD consistently show impairment in executive functions (Willcutt et al., 2010). However, little is known regarding the extent to which these findings are due to shared mechanisms rather than reflecting autonomic deficits in

ADHD. Given the prevalence of executive function deficits (e.g., up to 89% of children with ADHD may have a deficit in at least one executive function; Kofler et al., 2018) and social skills deficits in ADHD (For example, up to 65% of children). Children with ADHD may meet criteria for specific learning disabilities; Mayes et al., 2000; Re & Cornoldi, 2010), it is necessary to examine the influence of executive functioning on social skills in children with ADHD.

In addition to evidence from the cognitive and developmental literature, there is emerging evidence linking executive functions to social skills specifically in children with ADHD. Existing research has shown that working memory is associated with speech and expression in pediatric ADHD (Kroese et al., 2000), and emerging empirical evidence suggests that children with ADHD make more errors. In social tasks compared to their neurotypical peers under significant working memory pressure (Kroese et al., 2000; Re et al., 2014). In addition, inhibitory control difficulties have been associated with decreased expressive skills in children with ADHD (Bledsoe et al., 2010; Semrud- Clikeman & Harder, 2010). Examining the relationships between executive functions and ADHD is important as recent literature suggests that the majority of children with ADHD may exhibit deficits in at least one executive function (Fosco et al., 2020; Karalunas et al., 2017). ; Kofler et al., 2018). Furthermore, replicated evidence suggests that some, if not all, executive functions may underlie ADHD symptoms (Snyder et al., 2015; Willcutt et al., 2005) and functioning (Willcutt et al. al., 2005), with functional functions. If not causal evidence is based on experimental (e.g., Kofler et al., 2010; Rapport et al., 2009) and longitudinal studies (e.g., Karalunas et al., 2017). Taken together, the evidence base at this time suggests executive function deficits in behavioral symptoms of ADHD (Karalunas

et al., 2017; Kofler et al., 2010) and social skills difficulties (Casas et al., 2013; Kent et al., 2014). ; Kim and Lee, 2009) separately. However, to our knowledge, no studies have simultaneously examined all executive functions about multiple components of social impurity functioning in a pediatric ADHD sample.

Therefore, the current study addresses the following questions.

- 1- Is there a statistically significant correlation between executive functions and social skills?
- 2- Are there statistically significant differences between boys and girls in both executive functions and social skills?
- 3- Are there statistically significant differences between normal boys and girls and boys and girls with attention disorders in both executive functions and social skills?

Study purposes

The current study aims to verify the following.

- 1- Study the relationship between executive functions and social skills.
- 2- Detecting differences between boys and girls in both executive functions and social skills.
- 3- Detecting the differences between normal people and those with attention disorders in both executive functions and social skills.

The importance of studying

The importance of the current study is evident through its aim to explore the nature of executive functions that work to increase awareness, working memory, and cognitive flexibility in a way that enhances cognitive processes and determines

their relationship with social skills. The importance of this study also stems from the nature of the topic it addresses. Executive functions are among the issues with important dimensions that express the standards of cognitive functions and the level of children's participation in social life. It also expresses their awareness and eagerness to interact and socialize. It also reflects the extent of their awareness of their role in facing the challenges they face. This study gains special importance through the proposals it presents to increase the degrees of executive functions and social skills in light of the changes that the world is witnessing after the tremendous technological development and overcoming the factors of time and place, as it sheds light on the most important dimensions of both executive functions and social skills and studies the relationship between them and the impact of variables. Student gender and ADHD, and presents theoretical literature and tools that can be used to conduct other studies that address other cognitive variables such as working memory, self-efficacy, and other social variables such as; Social responsibility for other categories of children, such autistic children and those with learning disabilities.

Literature Review

Social skills

Social skills are learned behaviors that support children's positive reactions in their interactions with others and help them avoid socially unacceptable behaviors. These skills consist of socially acceptable behaviors such as participation, responsibility, cooperation, initiating communication, asking for help from other children when necessary, and apologizing or thanking them (Gresham & Elliott, 2008; McClelland & Morrison, 2003). In addition, they enhance children's academic success and reduce problematic behaviors (Lane et al., 2004). The inability to employ these skills is generally defined as a

social skills deficit (Hupp et al., 2009). It is also associated with problematic behaviors and developmental deficits (Jewell et al., 2009). Children's social skills play a crucial role in avoiding or preventing negative behaviors displayed by their peers (Elliott et al., 2001). Likewise, cognitive distraction strategies help them control their immediate impulses (to reach a higher-valued reward) and keep them occupied.

Poor social skills are more evident at school than at home because children interact with more children and adults at school than in their home environment. Thus, schools generally bear primary responsibility for implementing social skills training programs (Kavale & Mostert, 2004). At school, students with cognitive difficulties are surrounded by peers and trained teachers who can properly teach social skills. Social skills education can also be implemented through academic programming, to increase the amount of time spent on social skills education.

In this way, they are more likely to avoid negative behaviors by using cognitive distraction strategies (e.g., talking to themselves, singing, playing with their hands or feet), rather than giving immediate impulsive responses. Moreover, it is noted that self-control skills play a crucial role in children resorting to these strategies (Kidd et al., 2013). Self-control is an important component of social skills (Gresham et al., 2011). Children who use cognitive distraction strategies with high self-control are less likely to display problematic behaviors, which enables them to perform higher-level social skills.

Executive Functions

Executive function (EF) was caused by the functioning of the prefrontal cortex (PFC), which evolved and worked with interconnected neural circuits in other brains (Huizinga et al., 2018; Haenjohn, Sirithadakunlaphat & Supwirapakorn, 2018; Watanabe, 2021). It has been divided into three dimensions:

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- 1- metacognition (initiation, working memory, planning and organization, and organization of materials).
- 2- behavior (inhibition and self-monitoring)
- 3- emotion (emotional shifting and control) (Cooper-Kahn. & Dietzel, 2008; Chutabhakdikul, Thanasitkorn, and Lertawasadrakul, 2017; Ahrens, Lee, Zweibroek, Tumanan, & Larkin, 2019; Changkhachon, 2019).

The prefrontal cortex (PFC), which was developed and worked in line with other parts of the brain through interconnected neural circuits, was responsible for executive function (Chutabhakdikul et al., 2017).

This especially occurred during adolescence (Chularut, Aeamtussana, & Kambhu, 2019). As a result, adolescence is a critical stage for forebrain development because it is the age of transition (transitional period) in which people change physically, cognitively, emotionally, and socially, also known as the transition from childhood to maturity.

Executive functions (EF) refer to processes that control reflexive thoughts, cognitive abilities, behaviors, and attention processes (Diamond, 2013). Inhibitory control, working memory, and cognitive flexibility are three subcomponents of the EFs (Garon et al., 2008). EFs are one of the most studied topics; what functions affect EFs and what functions affect EFs are highly interesting in developmental psychology.

Executive functions (EF) refer to the processes that control reflective thoughts, cognitive abilities, behaviors, and attentional processes (Diamond, 2013). Inhibitory control, working memory, and cognitive flexibility are three subcomponents of EFs (Garon et al., 2008)

Children who correctly sort the cards as instructed and after switching the instructions successfully pass the task

(Zelazo et al., 2003); In other words, they should apply inhibitory control and cognitive flexibility. This daily practice may lead to an advantage in inhibitory control. However, not all findings justify a bilingual advantage in EFs.

Children do not naturally acquire executive functions. Instead, executive functions emerge through experiences that support growth in inhibitory control, working memory, and cognitive flexibility (Wiebe et al., 2012). Many factors hinder the development of a child's executive functions such as low socioeconomic status, mental and health illnesses, and disabilities including lack of sleep, loneliness, and lack of exercise. For adults in children's lives, it is essential to understand the benefits of executive functions in a child's resilience and success in navigating life experiences to achieve optimal outcomes. Even more important is the knowledge that a child's executive function development can be hindered or enhanced throughout the early childhood years (Diamond, 2013). Supporting the development of executive functions in children should be a focus of attention for parents, caregivers, and teachers of children in the early childhood years.

Working memory entails the ability to remember and process information regardless of distractions. During the early childhood years, children retain more items in memory, as well as modify them and modify this knowledge as needed. More specifically, working memory enables a child to sequence events, follow instructions, think mathematically, reason, make plans, and make decisions. Inhibitory control and attention affect a child's working memory (Diamond, 2013).

One example of how working memory affects a child is when a group of children listens to a read-aloud. The teacher stops and asks the group of children a question about the story. Some of the children are moving on the carpet and one or two of them are talking. But most children raise their hands in response. A child with strong working memory skills will be

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able to think of the question and answer appropriately regardless of distractions or having to wait to be called. Working memory is demonstrated when a child is recalled and then says, “Oh, I forgot” (Mahy, Moses, & Kliegel, 2014).

ADHD is a neurodevelopmental disorder characterized by persistent symptoms of inattention, hyperactivity, and impulsivity (Badía & Raga, 2015). ADHD is not a modern disorder, as the first description of symptoms that closely resemble what would currently be described as ADHD is attributed to Steele (1902). ADHD is distinguished into three types, attention-deficit type, hyperactivity/impulsivity type, and combined type (Stampoltzis & Voulkidou, 2023). The latter combines the symptoms of the other two types.

According to the National Institute for Health and Care Excellence (NICE, 2018), to be diagnosed with ADHD, symptoms of hyperactivity/impulsivity and/or inattention must meet the diagnostic criteria in the DSM-5 or the International Classification of Diseases (ICD-10). Symptoms of the disorder must persist for at least six months and must be disproportionate to the child's age, resulting in impairment in two or more important settings, including social/family and educational settings. Furthermore, the disorder must be identified before the age of 12 years (APA, 2013). Boys are more likely than girls to develop ADHD. ADHD should be considered in all age groups, with symptom criteria adjusted to match age-appropriate behavioral changes (NICE, 2018). Social as well as interpersonal difficulties are often observed in children with ADHD (Nixon, 2001). In addition to children who have been formally diagnosed with ADHD by professionals, there are also some children whose parents and teachers report “attention problems.” This second group represents a separate subgroup among children.

Research Hypotheses

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Therefore, the following hypotheses are suggested answers to the questions of the current study:

- 1- There is a statistically significant correlation between executive functions and social skills.
- 1- 2- There are statistically significant differences between boys and girls in both executive functions and social skills.
- 2- There are statistically significant differences between normal boys and girls and between boys and girls with attention disorders in both executive functions and social skills.

Method

Research method

A descriptive research design was used in this study as it attempted to collect data about executive functions and their association with social skills. Executive functions include; Cognitive flexibility, inhibitory control, and working memory; Social skills include; Communication skills, Self-assertive Skills, emotional skills, and self-control skills. This research design is best suited for studies that aim to describe the nature of situations as they existed at the time of the study and to explore the cause of a particular phenomenon. Among the different types of descriptive research designs, four of them have been properly applied: survey, in-depth study, correlation, and comparison.

Participants:

Eighty mothers of boys and girls aged 6 to 12 years participated. Forty children were diagnosed with ADHD-HI and forty were mothers of normal children, and participants were recruited from district physicians, school districts, ADHD parent groups, and clinic settings. All boys were required to meet the following criteria for inclusion in the study: (1) to

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have a full-scale IQ > 80; (2) be absent of pervasive developmental disorders, hearing or vision impairment, physical challenges, documented brain injury, or other neurological disorders; (3) be placed in a regular education classroom (resource support is acceptable); (4) have no documented learning difficulties; Boys met the following criteria: (1) they had been diagnosed with or without ADHD or a form of hyperactivity-impulsivity by a trained clinician using DSM-V criteria, and (2) had a positive criterion score for ADHD. The mean age of the boys was 8.61 (SD = 1.80) and the mean grade level was 3.25 (SD = 1.89). Ninety percent of the boys with ADHD were taking medication.

Data Collection Tools:

- Executive Function Scale (MEFS)

The instrument used was the Minnesota Executive Function Scale (MEFS), an instrument developed in 2014 to measure executive function in young children through adults. The tool was based on Dimensional Change Card Sorting, a measurement tool that has been used in hundreds of executive function studies (Carlson et al., 2016). The tool was created by the same researchers who created the NIH Toolbox, an assessment of executive function available as a clinical app “not intended for use outside of clinical application.” The MEFS was chosen for its uniqueness in that it can be used with children as young as two years old and takes only four minutes to administer on average. Given the body of data suggesting convergence of EF skills in early childhood, the MEFS produces a total executive function skills score, rather than three distinct scores for the domains of cognitive flexibility, inhibitory control, and working memory (Zelazo et al., 2016). Participants' scores can be compared to current standards for EF development based on the age of the participant. Mothers

were required to rate their children's behavior on a scale from 1 (never/rarely), 2 (sometimes), 3 (often), and 4 (very often).

Although the MEFS is relatively new, it has proven to be reliable and valid as a measurement tool. The test-retest reliability of the instrument is 0.91. The iPad software guides the measurement process, so the administrator does not introduce subjectivity into the MEFS scores. Validity has been demonstrated in several ways. First, the MEFS correlates highly with other commonly used research measures of EF (such as the NIH Toolbox battery of EF measures often used for clinical purposes). The MEFS does not show a strong relationship with IQ, suggesting that it measures EF rather than intelligence (Executive Functioning Tests, 2017).

- Social Skills Assessment Scale

The researcher developed a social skills scale to evaluate children between the ages of 6 and 12 years and includes four sub-dimensions; Communication Skills, Self-assertive Skills, Affective Skills, and Self-Control Skills. This instrument was originally developed to meet the need for a relatively brief and easy-to-administer instrument to assess children's complex social traits, identify strengths and challenges in the social domain, and provide recommendations for intervention planning through individualized specific goals and strategies. The Social Skills Taxonomy Model contains descriptors for social behaviors in domains including emotional understanding/perspective taking, initiating interactions, responding to interactions, and maintaining interactions. The respondent (parent or teacher) rates the child's ability to perform each behavior on a four-point scale, ranging from "not very well" to "very well." The results of the initial application indicated its reliability at 0.92 for parents' evaluation and 0.94 for teachers' evaluation through Cronbach alpha. They also confirmed the authenticity of its content. The parent model was used in this study. The construct validity was 0.79 - 0.93

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through the method of correlation between the entire test and its subscales. The reliability of the entire scale was 0.86 using Cronbach's alpha coefficient.

- ADHD Symptoms

ADHD Rating Scale (ADHD-RS-4/5).: The ADHD-RS-4/5 (Du Paul et al., 2016) was used to assess the frequency and severity of ADHD symptoms based on... On DSM criteria in children and adolescents aged 5 to 17 years (18 items; 4-point Likert scale). The ADHD-RS-4/5 includes two symptom subscales: inattention (9 items) and hyperactivity-impulsivity (9 items). Psychometric support for ADHD-RS-4/5 includes high internal consistency ($\alpha = 0.94$) and retest reliability ($r = 0.79$ to 0.85 ; DuPaul et al., 2016). Teacher-reported ADHD symptoms were selected a priori because there is evidence that children's behavior at school may be more predictive of their academic achievement than their behavior in other settings (Nadder et al., 2002). Sensitivity analyses were performed using parent-reported ADHD symptoms to check the robustness of the results to this a priori methodological decision. Higher raw scores reflect greater quantity/severity of ADHD symptoms.

- Global Intellectual Functioning (IQ)

All children were administered the Verbal Comprehension Index of the WISC-V (Wechsler, 2014).

Process

The tools were applied in the fall semester of the 2022-2023 academic year. Before implementation, permission was obtained from the responsible authorities. After that, the researcher went to the selected schools and conducted the study with the selected students and their volunteer mothers after also obtaining the approval of the teachers.

Data analysis

Quantitative data collected through questionnaires were analyzed using means, standard deviations, linear correlation coefficient, and t-test. Through this statistical analysis, the association between executive functions and social skills was examined, as the differences between boys and girls in each of them, and the differences between students with and without attention disorders accompanied by hyperactivity in both executive functions and social skills.

Results

Hypothesis 1: There is a statistically significant correlation between executive functions and social skills.

Table 1 shows the correlation between executive functions and social skills

Variable	Correlation	Executive functions	Social skills.
Executive functions	Pearson Correlation	1	0 .635 **
	Sig.		0.000
	N		80
Social skills.	Pearson Correlation		1
	Sig.		
	N		313

Table 1 shows a positive and statistically significant relationship between executive functions and social skills. This result is supported by the results of Table 1 above, where the averages are high (0 .635) compared to the highest value of 1, which indicates that these two variables are related to and dependent on each other; Therefore, the relationship between them is positive. Hence, it can be said that these results prove the acceptance of the first hypothesis proposed in this study.

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Hypothesis 2: There are statistically significant differences between boys and girls in both executive functions and social skills.

Table 2. T-test of the differences between boys and girl's students' executive functions

Variables	Boys		Girls		t	Sig
	M	SD.	M	SD		
Cognitive flexibility	2.42	1.72	2.40	1.87	0.91	0.391
Inhibitory control	2.39	1.69	2.44	1.91	1.11	0.367
Working memory	2.27	1.85	2.31	1.78	1.13	0.349
Executive functions	2.36	1.74	2.38	1.75	0.72	0.793

Table 2 indicates that there are no statistically significant differences between boys and girls in executive functions. This result indicates that both boys and girls have the same executive functions. This may be because Egyptian families do not differentiate in providing cognitive opportunities for both genders. Therefore, this result proves that the second hypothesis is unacceptable about these variables.

Table 3. T-test of the differences between boys and girl's students' social skills

Variables	Boys		Girls		t	Sig
	M	SD	M	SD		
Communication	2.63	1.79	2.76	1.99	1.115	0.113
Self-assertive	2.47	1.57	2.67	1.71	1.315	0.105
Affective Skills	2.57	1.91	2.71	1.87	1.023	0.157
Self-Control	2.61	1.83	2.49	1.77	1.206	0.101
Social skills.	2.57	1.68	2.66	1.57	1.101	0.127

Table 3 indicates that there are no statistically significant differences between boys and girls in social skills. This result indicates that both boys and girls have the same social skills. This may be due to providing equal opportunities for both genders in social interaction and communication with others. Therefore, this result proves that the second hypothesis is not accepted in light of these variables

Hypothesis 3. There are statistically significant differences between normal boys and girls and boys and girls with attention disorders in both executive functions and social skills.

Table 4. T-test of the differences between normal boys and girls and girls with attention disorders in executive functions

Variables	Normal		Attention disorders		t	Sig
	M	SD	M	SD		
Cognitive flexibility	2.91	1.93	2.41	1.98	2.97	0.01
Inhibitory control	2.88	1.81	2.39	2.07	2.96	0.01
Working memory	2.94	1.86	2.31	1.93	3.11	0.01
Executive functions	2.76	2.07	2.37	1.83	2.85	0.01

Table 4 shows that there are statistically significant differences between normal children and those with ADHD in executive functions in favor of normal children. This may be due to normal children being more focused on performing cognitive functions. These results prove the acceptance of the third hypothesis regarding these variables.

Table 5. T--test of the differences between normal boys and girls and girls with attention disorders in Social skills

Variables	Normal		Attention disorders		t	Sig
	M	SD	M	SD		
Communication	2.86	1.96	2.81	2.09	0.891	0.157
Self-assertive	2.89	1.89	2.78	1.91	1.115	0.117
Affective Skills	2.90	2.01	2.69	1.87	1.317	0.101
Self-Control	2.95	2.11	2.83	2.16	1.319	0.091
Social skills.	2.90	1.95	2.78	2.36	1.318	0.090

Table 5 shows that there are no statistically significant differences between normal children and those with ADHD in social skills. This may be because normal children and those with ADHD have equal opportunities and similar levels of social interaction and communication with others. These results prove that the third hypothesis is not accepted regarding these variables.

Discussion

This study revealed that the correlations between self-efficacy and social skills toward executive function were statistically significant at the .01 level. However, students' executive function is constantly evolving and effectively developing to a higher level of cognitive control. These skills are tools to support self-control and changing environments. The role of executive function is crucial in predicting students' self-efficacy, self-awareness, and social skills. The results were consistent with Saeed's (2013) study, which focused on predicting academic performance based on executive function, metacognition, study strategies, and self-efficacy, and revealed that executive function was statistically related to self-efficacy at the .05 level. The results were also consistent with Zahodne et al. (2015) found that self-efficacy strengthened the relationship between executive function and education.

Moreover, social competence was related to executive function, indicating that the relationship between social and executive function was very effective for children. In addition, Mager et al. (2019) found that executive function is significantly related to social skills. This is because social skills have been related to social interaction, social relationships, social engagement, social communication, social perception, social awareness, and social motivation (Mariasine, Pei, Poth, Hennevel, & Rasmussen, 2014; Jahja et al., 2016; Christ et al., 2017; Yingdamnoon, Phusuan, Trakulsunthorn, Sarotipakorn, & Hongswat, 2017). Meanwhile, Grafman (2008) reported that people with abnormalities in executive function showed lower levels of self-awareness in the study, which affected their abilities in a variety of areas.

This study examined the relationship between children's executive functions and their social skills. The results revealed a statistically significant relationship between children's executive functions and their social skills. Furthermore, this relationship can be interpreted in at least two different ways: First, it can be argued that deficits in children's social skills indicate executive problems. Instead, a lack of social skills in children is a symptom of ADHD.

This result shows that the levels of executive functions are an effective variable on the levels of their social skills. As students' levels increase, their social skill levels also increase. Balian (2009) found in his research that students' levels of positive social skills do not differ depending on class, school type, and classroom situation. With the category variable, it can be concluded that there are also results that contradict our research. When the social skills evaluation scale was examined according to educational levels, it did not affect the level of social skills.

When examining the literature, as the level of education of the parents increases, the level of adjustment of the child

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increases, and there is a significant difference between the level of education of the parents and the level of personal and social adjustment. Adaptation and general adaptation of the student (Ünlü& Çeviker, 2022). The research does not support the results of research in this aspect. It is believed that this difference is due to the age difference in the study group. When the levels of social skills of students were examined, there were no statistically significant differences between the levels of social skills of students according to gender and attention disorders accompanied by hyperactivity. There were statistically significant differences in executive functions and as a result, it can be said that it is very important for students to be directed to developing executive functions to express themselves in social environments and adapt.

Initial support has been provided for Barkley's (1997) theoretical model that includes differences in executive functions in children with and without ADHD. Boys with ADHD appear not only to have symptoms of inattention, hyperactivity, and impulsivity, but also to have symptoms associated with “control processes” such as working memory, motivation, emotion regulation, motor control, and behavioral inhibition. All EF factors in the ChIEFS appear to be very sensitive to the difficulties faced by boys with ADHD, however, the factors correlate significantly with each other and the overall ChIEFS score. While it is clear that these measures of executive function are sensitive to ADHD, it is unclear whether the rational factors are empirically distinguishable from each other and the overall score. It may be possible that the ChiEFS measures a general construct of “self-control” rather than separate executive functions.

Conclusions

Executive function is the part of the brain that manages thoughts and behavior (Frick and Brockie, 2019). Deficits in executive function lead to problems with inhibition, shifting,

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and working memory—key qualities for academic success (Frick & Brocki, 2019). Children with ADHD lack basic skills for academic performance, such as writing essays, organizing material and ideas, memorizing, reading comprehension, and solving mathematical problems (Ziegler-Dindy, 2011). Executive function allows the brain to learn from the consequences of an action and make plans about those actions in the future (Children and Adults with Attention Deficit/Hyperactivity Disorder [CHADD], n.d.). Children who lack executive function will have difficulty modifying their behaviors or learning based on past events and may need help to manage their behaviors. ADHD is a disorder that affects attention and executive function. It may present with different symptoms in different individuals, but the basic categories of symptoms remain the same. Deficits in executive function are a large part of ADHD and greatly impact school and home life. He faces long-term challenges in his personal and professional life.

Future Research and Recommendations

Attention-deficit/hyperactivity disorder (ADHD) affects executive function and attention. Many children show symptoms similar to those of ADHD. However, diagnosis requires the presence of at least six symptoms that significantly interfere with the child's life for a period of time. School and home can be greatly affected by the deficits in executive function that characterize this disorder. A variety of interventions are needed at home and at school to support children with ADHD. Without appropriate interventions, they may have more difficulty dealing with long-term challenges in their lives. They have long-term challenges in their personal and professional lives.

Deficits in executive function affect children's lives at home as well as at school. Fighting back, talking back, and starting fights are some of the behaviors that a child with

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impulsivity issues will exhibit (Zeigler Dendy, 2011). These behaviors can affect the parent-child relationship and may cause conflict at home. Parents will need help regulating the motivations and other behaviors of their children with ADHD (Frick & Brocki, 2019). Parents may need to help their children with ADHD initiate tasks, plan tasks, stay on task, and get organized. They may need to be the outside voice so that their children's inner voices can control their behaviors and reflect on their actions. Parents of children with ADHD and executive function deficits will need to spend more time organizing and managing their children than typically developing children. Deficits in executive function can significantly impact social skills. He faces long-term challenges in his personal and professional life.

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